

SSEN DISTRIBUTION RIIO-ED2

CONSUMER VALUE PROPOSITIONS

RIIO-ED2 Business Plan Annex S3



Scottish & Southern
Electricity Networks

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1. INTRODUCTION TO OUR CVPS



Consumer Value Propositions (CVPs) form part of Ofgem’s Business Plan incentive, which provides a mechanism for network companies to be rewarded for ambitious commitments that go above and beyond minimum requirements in generating value for customers over RIIO-ED2.

In this document, we present our five CVP proposals aligned to our strategic goals for RIIO-ED2. Whilst we believe that our core business plan is ambitious and stretching, through our CVP proposals we demonstrate where we plan on going even further to deliver benefits to our customers, communities and wider society.

We show our CVPs as a collective package in Figure 1 below. Our aim is to explain how each of our proposals align with Ofgem’s CVP expectations and into our wider business plan. We believe we can deliver over £50m in additional consumer value through these CVPs.

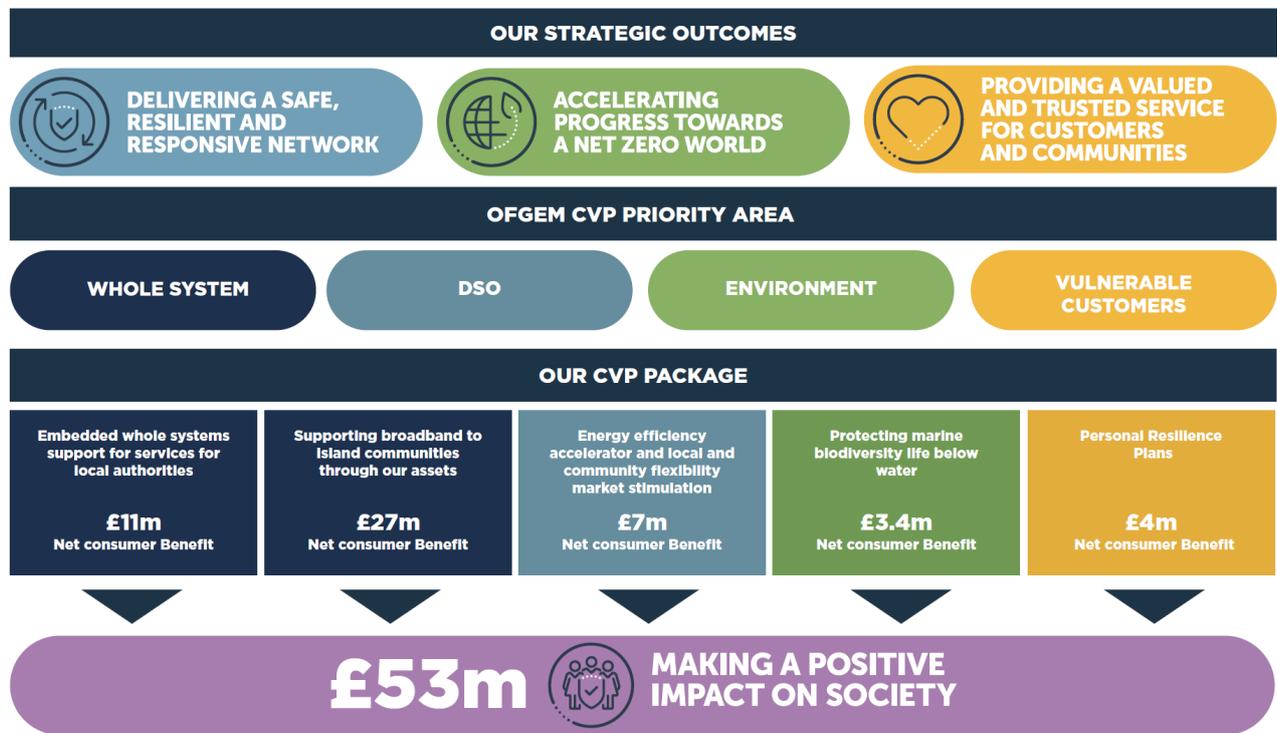


Figure 1: CVP Package

Our CVP proposals should not be considered in isolation and should be considered in the context of our ambitions set out in the whole Business Plan. Our Business Plan has been developed and co-created with stakeholders and seeks to address the needs of customers and consumers, deliver benefits to the economy and focus our efforts towards the UK meeting its net zero ambition. Whilst we do not yet have certainty on the pace and path ahead, we do understand the direction of travel and have designed a flexible plan that can respond to these uncertainties. Notwithstanding these underlying timing uncertainties there are many areas where investment is urgently needed now to help to facilitate this change.

We are confident that our CVPs provide a new, proactive approach that will drive innovation, secure additional benefits for current, future and vulnerable consumers, push the boundaries of where we can deliver more for less and be more efficient. Our CVPs build upon experience and feedback gained within RIIO-ED1 and valuable input that we have received from our RIIO-ED2 engagement, where consumers and stakeholders told us what they value most and what they would like us to deliver.

The benefits of our CVP proposals have been quantified using the DNO joint social value framework, with each delivering a net benefit to customers greater than £3 million and a combined net value in excess of £50 million.

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
1	Embedded Whole Systems Support Services for Local Authorities	Whole system	£12.3m	£11.7m	£22.9m	£11.2m
2	Supporting broadband to island communities through our assets	Whole system	£8.0m	£7.5m	£34.5m	£27.0m
3	Protecting marine biodiversity: life below water	Environment	£2.6m	£2.4m	£5.8m	£3.4m
4	a) Energy efficiency accelerator for smarter networks and b) Local and Community Flexibility Market Stimulation	DSO	£36.8m	£33.8m	£40.9m	£7.1m
5	Personal Resilience Plans	Vulnerability	£7.3m	£6.8m	£10.7m	£3.9m
	Total		£67.0m	£62.2m	£114.8m	£52.6m

Table 1 – Consumer Value Propositions - costs and benefits

The purpose of the rest of this annex is to detail our Consumer Value Propositions (CVP) and our approach to qualifying and quantifying each proposal. The document is structured as follows:

- **Section 2. Approach:** our approach, methodology and assessment framework applied
- **Section 3. Summary of our proposals:** overview of each CVP including how it goes above and beyond baseline levels (and those set out in our Business Plan), the consumer benefits delivered and stakeholder support
- **Appendix A. CVP assessment framework:** the assessment criteria that we used to select and refine our proposals
- **Appendix B. Stakeholder engagement summary:** summary of key feedback and how each initiative addresses priorities identified by our stakeholders and customers
- **Appendix C. Detailed proposals:** additional detail on each CVP proposal and how we plan to deliver them
- **Appendix D. Consumer benefits methodology:** an explanation of how we have assessed the benefits generated by each CVP and a full set of assumptions made in our calculations
- **Appendix E. Proposed reporting format in RIIO-ED2**

2. APPROACH

In this section we describe our approach for developing the CVPs that deliver additional value for consumers above and beyond our baseline plan.

2.1 STAKEHOLDER ENGAGEMENT

We have engaged closely and extensively with our stakeholders and customers throughout the development of our business plan and we set out the full details of our approach in our *Enhanced Engagement Strategy (Annex 3.1)*.



Our CVPs have been developed as part of our wider business plan engagement programme through a combination of cross plan and bespoke routes, as we seek to deliver our ambition during RIIO-ED2 and secure additional consumer value. At draft we had developed proposals in three areas more fully, but since July we have continued our engagement process and are now present all five CVPs that we are confident reflect the priorities of our stakeholder and consumers. We believe that our final proposals, formed in discussion with our stakeholders, now provide a richer offering and seek to deliver meaningful and valued improvements across a number of areas.

We have engaged with Local Authorities, Community Groups, consumers, customers and Ofgem to develop proposals that seek to push the boundaries of what is, or could be, expected of us.

In a letter to Andy Huthwaite, SSEN’s Director of ED2, the Scottish Government confirmed its support for our business plan, recognising the potential for CVPs as a means of creating the right framework to underpin transformation in areas of the energy system that might not otherwise happen¹. The letter referenced our proposed whole system support for local authorities, acknowledging its potential to provide a valuable resource for local authorities acting on their own decarbonisation ambitions. The letter also stated that “Plans for improving islands connectivity and resilience can help to significantly reduce the significant impact of sub-sea cable outages and reliance on stand-by diesel generation.”

We are confident that our approach strikes an appropriate balance between different stakeholder views and we believe sets out a balanced, yet still ambitious, proposal to deliver additional value to the consumer within RIIO-ED2. We have also tested our proposal with our Customer Challenge Group (CEG).

We have listened and responded to the feedback we have received since Draft and have revised our proposals to increase clarity, strengthen our ambition and focus on delivering the maximum possible benefit for our consumers and wider society.

We set out the specific feedback received from stakeholders and how this has informed each CVP proposal in Appendix B of this document.

¹ Letter dated 22 November 2021, from the Scottish Government’s Energy and Climate Change Directorate, Head of Electricity Networks and Regulation.

2.2 METHODOLOGY



We have carried out an iterative process to select our CVPs in the business plan. Our first step was to create a long list of proposals. We considered 37 options as part of our overall CVP approach. We then compared these proposals against Ofgem’s guidance and regulatory precedent from RIIO-GD2/T2.

We compared the emerging ideas against our existing stakeholder feedback and as part of this process some options were rejected as they did not meet Ofgem’s criteria or push the boundaries of what would be normally expected, or were not identified as priorities through our engagement. In some cases we have promoted options into our base offering within the plan. We performed this iterative process several times, refining our concepts and ideas and developed and co-created proposals across the business. Our final step was to measure the benefits of our CVPs to ensure each of our proposals deliver tangible and clearly demonstrable value to consumers and society. We believe the combined package can deliver additional consumer benefits of up to £53m (as shown in Table 1)

2.3 CONSUMER BENEFITS



We have applied the industry standard joint social value framework and associated Social Return On Investment (SROI) model to quantify the benefits of our CVP proposals. SROI is a framework that enables the use of standardised industry proxies, network data and bespoke company research to calculate consumer benefits, societal benefits and network avoided costs.

During working groups in early 2020, DNOs discussed the (quantitative) measurement of social value, and how it could form a part of how the DNOs were reviewed. To prepare for the CVP process, DNOs decided to develop a common approach to measuring social value – a consistent mechanism that would allow for straightforward assessment and comparison.

Supported by Sia Partners and building on engagement with key industry stakeholders and Ofgem, the DNOs developed the Social Value Framework – a set approach that aimed to deliver consistent, comparable, and conservative values for societal benefits.

In late 2021, to improve comparability and assure Ofgem that the joint approach is delivering consistent figures, the DNOs commissioned Sia Partners again to audit each company’s draft CVP SROI modelling and provide recommendations if adjustments were required.

SSEN was provided with 7 recommendations to either provide further justification or make changes to assumptions for its draft CVPs. We can confirm that these recommendations have all been acted upon for our final CVP proposals.

In addition to the joint DNO audit, we commissioned a ‘clean team’ from Sia Partners to independently measure, scrutinise and verify each of our final CVP calculations, providing assurance and confidence that the values presented are conservative, comparable and consistent with the industry standard approach adopted across DNO’s.

2.4 DELIVERY AND REPORTING



We recognise that our CVP package has not yet been accepted, but we will work following Determination to agree a delivery profile and reporting format to ensure we are transparent with the progress in each of our proposals. We are prepared to report annually on each measure. We believe the proposals we present are deliverable. However, if it transpires we fall short of the delivering in line with the outcomes presented, we will both return the element of underspend and any reward awarded, less any agreed efficient costs incurred, if matters were within our control. We have started to develop a possible reporting format, as shown in Appendix E, but ultimately we will continue to work with our stakeholders and Ofgem to agree a suitable format to use in RIIO-ED2.

Where possible, we will seek to deliver more than forecast, especially where efficiencies are realised and we can utilise to further increase our activities within each area.

3. SUMMARY OF OUR CVPS

We are proposing Consumer Value Propositions which cover Whole Systems, Environment, Distribution Systems Operator (DSO) and Vulnerable Consumers focused on the following themes:

- Proactive approach to addressing customer needs
- Utilising our skills and knowledge to ensure efficient decision making
- Positive action on sustainability challenges across our network area and wider society
- Doing the right thing for our most vulnerable customers
- Utilising our network assets for wider societal benefits – for those in our Scottish Islands
- Ensuring all consumers benefit from the energy system transition

Using our approach described in Section 2 we have developed detailed analysis on all of our proposals, as shown in Table 1 (above) and Table 2 (below). At Draft we were still finalising three consumer value propositions (Protecting Marine Biodiversity, Local and Community Market Stimulation and Supporting Broadband to Island Communities) and these are now presented with complete costs and SROI assessments.

More detail can be found on costs, consumer benefits and SROI analysis in Appendix C and D.

CVP	Proposition	Aspiration	Changes since Draft
Embedded Whole Systems Support Services for Local Authorities	Providing embedded support and resource to enable 72 Local Authorities and up to 200 Community Groups to optimise their use of the electricity network and plan whole system opportunities to facilitate the net zero transition.	Deliver Net Zero capabilities at pace, helping build capabilities beyond SSEN and embed skills for society benefit. Enable more efficient siting of infrastructure, such as Electric Vehicle charging hubs and heat pump trials, reducing long-term costs.	Added a Support Pack provision to help respond to stakeholders needs.
Supporting broadband to island communities through our assets	Support the delivery of broadband services to 14 remote communities through a whole systems solution to utilise the fibre in our subsea cables, creating significant wider societal benefits.	Challenge typical limitations and look for lowest whole systems solutions, using our asset base for public good. Encourage wider customer benefits through using the fibre network to share data and enable systems, such as future flexibility markets. Empower customers to participate in the energy transition and make more informed decisions as the future market opportunities develop.	Additional clarity on whole system benefits added and we've increased the total number of island communities we believe we can reach.
Protecting marine biodiversity: life below water	Plant up to 17 hectares of seagrass meadows during RIIO-ED2, aiding biodiversity recovery, supporting climate adaptation pathways, and provide carbon sequestration as an alternative to offsetting.	Contribute to a 1.5-degree Science Based Target pathway and recognise our role in supporting biodiversity and delivering wider societal benefits. Encourage other DNOs and large corporations in the UK to look at our waters as key environmental protection zones.	Increased our ambition and scale of activity we plan to undertake.
a) Energy Efficiency Accelerator for smarter networks and b) Local and Community Flexibility Market Stimulation (combined)	Partnering to deliver energy efficiency at targeted points on our network supporting a reduction in bills and providing direct energy efficiency improvements to 112,000 households. Facilitate up to 7,000 LCT installations as part of Market Flex Stimulation, supporting 50 Constraint Managed Zones across RIIO-ED2	Reduce costs to customers by partnering to deploy energy efficiency measures where these are likely to have the most significant benefit on alleviation of network constraints, prioritising areas with high levels of vulnerability or fuel poverty. Ensure all customers are able to access and benefit from the future energy system, including participating in flexibility markets, and benefiting from them.	Proposed merging CVPs to securing better efficiencies in delivery. Developed top-up mechanism to add to size of CVP.

Personal Resilience Plans (PRP)

Targeted, personalised and proactive personal resilience support to a total of 420,000 new and existing PSR customers, providing up to 21,000 battery packs to new and existing PSR1+ customers.

Aspiration for all PSR customers to have a PRP. We want to help all customers with personalised advice relevant to them about what to do if there is an interruption or emergency situation. New base level PSR offering in RIIO-ED3.

Increased in scale, to benefit more customers.

Table 1. Consumer Value Propositions and Aspirations

FINAL CVP PACKAGE - CHANGES SINCE DRAFT

We have responded to the challenges raised on our CVP package by our stakeholders, the Challenge Group and our CEG. As a result of this feedback we have revised aspects of our proposals to make them stronger and to draw out the consumer benefit more clearly. Full details of each improvement are set out within Appendix C.



We believe all our draft CVPs demonstrate clear intent that we aim to go above the baseline, pushing the boundaries of what is typically expected and had the potential to deliver additional value for the consumer. We have updated and strengthened our narrative to demonstrate our aims in all CVPs, including adding additional examples to help bring each proposal to life. We call out our ambition, emphasising how we have built on from previous knowledge and experience to drive additional value, but also recognise that elements of our CVPs require acceptance before we can develop any further at this stage.

We have undertaken the following activities since Draft:

- We have carried out further stakeholder engagement to test proposals
- We set out, in Appendix E, our proposal on how to measure, track and report on our CVP package during RIIO-ED2.
- We have undertaken a consistent SROI assessment on all CVPs and have revised our SROI modelling, following an audit by Sia Partners, to ensure consistency across all DNOs.
- We also set out our clear proposals on non-delivery of our ambitious CVPs.

Since July, we call out these specific improvements implemented:

1. **Embedded Whole Systems Support Services for Local Authorities** – Stakeholders were confused as to whether this was proactive, or different from what we already undertake, so we have clarified this is both a proactive and responsive service where our stakeholders can request support in addition to projects where SSEN seek support from local partners. We have also added detail to highlight why and how this CVP goes above our existing baseline and why we feel it is essential, across engagements since draft our stakeholders have responded positively to these enhancements. We have also added the construction and circulation of a Whole System ‘Support Pack’ to the CVP, this will provide additional data sets, guidance and case studies to Whole

System stakeholders and should, over time, reduce the ongoing need for additional bespoke support.

2. **Supporting broadband to island communities through our assets** – We want to demonstrate commitment to facilitating the truest and broadest whole system solution. We've already demonstrated the viability of this in Shetland during RIIO-ED1, but **we are proposing a new proactive approach to ensure that our island communities realise benefits at the earliest opportunity**. We look to help engage with service providers to use our assets proactively, rather than waiting to be approached. This has been universally supported by local councils and the Scottish Government, but questioned by other stakeholders; why are we stepping into Broadband provision space. We are looking to stimulate and provide capacity, but not take on any broadband role, rather just look for our assets to be utilised by others more effectively. We have expanded the total number of islands, up to 14 islands, we believe we could undertake this approach, although we are open to all engagement to make this a reality for all of our rural customers. We are committed to delivering benefits to the widest range of communities through our assets. We explore this further in Section 3.1 and Appendix C.
3. **Life Below Water** – We have explored the potential to restoring seagrass meadows around our coastal regions, with a strong desire to improve the biodiversity and lock in environmental benefits for the long term through positive action. **We have developed a list of candidate sites and partnership organisations with a desire to see up to 17 hectares of seagrass meadows planted by 2028**. Our long term ambition, subject to costs reducing, is to drive more significant seagrass planting beyond 17 hectares as we treat our below water biodiversity in a similar way to on land biodiversity. If this is possible, we will do as much as we can within our CVP allowance, as we underline our commitment to life below water around our island and coastal communities.
4. Our main change, and improvement since Draft, is to **merge our Energy Efficiency and Local and Community Flexibility Market Stimulation CVPs together**. This is partly in response to the challenge we have had around the cross over between the two options and how they are both valued by consumers. We acknowledge that there are elements of similarity, and whilst we wanted to put these forward as separate measures, we have merged them so as discussions on both outcomes can happen on a simultaneous nature and be used as a combined tool to deliver additional consumer value. Further details can be found in Section 3.3 and Appendix C.
5. For the Energy Efficiency Accelerator part of this CVP, we have been pushed to do more but we remain mindful of the role that DNOs play in this space and how other options are available to address wider energy efficiency issues. As such, rather than increasing the size of the investment, **we are proposing a top-up facility to bolster the CVP and ensure that any network benefit savings realised are fed back into the CVP to ensure greater opportunity for wider societal benefits** to be realised.
6. **Personal resilience plans** – **We have clarified that our intention is to ensure that every single customer on our priority services register will be targeted to receive a PRP in RIIO-ED2**. If we can, we would like to ensure that 1m households have this peace of mind in an emergency situation. We outline our desire to deliver efficiencies from the battery pack provision programme to allow wider uptake of the PRPs for all PSR customers.

3.1 WHOLE SYSTEMS



We are aware we have a critical role within ‘Whole Systems’ and that Local communities and authorities will require collaboration with organisations in the energy and transport, telecoms, and water sectors to achieve net zero. For example, the decarbonisation of heat, with a range of alternative solutions (hydrogen, electric heat pumps and district heating) requires cross sector collaboration and Whole Systems thinking to optimise costs and investment while meeting environmental commitments.

Our stakeholders and customers have set us the mandate to provide them with a sustainable and reliable energy supply, and to help them realise their net zero ambitions. In addition, Ofgem has introduced a Whole Electricity System Licence Condition and minimum requirements for networks to embed ‘Whole Systems’ thinking, culture and approaches in their RIIO-ED2 business plans. We interpret Ofgem’s expectations as requiring **coordination or cooperation between energy sectors and other vectors with the aim of an overall enhancement in quantifiable consumer benefits and/or societal outcome**. Further detail on our approach is available in our Whole Systems (Annex 12.1).

Our long-term commitment to work collaboratively with stakeholders and policy makers will help to embed our Whole System approach within our business, and will support us in playing a more active role in identifying solutions to address challenges faced by others. To this end we have identified two proposals which seek to deliver further ambition above Ofgem’s expectations, to deliver a better outcome for consumers. The proposals are as follows:

EMBEDDED WHOLE SYSTEMS SUPPORT SERVICES FOR LOCAL AUTHORITIES: INFORMATION, ADVISORY AND WHOLE SYSTEM LIAISON SERVICE

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
1	Embedded Whole Systems Support Services for Local Authorities	Whole system	£12.3m	£11.7m	£22.9m	£11.2m

Proposal: We are already seeing an increase in the number of Whole System style projects in design across our licence areas involving Local Authorities and Community Groups, combined with the need for decarbonisation and the journey to net zero we’re confident these projects and initiatives will continue to grow in RIIO-ED2. We will provide in-house support and enhanced engagement to 72 Local Authorities and up to 200 community groups, apply our staff, expertise and capabilities to optimise the electricity network and whole system opportunities in turn providing a sustainable and reliable energy supply and facilitating the net zero transition. This targeted, location or project specific assistance will help to unlock additional consumer value, with limits applied to the scope to ensure that all participants across our licence areas have equal opportunity to benefit from this support and upskilling proposal.

Consumer outcome: We believe we can unlock additional value for Local Authorities, Community Groups and consumers through this targeted action. We can utilise our skills and knowledge to help local authorities and community groups upskill, expanding knowledge and also investing more efficiently. This will help to reduce project costs, improve project success and increase the number of projects being delivered by organisations wishing to embed net zero projects and initiatives – such as the electrification of local public transport.

By offering this bespoke support we're confident this CVP will help consumers achieve a broad range of benefits, such as ensuring that there will be equitable access and accelerated uptake of low carbon technologies for all households and communities, leading to a faster rate of decarbonisation and journey to net zero. This can be achieved by enabling infrastructure as a universal service expectation. From a network perspective, greater collaboration and co-creation of projects will enable the more efficient siting of infrastructure and help deliver net zero at a lower overall cost.

The CVP support will be offered both proactively where we identify a network need, and reactively in response to an external request for assistance from a Local Authority, Community Group or other 3rd party, ensuring no region is left behind in their ability to deliver Whole System outputs and/or reaching net zero objectives.

Background: During RIIO-ED1 we have engaged extensively with a large number of Local Authorities and communities through our innovation programme, our Distribution Future Energy Scenarios (DFES) engagement and other projects and initiatives such as the Electric A9 project. Significant funding is being made available to Local Authorities to undertake trials and other activities to enable them to transition to net zero. However, additional value could be released or added by a more holistic, joined up approach to the design and delivery of projects and initiatives.

We know from our participation across a range of Whole System pilots such as Project Local Energy Oxfordshire (LEO) and Regional Energy System Optimisation Planning (RESOP) project with Dundee City Council, that local communities will require support from energy networks to help them design and implement projects and also to secure funding in order to support the net zero transition. Insights gathered from our engagement tells us that there is a significant reliance from Local Authorities and Community Groups on us for technical information and experience from us to support tenders and secure third party external funding. In particular, where local authorities are tendering to participate in projects or secure external sources of funding, it can result in an increase in the number of requests for support, bespoke data and planning services, but where we provide that support; it has a material positive impact on their submissions. Furthermore, these activities are resource-intensive and there is currently no mechanism to fund the provision of support on the scale that is anticipated.

We know there is a strong demand from local authorities and other organisations for assistance in developing their thinking and planning. Examples of this assistance includes data, expertise and regulatory insights, commercial and engineering specialist advice. Whilst data sharing is a crucial part of our Digital Strategy, the real value we can provide is through the full range of assistance. Whilst historically we have been able to support a maximum of two significant Whole Systems projects concurrently, the net zero transition will see projects, plans and initiatives increase across the 72 local authority areas in our licence area. The Whole System is a 'two-way street' and will require energy networks, their partners and the

individuals that work within these organisations to think and behave differently. We will make available a range of services to local authorities and community groups to provide support from people within our business who have relevant experience of delivering networks from end-to-end and apply our capabilities to make available a range of services, including optimising electricity generation and storage. This support will focus on helping them meet their low carbon transition plans and secure innovation and other available project funding.

Stakeholders have indicated that we should not extend our support into the realms of competing with consultants and subsidising local authorities. Therefore, we have been very specific on the types and volumes of support per community group or Local Authority we will provide. Through this arrangement we can ensure that the support is shared fairly throughout our geography.

Baseline: As a minimum requirement under Stage 1 of the Business Plan Incentive (BPI), DNOs must set out their approach to enabling whole system solutions in their Business Plan. This must include:

Plans and processes for **joint planning with other network companies** and/or the system operator (and evidence of that already undertaken).

Evidence of **effective identification and adoption of potential whole system solutions** and approaches, reflecting how they have taken account of the impacts and opportunities of their actions for the wider system, and vice versa, and accounted for those in their **cost benefit analyses**.

Demonstration of **long-term whole system thinking** and value for consumers and the wider society, including identification of uncertainties and mitigation, and how these relate to a range of different forecast pathways.

Demonstrable **cross-sector engagement**, optioneering, and planning with sectors other than their own

Our Whole Systems (Annex 12.1) outlines our business as usual (BAU) activities in this space. As a baseline activity in RII0-ED2, we will provide access to standardised data about the SSEN network and will engage annually with Local Authorities to discuss potential needs for strategic investment decisions, including helping them prepare Local Network Plans, Local Area Energy Plans, and Energy Efficiency Strategies. We will also provide customers with educational material on low carbon technologies (LCTs) through partnerships with Local Authorities and Community Groups.

Above and beyond: As we transition towards net zero, we recognise the value of a more involved approach. Local Authorities and Community Groups increasingly require support from energy networks to help them design and implement projects and secure funding in order to support the net zero transition. The package goes **notably beyond BAU** by providing in-house, specialist support at scale based on insights from our existing suite of Whole System projects, our innovation portfolio and the RESOP modelling tool. Above and beyond value is generated by enabling Local Authorities and Community Groups to identify cross vector optimisation, realise more LCT and flexibility projects and to design and deliver these projects more effectively and efficiently. If this package was not put forward as a CVP, there is a high likelihood that some regions would develop faster than others, which could unfairly disadvantage some areas, we want to facilitate the broadest and most efficient uptake and believe that this CVP offers the best chance to drive value for all.

Support: This CVP is strongly supported by our stakeholders, including local authorities and the Scottish Government. They see the value that we can unlock by providing support package and bringing our skills and knowledge to help them make better decisions. They accept the balanced support that this CVP offers and the upskilling opportunity that it can provide to delivering Net Zero projects in the most efficient way.

SUPPORTING BROADBAND TO ISLAND COMMUNITIES THROUGH OUR ASSETS

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
2	Supporting broadband to island communities through our assets	Whole system	£8.0m	£7.5m	£34.5m	£27.0m

Proposal: A crucial step in the delivery of Whole Systems is recognising secondary benefits from infrastructure and working cross-vector to deliver wider societal benefits. A key asset which can unlock additional societal value is the fibre contained within our subsea cables. This CVP will help to speed up the rollout of faster broadband, which will deliver significant value for consumers, businesses and communities in remote locations. Whilst the focus of our CVP is in supporting broadband services, we recognise there could be wider customer benefits through using the fibre network to share data and enable systems, such as future flexibility markets, and this would provide additional benefits to customers and communities who are currently poorly served. The ability to provide information and data to customers will allow them to make more informed decisions as the future market opportunities develop and will help ensure that no one is left behind as future markets evolve. In RIIO-ED1 we have already demonstrated the benefits that can be delivered from this proposal in trial on Shetland and that our stakeholders are keen to see a wider application of this approach, so our ambition is to use the knowledge and skills we have developed to roll this opportunity out to other remote communities and deliver improved quality of life improvements, helping to sustain rural communities and enabling our customers to access the services and benefits related to connectivity regardless of their location.

Our Digital Strategy acknowledges that fast and efficient broadband has become an essential part of modern living and the demand for faster internet connection will continue to increase. There are areas of our licence areas that are being left behind in this development and we believe this proposal presents a whole system solution that can unlock the value and benefits for our customers and network users, potentially at little to no extra investment.

As proven in our Shetland Trial, the fibre optic within our subsea cable assets provides an opportunity to enable new or additional broadband capability for many island communities which are digitally poor, if suitable partnerships can be identified. We will, subject to Ofgem consent, look to connect up to 14 island communities with fibre optic broadband for the very first time. We can deliver this opportunity by utilising fibre optic cores in subsea cables and working with service providers who will deliver the actual 'broadband service' to local areas.

This CVP has the opportunity to ensure that remote communities have access to multiple benefits arising from better connectivity, enabling broadband services to critical community sites and improving the service we provide to homes and businesses.

Consumer outcome: This is a whole system solution in its truest sense. Valuing whole system and being able to act in the widest of consumer interests, to deliver a cross-vector outcome at the lowest cost is clearly the right option for UKPLC and embodies the ethos of Whole System. The value to be unlocked is significant across the UK through faster broadband connections, particularly across island communities. However, these links and investments take time and are costly. Utilising our assets and proactively engaging with local communities and service providers, we believe we can accelerate this upgrade. This CVP aims to unlock the value for the consumer by speeding up the investment, cutting infrastructure costs, through the utilisation of our assets to create faster connections.

We appreciate the complexity and concern linked to the cross-sector interplay and funding, however through robust methodology and processes alongside compliance with existing regulations such as the Access to Infrastructure (Communications) Regulations 2016 this CVP can deliver significant benefits for a stakeholder group at real risk of being left behind.

Background: There are significant potential societal benefits to be unlocked by connecting Islands to broadband services, but unfortunately and despite centralised efforts such as the R100 and Scottish Broadband Voucher Scheme (SBVS) there remain challenges in meeting the financial criteria for viability given the small populations and extensive costs to installing new fibre links. We can help to connect island communities with fibre optic broadband, as we expand our own fibre optic network. Our SHEPD network covers 59 islands, including some of the most remote and challenging locations across GB which puts us in a unique position.

We have already demonstrated the ability to work with island communities to deliver the concept. In RIIO-ED1 we successfully worked with the Shetland Island Council and the local provider 'Shetland Broadband' to ensure high-capacity resilient connectivity for Yell and Unst which supported the delivery of:

- 95% Next Generation Broadband across Shetland by 2019 and 100% by 2021.
- Minimum of 100Mbps connectivity for Mid Yell and Baltasound Junior High and 10Mbps for all primary schools.
- Provided public access to high-speed broadband in all Council premises in Yell and Unst by 2020.
- Enabled high speed broadband and mobile coverage in all NHS locations across Yell and Unst by 2020.
- Enabled benefits to be delivered to Fetlar in a further phase

Sia Partners SROI analysis of SSEN's Shetland Telecom project in 2021 estimated a net benefit of £2.8m delivered by the scheme. Following the success of the trial, the Shetland Island Council are keen to work with us to progress the potential to expand this offering across other small islands within the region.

The UK Government on 24 November 2021 published its review of the Access to Infrastructure Regulations Call for Evidence. The review noted: The government encourages all infrastructure operators in all sectors to work together on new innovative solutions and cross industry standards. This will facilitate greater benefits from, and enable easier access to, sharing infrastructure, such as helping to reduce the costs and environmental impacts of deployment. Furthermore, by working across different sectors, operators can help unlock advantages from different technologies sharing space. For instance, telecoms is enabling greater monitoring of utilities infrastructure, including leak monitoring and energy usage, which may be particularly pertinent in light of industry's imminent retirement of analogue telephony networks. This will help operators improve efficiencies in their own network, but also prepare our nation's infrastructure for the challenges of the future as we move to a more sustainable world.²

We support this view and believe that our CVP is a positive step to help encourage true whole system thinking and coordination.

Baseline: We are responsible for managing 454km of submarine electricity distribution cables, which provide power supplies from the mainland to 59 Scottish Isles. We replace submarine cables with cables that have fibre optic capability and have so far installed 83.3km of this type of cable. We already use some of these fibre optic communications cables to provide connections between major substations and control centres. We plan to expand our fibre optic network in ED2 however, we have not yet proactively enabled the sharing of the communications ability within our infrastructure to date beyond our obligations under the Access to Infrastructure Regulations of 2016.

Above and beyond: We will therefore go above and beyond by proactively offering access to our fibre optic network to broadband providers, engaging with Local Authorities, Scottish Government and both local and central providers to maximise awareness of the opportunities available from utilising the fibre core in submarine cables. This will allow remote communities to have access to multiple benefits arising from better connectivity and aligns with our commitment to ensuring no one is left behind as infrastructure and services improve and evolve in ED2 and beyond. By enabling digitalisation we will also help facilitate the growth of flexibility markets and enable customers and communities to access a greater range of smart technologies and the ability to participate in these growing markets.

We believe we can and should do more than just responding reactively to access requests to deliver this additional consumer value. Through engaging with providers, working to review cable routes to connect remote communities to faster fibre broadband through the potential to help the investment costs associated with the broadband service providers connecting from their on land cables to our assets, via fibre wrapping on our poles if necessary. We believe there is scope to unlocking further consumer value, possibly at little additional consumer cost, through the savings that third parties are likely to experience through using our assets, rather than having to lay entirely new cables. We may also benefit from the 'sharing' of communications infrastructure to gain visibility at more local substations than has been previously viable to pursue, increasing the potential to implement smart or flexibility for localised network issues more efficiently and support local net zero aspirations more effectively.

² <https://www.gov.uk/government/publications/review-of-the-access-to-infrastructure-regulations-call-for-evidence/review-of-the-access-to-infrastructure-regulations-call-for-evidence-government-response>

We have tested this in Shetland and want to use the learnings in RIIO-ED2 to deliver real additional consumer value, in a true whole system context.

This CVP will be delivered within a 'use it or lose it' (UIOLI) allowance and will not seek to generate any income for SSEN through leases or rentals of our infrastructure. Any investment required in fibre wrapping or additional connectivity points will be properly justified, with Broadband Providers and Local Authorities being encouraged to use SBVS and R100 funding to ensure a balanced approach to investment is undertaken throughout the delivery of the CVP. We're keen where possible to pursue benefits of sharing infrastructure to encourage minimal cost and financial impacts, for example by agreeing the ability for SSEN to use a local providers infrastructure to increase visibility of local assets 'in exchange' for the ongoing use of the subsea fibre functionality.

We forecast that this CVP could provide significant benefits to our remote island communities. We have identified up to 14 islands where we can provide this increased level of service through our subsea cables, and will proactively work with Island Councils, communities and broadband providers to deliver new or improved connectivity via our assets in ED2. Importantly, our proposal seeks to identify opportunities where communities are at risk of exclusion from the transformative R100 investment programme or the Scottish Broadband Voucher Scheme (SBVS) due to their small size and lack of commercial viability. Acting now and earlier, as we have proved already, is the right thing to do for customers.

Our CVP would create additional network benefits, through the potential to avoid additional communications connections costs at our more remote transformers and from the potential to share infrastructure costs with providers where cost avoidance is possible for both parties. These benefits could reduce long term network costs and benefit our customers through increased network telemetry. There is also the possibility this CVP helps to deliver outputs, processes and Whole System approaches to shared infrastructure that could be expanded beyond island communities over ED2 and beyond.

Support: This CVP is strongly supported by the Scottish Government and representative Island Councils. Our engagement has been universally welcomed, to help accelerate the uptake of fibre broadband and improve island communities connectivity.

3.2 ENVIRONMENT

We are embedding our environment and sustainability ambitions throughout our Business Plan as we seek to demonstrate our corporate leadership position in the push towards Net Zero and doing the right thing for the environment. In October we became the first DNO to set an accredited 1.5 degree science-based target (SBT) for greenhouse gas reduction. This is explained in detail in Chapter 13 and Annexes 13.1 and 13.2. We want to push and deliver on our Net Zero aspirations as a business, in line with our SSE group commitments, but also as a leader to demonstrate commitment to supporting the wider GB economy as a whole. However, we are not limiting our approach to business carbon footprint (BCF) and our wider Environmental Action Plan (EAP), we genuinely believe there are areas where we can stretch what is seen as normal, beyond BAU and addresses wider environmental concerns.



PROTECTING MARINE BIODIVERSITY: LIFE BELOW WATER

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
3	Protecting marine biodiversity: life below water	Environment	£2.6m	£2.4m	£5.8m	£3.4m

Proposal: We will improve biodiversity in the seas around our island communities, in locations at or close to our subsea cables. We are exploring opportunities to restore seagrass beds in our Scottish and Southern English licence areas which have not already been initiated by existing marine conservation initiatives. This will help reduce carbon in our atmosphere, decrease coastal erosion and protect coastal areas from storm damage, whilst also improving water quality and sea life biodiversity. We want to undertake an ambitious programme of targeted seagrass meadow planting in and around the communities we serve. We see our CVP is making a positive step into giving our seas the same level of protection and prioritisation that biodiversity on land currently receives. SSEN would like to help make more seagrass restoration a reality. Our proposal is ambitious in scale, with only 3 hectares having been restored to date, and through this CVP we propose to plant up to an additional 17 hectares of seagrass beds, although if we can and costs decrease we remain committed to going further. This activity will help restore the health of our oceans, improve the carbon store potential within our surround environment, support sea life and fish populations, reduce coastal erosion and storm impacts and also water clarity and quality. **This is aligned to the 30x30 initiative where the UK has committed to ensuring that more than one third of the UK seas are fully or highly protected by 2030 to support whole ocean recovery.** We will help to achieve this by carefully selecting delivery partners from established initiatives and provide funding for additional restoration sites. It is hoped that with our support, at a minimum, a further 11 to 17 ha of seagrass restoration would be planted in Scotland and Southern England.

Consumer outcome: We support Net Zero and the wider adoption of more sustainable activity to slow and reverse the damage we are collectively, as a society, having on our environment around us. We are being encouraged to think beyond our typical toolkit of response to our investment activity and to consider both our impact on the sites we operate at, but also the widest concept of environment that we are located within. As such, and in line with the strong consumer interest, we believe there is a strong option to look at securing long lasting environmental improvements, delivering improvements to customers through improved water quality, increased carbon sequestration, reduced coastal erosion and increasing biodiversity in our coastal waters. Through this CVP we will build on from our excellent engagement with our communities and attempt to embed and leave long lasting projects that enhance our coastal regions and bring life back to their waters. We are open to developing our coastal ecosystems and are not exclusively looking at just seagrass meadows for future work, but work with conservationists to tackle the problem of biodiversity loss in our oceans around our networks.

Background: The period from now until 2030 has been declared by the United Nations General Assembly in New York as the “UN Decade on Ecosystem Restoration”. This ‘call to action’ was put forward to motivate people, communities and countries across the world to increase the speed at which we are restoring degraded ecosystems.

The Bonn Challenge was set in 2011 with a goal to restore 350 million hectares of degraded and deforested terrestrial ecosystems by 2030, but no such challenge has been issued for the marine environment.

Over the same period - by 2030 - world leaders have committed to 17 Sustainable Development Goals (SDGs). Most notably, this includes SDG [14. Life Below Water](#), which aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development. A key target to meet SDG14 is to protect and restore ecosystems - sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and to act for their restoration to achieve healthy and productive oceans.

Seagrasses, a functional group of marine flowering plants rooted in the world's coastal oceans, support marine food webs and provide essential habitat for many coastal species, playing a critical role in the equilibrium of coastal ecosystems. Despite their importance, seagrasses are disappearing from threats such as pollution, decreased water clarity, and physical disturbance.

There is no international legislation for protecting seagrasses, and so protection typically occurs by local and regional agencies. In the UK, Project Seagrass is a marine conservation charity dedicated to ensuring that seagrass meadows are protected globally, working with a range of partners to do so. A number of seagrass restoration and monitoring projects have been run across the nation - notably North Wales, West Wales, and the Isles of Scilly.

Despite their importance, seagrasses are disappearing from threats such as pollution, decreased water clarity, and physical disturbance. Over the last century, up to 92% of the UK's seagrass has disappeared³.

Based on stakeholder feedback, SSEN have identified a substantial funding gap for replanting lost seagrass meadows in our northern Scottish, as well as our Southern English, licence areas

Baseline: Our current commitment around biodiversity net gain (BNG) below the water is based on least damage to the locating of subsea cables. In essence, we want to leave the areas in the oceans around where we are active in the best state possible, following all regulatory, planning and legal obligations on us. In the absence of ambition in this space, we would continue with this current approach. In RIIO-ED2 we would continue to minimise the impact on the marine environment, but the important difference between baseline and ambition is that we would not leave it in an enhanced state after our interventions.

In 2019, SSE set a new Group Environment Strategy which outlines Group-wide goals across three priority areas which represent the most material areas of environmental impact for SSE's activities. The Environment Strategy in part supports SSE's 2030 Goals and, like them, is linked to the UN SDGs:

Priority Area 1: Climate action (SDG 13)

Priority Area 2: Responsible consumption and production (SDG 12)

Priority Area 3: Natural environment (SDG 14. Life below water, and SDG 15. Life on land)

³ Green, A.E., Unsworth, R.K., Chadwick, M.A. and Jones, P.J., 2021. Historical analysis exposes catastrophic seagrass loss for the United Kingdom. *Frontiers in plant science*, 12, 15p

The 'Natural Environment' priority area incorporates Life Below Water, which we discuss in further detail below.

We conduct various activities already in relation to this goal, including deliberate environmental planning during the design and construction phases of projects; reducing the amount of overhead line in designated areas e.g. areas of outstanding natural beauty and special scientific interest; reducing the amount of oil leakage caused by its assets; reducing our business carbon footprint; and continuously innovating to reduce our environmental impact.

Our business-as-usual operations in this area concern our impact when developing, operating and owning energy and related infrastructure; and the way we interact with the environment from global climate change to local habitats. We are responsible for 454 km of submarine electricity distribution cables, providing power supplies from the mainland to 59 Scottish Isles. We also serve the Shetland Islands, which run as a separate electrical system without connection to the mainland. Our cable laying and maintenance activities fully comply with the relevant environmental legislation and guidance, and as such we undertake mitigation and compensation where required. Seagrass habitat doesn't tend to be affected/ present in those areas. However, it may in the past have been present in a lot of our cable locations.

Above and beyond: Our customers have indicated that they are keen for seagrasses to be restored in their seas. We would like to go above and beyond our usual operations by investing in substantial and ambitious seagrass habitat creation projects. Our commitment to making the environment healthier could extend to the ocean sea bed. We want to ensure that we leave the ocean in a net positive impact. Whilst we do not own the seabed, our assets impact on them. At the moment we minimise our impact on the seabed, but we make no commitment to enhance the environment around our cables. This CVP takes us to the next level, in line with our wider SSE group sustainability position, and recognises that we can improve and enhance, rather than leave in the same condition. This is new, novel and not previously attempted by a DNO. We are working to identify the most suitable areas for this life below water support package. We want to mirror the on land push to enhance biodiversity in our below sea environment. In the absence of the same legal framework, our CVP seeks to secure positive outcomes sooner to address the long-term health of our coastal regions.

Support: Our stakeholders have indicated that we can and should do more to protect our environment and that we should explore new and different ways to address biodiversity across our licence areas. They have been receptive to this proposal and agree that it has the potential to deliver real long-term benefits to our seas and coastal communities.

3.3 DISTRIBUTION SYSTEM OPERATOR

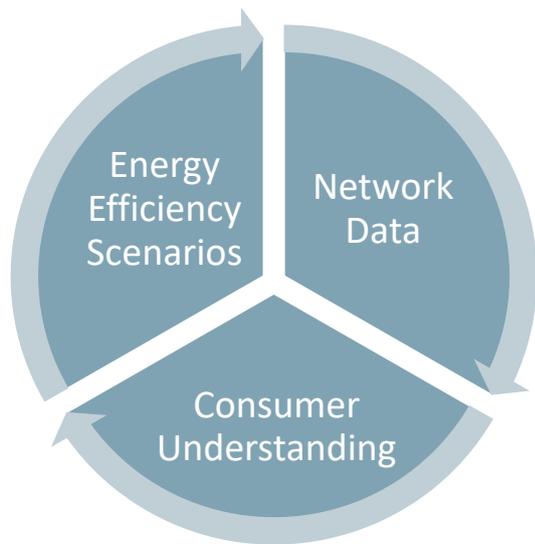


Distribution networks are key to unlocking the benefits of the low carbon transition which is crucial to cost effectively delivering net zero at pace. In RIIO-ED2, we will deliver additional data, monitoring and systems at the local network level to enable energy to flow in all directions, creating an active network or ‘smart grid’. These ‘smart grid’ functions, collectively known as Distribution System Operation (DSO) will enable our customers to connect and provide flexibility services at a time to meet their needs and allow us to share data on our forecast network requirements for flexibility services and investments. Our approach to Distribution System Operator (DSO) is set out in more detail in our DSO Strategy (Annex 11.1). Our DSO aligned CVPs were developed based on our insight from projects such as SAVE, LEO and Smart and Fair which all work in partnership with local authorities, community groups and organisations supporting vulnerable customers.

In our Draft Business Plan we proposed two DSO CVPs - one to enhance energy efficiency across our network and another to stimulate local market flexibility. In our final plan and in response to stakeholder feedback we have combined the two CVPs, to deliver efficiencies and to merge the outcomes into a single toolkit. We continue to present the individual benefits below, but in this Annex we outline how and why we have revised our proposal. Importantly, we want to remain in tune with our stakeholder support of both measures individually, but in merging these together we propose a headcount efficiency beyond our draft plan of 25% across both CVPs, we will also look to reinvest the network benefits from Energy Efficiency back into the CVP to allow funding to deliver benefits to the greatest number of consumers possible.

ENERGY EFFICIENCY ACCELERATOR FOR SMARTER NETWORKS

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
4	a) Energy efficiency accelerator for smarter networks and b) Local and Community Flexibility Market Stimulation	DSO	£36.8m	£33.8m	£40.9m	£7.1m



Proposal: We will work with Local Authorities, Community groups and local partners to deliver specific energy efficiency interventions, providing a reduction in baseline and peak demands on the electricity network and delivering real benefits in alleviating fuel poverty and quality of living for our customers. Using knowledge gained from successful projects such as SAVE, where partnerships with locally recognised organisations improved acceptance and uptake of interventions, we will look to increase the level of energy efficiency measures installed in local areas through targeted funding, engagement, collaboration with wider initiatives supporting interventions through our partners.

Though the triangulation of data sets we will identify targeted network locations where Energy Efficiency could slow or reduce demand on our networks. We will use our consumer vulnerability mapping tools and build on the learning of our Smart and Fair innovation project to prioritise, where possible, communities with higher percentages of customers in fuel poverty or vulnerable situations. In our engagement, Local Authorities and Community Groups have asked if they could contact us proactively if they feel local areas could benefit from interventions and to not limit interventions just to those who are ‘unable to pay’. We will prioritise where possible, communities with higher proportions of fuel poverty and/ or consumer vulnerability in a first instance, however we are open to expanding interventions more widely. This approach to customer inclusion and the ability to both propose and review areas proposed to us for intervention has been strongly supported by our stakeholders.

The proposal does not focus on nor is it exclusive to one Energy Efficiency intervention over another, for example we recognise that LED lighting may have some impact in some houses, but others may need insulation, glazing or new smart devices. We do however recognise the variation in cost and complexity in installing the range of solutions now available, and that these variances also impact the following Social Return on Investment (SROI) benefits which can be achieved. We have based the cost profile for the CVP and the resultant SROI on a conservative mix of different interventions to try and be as reflective as possible of the potential outputs of the proposal when implemented. Despite this, we feel it is critical to avoid limiting the proposal to one or two interventions, as we feel this could unnecessarily limit the customers who could benefit from this proposal and have instead opted to assessing the right interventions for each zone in partnership with locally knowledgeable organisations and authorities. We propose to work with stakeholders to develop and implement a transparent and inclusive selection process for the interventions which could be applied from zone to zone, based on the economic, societal and carbon benefits of those interventions to ensure the optimum solutions are selected for each area.

Consumer outcome: Through local partnerships with Local Authorities, Community Groups and delivery partners we will identify the right areas and best Energy Efficiency interventions on a zone by zone basis. Taking advantage of local knowledge to produce specific plans will increase the effectiveness of the CVP, and enable partners the potential ability to ‘stack’ funding streams with other initiatives (like warmer

homes) to increase/exceed the number of interventions available. By actively supporting the uptake of Energy Efficiency in local areas this CVP will enable cheaper energy bills thus delivering reductions in fuel poverty, interventions will also improve the quality of living across recipients and reduce carbon emissions

Background: We believe DNOs have a key role to play in increasing the uptake of energy efficiency, addressing long term societal issues, increasing resource efficiency, reducing waste and saving customers money in the long term. In 2019, the Committee on Climate Change stated ‘We cannot meet our climate objectives without a major improvement in UK housing’ and that ‘We will not meet our targets for emissions reduction without near complete decarbonisation of the housing stock’. The decarbonisation of buildings is contingent on energy efficiency, but the heat supply of buildings must also be decarbonised. These two tasks are co-dependent as low carbon heat cannot be cost-effectively deployed unless buildings are properly insulated.

The government forecasts an increase in electricity demand of 60% by 2050. This means that peak demand is likely to grow up to six times higher than what the network was designed for. Evidence shows that when domestic and non-domestic consumers actively participate in improving the resilience of electricity distribution networks they defer the need for traditional reinforcement. This translates beyond purely a financial saving for households and businesses, but also helps to increase the pace we collectively drive towards net zero as we consider our impact on resources and look to use less, including electricity. DNOs therefore have an increasingly critical role to play in actively facilitating energy efficiency in the energy system.

Baseline: As part of our DSO Business Plan, to meet Ofgem’s baseline expectations for DSO, we will classify energy efficiency as a valid option for responding to Constraint Managed Zone (CMZ) tenders and when submitted these will be assessed alongside other Distributed Energy Resources (DER) as cost-effective alternatives to reinforcement. It is essential to note there is no specific incentivisation, encouragement or stimulation for Energy Efficiency within our baseline, our CMZ tenders are competitive and are operated in full compliance with procurement legislation, are fully transparent and as such all tendering parties are treated fairly. We have also been exploring ways in which our DFES can capture the potential benefits of energy efficiency. This will help us target our energy efficiency activities more effectively and better understand the potential network planning impacts.

Above and Beyond: This CVP will offer proactive engagement, support and intervention funding to key enabling local organisations and Authorities, increasing the roll-out of viable energy efficiency options in areas of the network where efficiency can bring about real customer value and benefits to the network. Further details are included in Appendix C where we expand on how we propose the interventions to be undertaken, through a partnership approach, to maximise the impact and embed energy efficiency improvements uptake through our support, helping to ensure that other funding is also targeted in areas where there is maximum impact (taking a whole system approach to aligning our investment mechanism with existing funding streams and network benefits across our network areas).

This CVP has the benefit of not only delivering savings for customers directly, but also in addressing wider network issues that will lead to improvements in network utilisation, constraints and connections across our network through small but targeted areas of activity. Utilising the learnings from successful project such as SAVE and Smart and Fair we believe we can expand energy efficiency benefits more widely in RIIO-ED2. We recognise that Energy Efficiency will have a major impact on managing load growth at the Low-Voltage level of our networks in RIIO-ED2, this proposal will assist us in building our understanding on the impact of energy efficiency and how to embed this learning into our investment forecasting and within our DFES.

Support: Our stakeholders have welcomed the introduction of specific and targeted energy efficiency interventions, addressing multiple benefits. They have welcomed the improvements implemented and the push to securing better networks, at lower overall cost, but using a known approach in a slightly new twist. They welcomed SSEN helping to target specific hotspots and also utilising investments to help ensure that as many households as possible can benefit from these interventions.

LOCAL AND COMMUNITY FLEXIBILITY MARKET STIMULATION

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
4	a) Energy efficiency accelerator for smarter networks and b) Local and Community Flexibility Market Stimulation	DSO	£36.8m	£33.8m	£40.9m	£7.1m

Proposal: We will increase local flexibility market participation by empowering communities we serve – including vulnerable customers – to participate in the provision of system services. Utilising the learnings from our Northern Isles New Energy Solutions (NINES) innovation project and our work on a “Smart and Fair” transition, we plan to pursue opportunities to stimulate community flexibility markets.

We know that local energy market evolution will vary between region and city, we already see disparity in the numbers of Flexibility Service providers from zone to zone especially from a community based or domestic service perspective. We plan on releasing over £6m in Flexible Service payments across RIIO-ED2 and this CVP ensures as great a percentage as possible of those payments are able to go to communities and local areas ensuring that nobody is left behind.

Our experience of running Constrained Managed Zone (CMZ) tenders has shown us that the geographical distribution and liquidity of flexibility services is a major limiting factor in our ability to realise the full potential of Flexibility. This CVP seeks to address these limitations allowing us to actively stimulate the market place while still maintaining the neutrality and transparency in the way in which run our flexibility procurement exercises. We propose to identify locations to target by assessing both the network benefit and the societal benefits to establish where we can expect the greatest impact for any given intervention and the greatest overall benefit.

Consumer outcome: We plan on working with Local Authorities, Community Groups and delivery partners to identify the right market interventions to be delivered on a zone by zone basis, ranging from information provision and knowledge sharing to direct incentivisation of LCTs. By actively stimulating local markets this CVP will reduce local energy consumption, decrease reliance on centralised energy sources, increase local revenues resulting from the provision of flexibility services, provide new funding opportunities to community groups, or encouraging the formation of new community groups where they currently do not exist to support and deliver local market growth. In short, this has the opportunity to unlock the benefits that LCTs will provide to a much wider audience, helping to ensure that nobody is left behind in the energy system transition.

Background: We are investing in the capabilities and systems necessary to allow us to use Flexibility Services as an economic alternative to network reinforcement and expect to see significant benefit for us and our customers in the form of deferred and avoided investment, improved operational efficiency, reduced domestic bills and whole system benefits. **Learning by doing** has been a central to our approach to the development of Flexibility and this has highlighted to us some of the key challenges. Our experience of running CMZ tenders has shown us that the geographical distribution and liquidity of flexibility services is a major limiting factor in our ability to realise the full potential of Flexibility. The reasons for this are:

- Limited Domestic based flexibility service availability.
- Low levels of knowledge and interest at a local level with the exception of highly engaged communities.
- Lack of up-front funding for the investment required to enable flexibility
- Lack of expertise and access to specialist skills.
- Lack of intermediaries providing appropriate products, services, tariffs and commercial arrangements to allow easy access to the market by domestic customers and SMEs.

Baseline: We are required to act as a neutral market facilitator. The Minimum requirements include the provision of accurate, user-friendly and comprehensive market information in an accessible format and embedding simple, fair and transparent rules and processes for the procurement of distribution flexibility services.

Above and beyond: Our CVP builds on our role as a neutral facilitator, by proactively stimulating the market for the benefit of all. We believe that the additional value that can be ‘unlocked’ through this CVP is the opening up of the market to all, particularly the groups that are likely to be excluded unless supported or directly encouraged.

We believe that unless a proposal such as this is put forward there is likely to be an ongoing discrepancy in the market between the well informed and it will remain tilted towards those who have, rather than those who have not.

Support: Our stakeholders welcome this CVP and its firm intentions of not leaving anyone behind. They note that helping to stimulate markets, whilst remaining neutral, is above and beyond and should ensure that markets develop at pace and areas and groups get left behind as we move into RIIO-ED2 at pace.

DECISION TO MERGE CVPS

Following sustained engagement with our stakeholders, who offered universal support for the two DSO CVPs but questioned if there would be benefits from merging the approaches, we have decided to follow this feedback and combine the Energy Efficiency (EE) Accelerator and Local Market Stimulation (LMS) CVPs. These both had very similar delivery processes, both relied upon local engagement and the support of Local Authorities, Community Groups and delivery partners.

While we feel the intervention types (EE and LMS) are separate and should remain so from a funding and reporting perspective, we feel combining the CVPs is best for our stakeholders. We also believe we can leverage a 25% reduction in the cost of delivering the CVPs.

The combined CVP has the potential to reduce potential of stakeholder fatigue from local partners being approached multiple times for different interventions and could improve the efficiency of implementing both interventions in areas which could benefit from a dual approach.

HELPING TO VISUALISE OUR NET ZERO CONTRIBUTION

One of the main challenges, or explanations we have provided to our stakeholders relates to the cross over between three of our CVPs, shown below. We have been challenged on the similarity in approach and why we presented them as distinctly separate proposals. As part of our engagement we produced the following image to help demonstrate the interlinkages between all three draft CVPs – Embedded Whole System Support, Energy Efficiency Accelerator and Local & Community Flexibility Markets. This helps to illustrate how each of these CVPs interacts with each other and how the overarching aim is to achieve Net Zero through different routes.

We continue to believe there is strong merit in each of the three approaches, and feedback from stakeholders continues to mirror this approval. However, in terms of delivery, we have proposed a revision from Draft, which involves the merging of our Energy Efficiency Accelerator and Local & Community Flexibility Markets CVPs.



We believe a combined approach demonstrates a stronger commitment to addressing both issues, from different angles, as part of a wider support of delivering Net Zero either directly, or indirectly through households and businesses or indeed through local authorities actions.

3.4 VULNERABLE CONSUMERS



We recognise our role in supporting all consumers that use our network. However, we recognise that we can take the right actions in supporting those who are in more vulnerable situations. Our Business Plan sets out our intentions to continue to target activities and build on the positive momentum that we have established in RIIO-ED1. However, there are areas where we believe we can deliver additional value for consumers that go above and beyond our baseline offerings.

PERSONAL RESILIENCE PLANS

	CVP	Key area	Cost to deliver	Cost in PV	Gross Benefit PV	Net Benefit NPV
5	Personal Resilience Plans	Vulnerability	£7.3m	£6.8m	£10.7m	£3.9m

Proposal: We will introduce Personal Resilience Plans (PRPs) for all newly registered PSR customers and retrospectively incorporate our most medically vulnerable customers (those registered as PSR1+). We will proactively contact all of our PSR1+ customers to discuss their PRPs throughout RIIO-ED2 and discuss their access requirements for battery backup power supply to ensure consistent power supplies are available should their power supply be interrupted. We have an ambition to in time extend this PRP provision to all of our PSR customers, which we will target through our ongoing data cleanse and through proactive engagement across our customer engagement channels

Consumer outcome: We know that being prepared in emergency situations can help to reduce stress. Our intention, through this CVP, is to provide our customers in vulnerable situations with additional information, personalised to their specific needs, which will inform them of how to prepare and what to do in an emergency situation. The PRP will be unique to each customer and is our way of increasing what we can do for our customers. We also have plans to help those with the most significant medical needs to have access to a battery backup, which will help should supplies be interrupted. These simple, yet effective measures, introduce a step change in how we respond to our customers at times of greatest need. Our CVP proposal flips our response from proactive to helping those to be prepared in the worst case scenario, introducing a significant step change for our most vulnerable and challenges a step change across all DNOs in future price controls.

Background: We are obligated to maintain and upkeep a Priority Services Register and in addition when a PSR Customer’s name is first added to the Priority Services Register, we must give that customer (or their representative) appropriate information and advice about what precautions to take and what to do in the event of interruptions in the supply of electricity to the customer’s premises. We have a range of services for our most vulnerable customers to keep them safe in the event that something goes wrong with our network, but we want to improve this service offering further with proactive engagement to provide every person on the register with a Personal Resilience Plan.

At the outset we recognise the role we play in keeping people safe. This is a fundamental activity we undertake as a priority every single day. Electricity is critical, necessary for all aspects of day to day life and in some cases critical to sustaining life. This is the case for some of our customers who are registered on the priority services register (PSR). We use the PSR to notify customers in vulnerable situations of the tailored services we provide in a power outage and provide support equipment to our most vulnerable customers (PSR1+).

Baseline: As a provider of an essential service, we have a core responsibility to care for customers who are more vulnerable. The Baseline standards are clear that we should undertake proactive and targeted advertising of the PSR and the services offered to vulnerable consumer groups. By targeted, we mean towards specific areas of highest need or where data analysis suggests there are gaps in PSR reach. At the heart of our Customer Vulnerability Strategy we have five consumer vulnerability Promises, one of which is to ‘Drive forward priority services register provision and promotion’. This is the base level of service we are held to and are committed to ensuring. We are committed to achieving a reach of over 1 million registered for Priority Services in RIIO-ED2. Further details on the additional base level of commitments are outlined in Chapter 4 of our Business Plan.



Drive forward Priority
Services Register
provision and
promotion

Above and Beyond: We remain committed to looking after our customers, especially those in the most vulnerable situations. As an above and beyond ambition, we plan to expand our PSR provision, actively expanding our offer to those on the PSR by providing personal resilience plans (PRP’s) for each new customer registered and retrospectively ensure that all PSR customers already on the register are aware of how to obtain a plan. PRPs would look at the customer’s circumstances and provide simple tailored advice on how to prepare and what to do in a power cut, (e.g. who to call with numbers for SSEN and Oxygen providers etc) . We would also pro-actively call PSR1+ customers to discuss their needs, review their PRP and where appropriate offer support so they are prepared for a power cut, work with NHS, occupational therapy, local authorities and charities to help to facilitate the right advice being used in the PRP’s. This would further reduce the impact on them should there be an interruption to supply. Where necessary, and against a set criteria, we would provide funding towards a battery backup provision for the customer if no other funding source was able to do so. This will reduce stress and uncertainty on our most vulnerable customers at the time of greatest needs. A further above and beyond offering is to retrospectively include all existing PSR1+ customers.

Support: Our CVP has been refined and presented to our customers and stakeholders since Draft and has been universally supported. Engagement across sectors agreed that having tailored advice providing reassurance to PSR customers was really important. We have tested it, including engaging with non PSR customers, who supported the proposal and were willing to see an increase in bills for this above and beyond service which supported customers in vulnerable situations. Our customers agreed this was a good proposal and would provide them with reassurance in knowing how to prepare and cope in a power cut with advice tailored to their needs. Testing of the battery packs further justified that customers dependent on medical equipment would value the option of a battery backup provision.

APPENDIX A – ASSESSMENT FRAMEWORK

The following table demonstrates our assessment criteria that we used to refine our proposals.

	Criteria	Points to highlight or consider
Q1	Does each CVP proposed genuinely represent additional benefits to consumers, including views on quantification of such benefits?	Companies should set out the ways in which their plan goes beyond the minimum requirements and functions typically undertaken as business as usual, and how this demonstrates value to customers. Rewards will not be given for activities currently undertaken by DNOs in RIIO-ED1
Q2	Does the proposed CVP fall into one of the relevant categories, as stated in Ofgem’s Business Plan Guidance?	In other words, proposals that demonstrate approaches to providing services to 1) vulnerable customers, 2) major connection customers 3) EAPs, 4) DSO activities, or 5) whole systems approaches.
Q3	Does the CVP clearly go beyond the baseline standards in each area?	If not, should not be included as a CVP
Q4	Is there evidence of the associated value to consumers? Is there evidence of the associated value to consumers?	This should be quantitative and independently substantiated, taking into account any distributional impacts on different consumers.
Q5	Has the company provided a monetised value to consumers for each proposal forming part of its CVP, and set out any methodology deployed in determining this value, including underlying data?	Ofgem may not be able to determine an appropriate size of reward, which might lead to the proposal receiving no reward. Where Ofgem are content with an overall proposal, but do not accept the quantification methodology, they are likely to engage with relevant companies to develop a robust methodology.
Q6	Are proposals forming part of a company CVP clearly and unambiguously defined?	Verification in the CEG report that CVPs are understandable for stakeholders and engagement plans provide adequate transparency for stakeholders to hold the company to account. Potential testing CVP definitions with stakeholders for ease of understanding.
Q7	Does the proposal include evidence that shows how it incorporates consumer expectations/priorities and values? CEG? Has the proposal been reviewed by and received the support of the Ofgem RIIO-2 Challenge Group, and the DNO’s CEG?	Including willing to pay studies/ SROI Alignment of the proposals to consumer priorities, as identified in stakeholder engagement.
Q8	Has the proposal been reviewed by and received the support of the Ofgem RIIO-2 Challenge Group, and the DNO’s CEG? Has the proposal been reviewed by and received the support of the Ofgem RIIO-2 Challenge Group, and the DNO’s CEG?	Or otherwise, the extent to which reasons for the lack of such support are clearly and satisfactorily explained
Q9	Does the proposal include a monetised consumer benefit, associated monetisation methodology, and explain the extent to which such a methodology is reasonable?	A robust methodology will give confidence that any rewards are appropriately sized and that customers are not paying too much for the delivery of the proposal.

	Criteria	Points to highlight or consider
Q10	Do monetised benefits accrue to existing and future consumers including consumers in vulnerable situations?	Documentation and evidence of engagement with future customers and hard-to-reach groups.
Q11	If the company proposes to deliver something within RIIO-ED2, are arrangements to address the possibility of non-delivery set out?	E.g. Completion of a project. Ofgem will assess the extent to which such arrangements for non-delivery are appropriate and implementable. In these cases, Ofgem expects to determine the size of the reward by multiplying net consumer value with the company's totex efficiency incentive rate.
Q12	Has the company included a proposal for an Uncertainty Mechanism as part of its CVP? Has the company included a proposal for an Uncertainty Mechanism as part of its CVP?	If yes, the company should include an assessment of the likelihood of the mechanism being utilised in the RIIO-ED2 price control period
Q13	Does the total number of proposals not exceed 10 per Business Plan?	The upper limit of 10 CVPs applies at the DNO group level, not the licensee level. Before the SSMD, Ofgem applied a monetised value cap of at least £3m per proposal and not more than £10m per proposal, with the aggregate value of proposals not exceeding £50m.

Table 2 – Assessment Framework

APPENDIX B – STAKEHOLDER FEEDBACK SUMMARY

We have engaged closely and extensively with our stakeholders and customers throughout the development of our business plan and we set out the full details of our approach in our *Enhanced Engagement Strategy (Annex 3.1)*

Below we set out the specific feedback received from stakeholders on our CVPs and how this has informed the development of each proposal.

EMBEDDED WHOLE SYSTEMS SUPPORT SERVICES FOR LOCAL AUTHORITIES

In developing our plan, we engaged with 3,314 stakeholders across 18 events on Whole Systems, and they identified the following RIIO-ED2 priorities:

1. Collaborate with the whole industry to share best practice and resources
 2. Facilitate access to network data and industry data sharing
 3. Facilitate local stakeholders to achieve their net zero ambitions, especially through local representation
- While our stakeholders were broadly positive about the strategy and package of outputs for whole systems, they encouraged us to do more to collaborate with local authorities on regional network constraints and issues and it was explicitly mentioned that we should engage more regularly.

When refining our Whole Systems Support strategy and CVP we held targeted engagement sessions with Government, Community Energy Schemes, Charities and Local Authorities to better understand the type of support that would like from us and how we could deliver this. Key feedback receiving that informed the development of this CVP included:

- MP for North East Scotland was interested in the whole systems support for local authorities CVP citing “zero policy-making capacity” within local authorities who are stripped to the bone and that anything we can do in this area is positive.
- One local authority stakeholder felt there is often a lot of data missing at individual substation level. They said that as smart metering is present in all our buildings, in recognition of 'this shared whole systems enterprise', we need to look at how it can get its own house in order to provide us greater visibility of the network. Therefore, sharing data at a local level would be great, but we can go further e.g. by developing a general data management infrastructure/superstructure for sharing information or looking into our stakeholder management process.
- Another local authority stakeholder asked what opportunity is there to connect and share information through energy suppliers. They felt as a customer, they rarely have any engagement

with a DNO and the only time that it really happens is with emergencies like floods, where there has been damage to lines coming to properties. They felt it is time to be more collaborative to reach communities and find more joined-up solutions to reach communities to drive towards net zero.

- A local authority stakeholder noted that given the limitation of available funding, we should build a bank of resources for local authorities and customers to use to inform a whole system approach rather than engagement. They added that coupling this with continued work to simplify new ways of working to feed back into business as usual would make us far more effective and an enabler than project-by-project engagement, thus better empowering our customers.
- When asked how we should prioritise engagement increase one local authority stakeholder felt there is the potential need for a lot more engagement with local authorities and for developing more formal partnership working as we all serve the same customers, and we all have a role to play in achieving net zero. They added we should recognise that an approach that works in West Sussex will not necessarily work in the Highlands and therefore treat these partnerships as meaningful.
- One Local authority stakeholder said they support local authorities proposing areas of review, but felt we need to think about how the engagement will work in a complicated local-authority landscape, as there are lots of different models and lots of different local authorities that might engage. We should consider who would be taking on responsibilities/funding. In addition, some programmes may be in place in some areas, where, in others, they need to be created from scratch; easy and efficient engagement with local authorities would be a great step to achieving this.
- When asked whether they felt the CVP goes above our normal obligations one local authority stakeholder felt there is no way that can be achieved as business as usual due to its complexity. In addition, they felt it is part of a bigger next step which involves thinking about how we keep the key benefits and simplify them so that they can be rolled out into business as usual. They felt that there are ways that are starting to crystallise to allow this to happen.
- When asking stakeholders whether they thought the service should be reactive or proactive, one local authority stakeholder felt it would be helpful to have different choices on what action to take when engaging with the DNO in an organic way, rather than a 'bolt-on' consultation. They added, most of all, simple and targeted engagement with local authorities is needed to ensure that they receive the right kind of support”.
- When asked if they would support the Whole System Support CVP, one local authority stakeholder felt it would be difficult for benefit to reach the community as a whole using a special-purpose vehicle with a zone that delivers a flexibility benefit. Instead, they suggested creating an entity that could recoup the benefits if the flexibility was evident within the zone as a whole and reinvest that through shares or another channel. They felt this would take the decision making and complexity out of our hands and would instead reside with a separate vehicle that could be community-owned and used as a distribution mechanism.

SUPPORTING BROADBAND TO ISLAND COMMUNITIES THROUGH OUR ASSETS

In developing our plan, we engaged with 3,314 stakeholders across 18 events on Whole Systems, and they identified the following RIIO-ED2 priorities:

1. Collaborate with the whole industry to share best practice and resources
 2. Facilitate access to network data and industry data sharing
 3. Facilitate local stakeholders to achieve their net zero ambitions, especially through local representation
- Feedback from domestic customers, the Scottish Government and local authorities has been supportive of installing fibre cables alongside our assets to bring benefit to our customers beyond our traditional activities as a DNO.
 - While certain consumer group representatives questioned whether it was appropriate for a DNO to undertake this activity, we are confident of the benefits and have received positive feedback and interest through engagements with Scottish Government and three Local Authorities (Orkney, Shetland and the Western Isles) who have taken this up or plan to engage further.
 - Building on the positive engagement already undertaken, we propose to extend this engagement across other councils/Local Authorities where this proposal could supply new, or improved fibre links to gain support/interest in the CVP. We will continue to engage with the three existing authorities to progress these immediate opportunities as a priority.
 - In addition, SSEN will engage directly with the successful provider of the R100 scheme to identify direct opportunity for collaboration, and where this is unlikely to be taken up SSEN will engage directly with other, more local providers who may benefit from this collaboration.
 - When asked to prioritise the Broadband to Island Communities CVP alongside our other business plan outputs: 83% of stakeholders in the North and 70% in the South designated the broadband CVP as either high or medium priority.

PROTECTING MARINE BIODIVERSITY: LIFE BELOW WATER

In developing our plan, we engaged with 9,475 stakeholders across 37 events on Environmentally Sustainable Network, and they identified the following RIIO-ED2 priorities:

1. We should set ambitious targets to reduce our operational emissions
2. Collaborate with our supply chain to help them reduce their emissions
3. Reduce our environmental impact by removing potentially harmful cables and reducing visual pollution
4. Improve the biodiversity in our service areas and increase natural capital for long-term emission removal

- In our business plan co-creation workshops in early 2021, stakeholders told us that we shouldn't only focus on carbon reduction in our EAP and that we can do more to improve the biodiversity and natural capital across our region.
- Biodiversity loss is viewed as a critical issue by stakeholders and we were informed we could be doing more in this area (beyond our proposed Outputs). We were challenged by our stakeholders to explore new ways to protect our environment beyond our typical considerations as part of our overground assets and limited land base.
- During bilateral engagements with sustainability experts, it was highlighted that marine conservation is starting to grow massively, with higher prominence being given across the public and private sector. The Scottish Government told us that they are very positive about marine protection and see it as a key activity in reversing biodiversity loss.
- Coastal communities, conservation charities and government agencies alike are currently very keen on exploring seagrass restoration, and as such, many projects are currently being initiated in the UK to investigate restoration opportunities. However, the funds are lacking to pursue the myriad of opportunities which exist around the UK, and also to fund further research into upscaling.
- Several organisations told us they are interested in forming partnerships as part of the CVP and were keen for further engagement as our proposal is refined. e.g NatureScot (Scottish Marine Environmental Enhancement Fund), Seawilding (seagrass bed and oyster bed restoration), Seagrass Project.
- When asked to prioritise the Life Below Water CVP alongside our other business plan outputs: 84% of customers in the South and 90% in the North placed it as a medium to high priority, with only 16% in the South and 10% in the North placing it as a low priority.

ENERGY EFFICIENCY ACCELERATOR FOR SMARTER NETWORKS & LOCAL AND COMMUNITY FLEXIBILITY MARKET STIMULATION

In developing our plan, we engaged with 5,250 stakeholders across 22 events on DSO where they identified the following top priorities for RIIO-ED2:

1. Communicate and educate all stakeholders to enable them to participate in the flexibility markets
2. Establish clear and measurable metrics to assess DSO performance
3. Collaborate and coordinate with Local Authorities and community energy groups to assist them in local area planning and to reach their net zero ambitions

When refining our Energy Efficiency and Flexibility CVP we held targeted engagement sessions with Community Energy Schemes, Charities and Local Authorities to better understand the type of support that would like from us and how we could deliver this. Key feedback received at these sessions that informed the development of this CVP included:

Energy efficiency

- Our Energy Efficiency Accelerator for Smarter Networks CVP was a welcomed proposal, and the use of EE to address constraints as an alternative to the use of traditional reinforcement or flexibility measures should be seen as a requirement under the DSO roles and activities.
- SSEN should pursue a wide-ranging engagement approach in this area, which includes energy efficiency measures funding and creating synergies between local bodies. The latter being particularly important due to SSEN's intended role of acting as a hub for sharing knowledge.
- Engagement with landlords and affordable housing providers (via local authorities) was seen as an important way to create a clear picture of how initiatives would work within the local authority operating model and to ensure the largest effect with any energy efficiency projects.
- It was also suggested that SSEN consider engagement with its supply chain around upskilling, to solve difficulties faced by local-authorities in finding workers with the skills to roll out energy efficiency projects.
- One local authority said it was critical to ensure our plans work with different local bodies as we don't want to duplicate work. They added it was important this plan supported the fuel poor as they tend to underheat their homes meaning there are significant potential carbon savings here.
- While others reiterated that there is a lack of financial support and advice for vulnerable customers in increasing energy efficiency in homes, we were told that there is also huge demand but very little support and advice for the 'able to pay market'
- Stakeholders recommended we explore a dual approach targeting both vulnerable customers and the 'able to pay market' to deliver both additional financial and social benefits

- We were challenged by stakeholders needs to consider how the energy efficiency proposals would interact with other energy efficiency mechanisms operating across its license areas to avoid duplication of efforts and similar energy efficiency mechanisms competing against each other.
- One Local authority stakeholder felt any potential partnership between SSE and Local Authorities to support their shared areas to achieve Net Zero would be valuable for several reasons, not just to help drive energy efficiency

Flexibility market stimulation

- We were challenged to do more in playing have a central role in encouraging customers to participate in flexibility markets, which we'll do through a dedicated team focused on wide-ranging engagement.
- When asked if they would support the Local Market Stimulation Consumer Value Proposition (CVP) one local authorities stakeholder cited the Local Energy Oxfordshire (LEO) project and felt it is a particularly interesting area.
- When asked what stimulation measures they would like to see in the CVP one local authorities stakeholder said would like to see market stimulation as a few steps along the same journey as Energy Efficiency. They felt bringing people along with us is important; starting simple with bill checking, energy efficiency, solar generation and then moving to smart systems
- When asked about our LCT stimulation fund, business representatives suggested that we should use funding to encourage and stimulate innovation throughout supply chain and to create an open-access whole systems service, resulting in economic benefits for the UK as a world leader in energy and help it to achieve net zero.
- Charity Organisations suggested that funding should be used to reduce risks and upfront costs faced by early adopters of LCT. Considering RII0-ED2 pricing signals in relation to future flexibility services would also help community groups invest individuals' money in the long term.
- Developers/ Connections representatives advised that funding should cover flexibility, allowing for collective energy demand (such as with district heating in Scandinavia), as well as providing opportunities for households to participate in the market and choose how they interact with the grid.
- When asked whether they felt the CVP goes above SSENs normal obligations one local authorities stakeholder felt there is no way they can be achieved as business as usual due to its complexity. However, they felt it is part of a bigger next step which involves thinking about how we keep the key benefits and simplify them so that they can be rolled out into business as usual.

When developing this CVP, we also carried out a large-scale online survey conducted by Savanta to better understand Energy Efficiency attitudes of our domestic customers, vulnerable customers and future customers.

- Domestic customers told us they are open to improving the energy efficiency of their homes and they think this can save them money and help the environment. However, this intention is not translating to action: only around 1 in 4 claim to have improved the insulation of their homes and fewer than 1 in 10 think they will do so in the next 12 months. **This implies that domestic customers will not make the changes required for Net Zero if left to their own devices.**
- The greatest barriers to action are financial, a lack of responsibility (among renters), disruption concerns and a lack of information on energy efficiency. In addition to this, most domestic customers don't believe their homes to be inefficient, holding them back from mass action to improve energy efficiency. These barriers mean that half of domestic customers say the only way in which energy efficiency improvements will be made to their home is if an organisation offers to do it for them. **This shows that people need external help and support to make the requisite changes to their homes.**
- Domestic customers are generally supportive of this CVP, with three quarters thinking it's a good idea (77%). There are slight majorities for the CVP being targeted at vulnerable customers (55%), those in fuel poverty (56%) and where the network is under most strain (53%).

PERSONAL RESILIENCE PLANS

In developing our plan, we engaged 19,046 stakeholders across 58 events on Customer Service and Customers in Vulnerable situations, and they identified the following RIIO-ED2 priorities:

1. Improve response to unplanned power cuts reflecting customers increased dependency on electricity
 2. Enhance digital contact and self-service options while strengthening services for 'Generation Landline'
 3. Ensure customers in vulnerable situations are not left behind in energy transition, including those temporarily vulnerable
 4. Deepen the support services for domestic Priority Service Register (PSR) customers, as well as recognise and assist vulnerable Small and Medium Enterprises (SMEs)
 5. Support community action on net zero, including advice on Low Carbon Technologies (LCTs) and new low carbon connections
- During our early RIIO-ED2 business plan consumer research, vulnerable customers told us that they wanted to be proactively offered additional support that is tailored to their need.
 - Through our stakeholder co-creation events, we were again encouraged to focus on increasing support for customers in vulnerable situations, including the suggestion to provide Personal Resilience Plans for those on the PSR.
 - We develop our Personal Resilience Plan CVP for draft plan which was received positively by both customers and stakeholders, who recognised the benefits to vulnerable customers during an interruption to their supply. Vulnerable customer representatives felt that the strategic output to drive forward priority services register provision and promotion, to achieve a reach of over 1

million for Priority Services in ED2 and the Personal Resilience Plan CVP are ambitious and will give much-needed confidence and support to the vulnerable.

Since we published our draft proposal, we have completed further engagement to make sure that the above and beyond service we provide in this CVP remains the right approach to take.

- Citizens Advice welcomed the intent to support PSR customers in a personalised way as shown in the CVP however, the way in which this differs from existing support could be better demonstrated alongside the associated costs for RIIO-ED2. Following this feedback, we have engaged with partners and industry to seek feedback on how we can further tailor our PRP. We believe our tailored plan proposal responds to individual needs and will provide reassurance over a range of issues that customers value.
- We engaged with 15 partners ranging from experts in vulnerability to cross utility organisations such as water, gas and energy. 7 of the 15 we engaged with rated this CVP 9 and 10 out of 10, being a benefit to customers in vulnerable situations.
- We were challenged by certain stakeholders about why we were prioritising the provision of Personal resilience plans for PSR1+ customers and were encouraged to expand this to include more general PSR customers. We have expanded our CVP offer to all PSR customers. For customers already on the register we will notify them on how to obtain a PRP during our data cleanse process. These costs have now been factored into the CVP.
- We will also directly offer the PRP to PSR1+ customers with medical equipment and make them aware of the battery provision fund in the first year of RIIO-ED2.
- Vulnerable customers told us they like the PRP's personal approach and think tailored advice is more helpful. Some think that more information on emergency contact numbers, and advance warning/estimated restoration time would be useful. Support could also be aligned with emergency services and energy needs, and eligibility for Warmer Homes Scotland (for those on health-related benefits).

We also ran customer trials with 4 small battery packs and conducted testing via our occupational therapy partnership and with PSR customers who had medical equipment, during planned and unplanned power cuts.

- Customers expressed during the live battery back up testing trials that the upfront cost of the battery packs is a significant barrier to uptake but if there was support towards the cost, this would make the proposal very appealing. 30% of PSR1+ customers suggested they would be interested obtaining a battery back up in RIIO-ED2.
- Vulnerable customers expressed they were happy to purchase the back up pack using vouchers provided by SEN but most did not know where they would purchase the pack from, highlighting that providing advice on this or using a trusted provider would be useful.

Explain conducted research with 400 of our customers, across both SEPD and SHEPD areas, to understand their views on the principle of the PRP and the likelihood to take up the service, gather insight on the proposed process and their views on the battery backup provision. Of the 400 customers, 150 were non PSR customers, so we could gain insight to understand if they were willing to pay for this service in their bill.

- 88% of PSR surveyed customers in SEPD and 86% in SHEPD felt the PRP is a good idea. 85% in both SEPD and SHEPD thought it would be useful to receive a PRP.
- Of the 150 non PSR customers surveyed, 85% in SEPD and 89% in SHEPD felt the PRP was a good idea.
- 75% in SEPD and 86% in SHEPD would be willing to pay the extra cost on their bill for the PRP and battery back up.
- One customer told us, “it is a good idea for those that do need them, it would provide security to stop worry and anxiety”, another customer said, “I just think these people in that situation need all the help they can get. It’s a worrying time if you’re in that situation and the electricity goes off”.

In our final Phase 4 Acceptability testing, 79% of customers stated that our CVP proposal to ‘Proactively provide Priority Services Register customers with Personal Resilience Plans giving specific advice tailored to a customer’s individual needs, helping them know what to do during power cuts’ was acceptable and affordable.

APPENDIX C – DETAILED PROPOSALS

In this appendix we provide further detail on the CVP proposals including costs, consumer benefits and SROI calculations. We have embedded feedback and challenge on our proposals and have sought to improve our package through positive change and clarification, we have also attempted to bring each proposal to life with real examples of what each will provide and how this is above and beyond.

Embedded Whole systems Support Services for Local Authorities

During ED1 we have engaged extensively with a significant number of Local Authorities and Communities through our innovation programme, our Distribution Future Energy Scenarios (DFES) engagement and other initiatives such as the Electric A9 project. This engagement alongside the significant number of additional requests to support projects outside of the traditional routes has demonstrated to us clearly that Local Authorities and Communities would realise real value from a support service that helps them formulate and deliver plans for their own net zero transition.

Our baseline plan commits us to engaging annually with Local Authorities and providing access to data to help inform Local Area Energy Plans (LAEP) and Local Heating and Energy Efficiency Strategies (LHEES) and support delivery of net zero ambitions. From our engagement we've identified that the support needed goes beyond baseline access to data and appears in the form of information, guidance, insight, including Whole System modelling, optioneering, network monitoring placement and cross-sector co-ordination. We have engaged with our stakeholders on the value of such a service during RIIO-ED2 and support has been universal and sustained.

At present there is not a mechanism to fund the provision of support on the scale that is anticipated for RIIO-ED2, with 72 Local Authorities and several hundred community groups we anticipate significant demands for support. Our CVP would allocate additional resource within SSEN to provide above and beyond support to 200 community groups and 72 Local Authorities to help them transition to net zero, including the production of area specific information and providing bespoke services. Above and beyond our baseline, services we plan to provide include, tailored local information packages and guidance and interpretation of the data, scenario and output modelling, advisory support to assist groups to identify, scope and improve the design of Whole Systems opportunities, support with applications for funding for projects, and ongoing technical support during delivery to manage interdependencies with the SSEN network and other work.

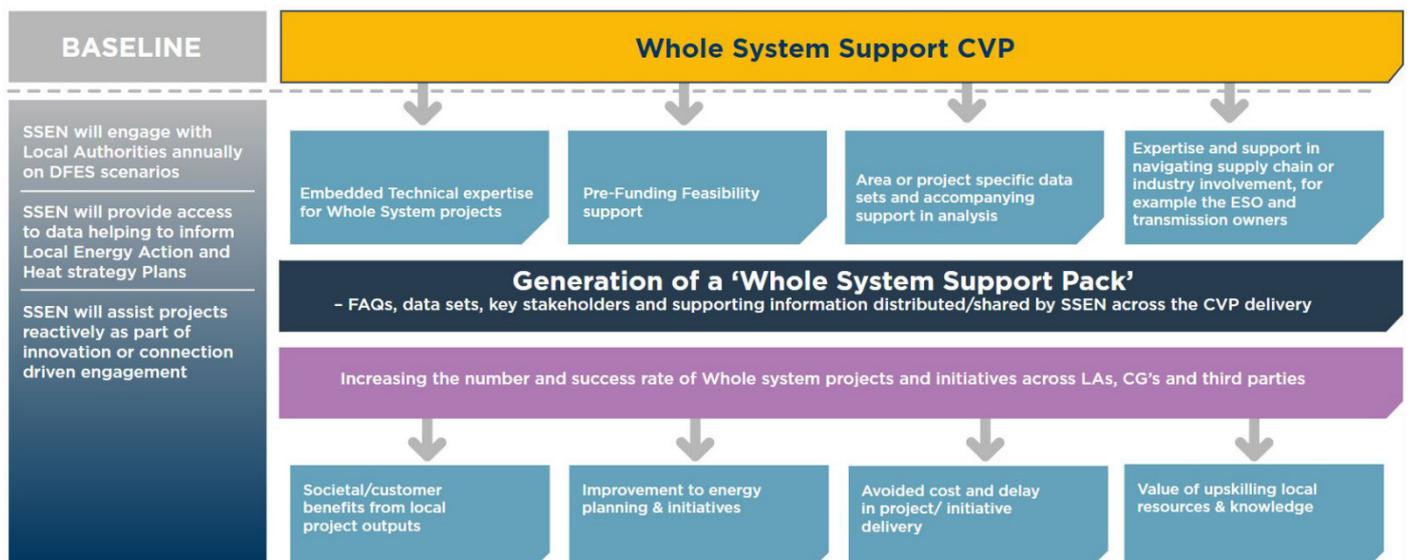
During our engagement to date, stakeholders have indicated that it is important that we do not extend our support into the realms of competing with consultants and subsidising Local Authorities, as a result we have been very specific on the types of support that we will provide and the volume of support per community group or Local Authority will be rationed with any excess being paid for. Through this arrangement we can ensure that the support is shared fairly throughout our geography and is not there to be abused or diluted.

Our proposal

We will provide enhanced in-house support to Local Authorities and community groups by applying our capabilities to optimise the use of the electricity network and enable whole system opportunities to facilitate the net zero transition. We believe we can go further than our base plan, we want to not only meet with local authorities and provide data to them, but we want to unlock additional value for consumers through targeted, specific actions. Through our CVP we believe we can share our knowledge and understanding to develop better outcomes, at lowest cost, potentially increasing the ability to roll out further schemes in RIIO-ED2 that will increase and accelerate the journey to Net Zero.

We are proposing to use our expertise to help optimise investment, reducing potential network reinforcement costs (now and in the future), whilst also helping others to identify and realise where LCT and flexibility projects could be located. This will help secure an efficient and well-designed whole system moving forward.

WHOLE SYSTEM SUPPORT



Our proposal is not to be viewed as a consultancy service, but rather the upskilling of local authority and community groups, helping to develop the skills and expertise required to help deliver Net Zero. The CVP offers over 28,000 days of support across RIIO-ED2 from SSEN to local authorities and community groups. We will provide advisory and information services, as detailed below, up to a fixed level for each group or organisation. This will importantly allow an equal uptake and opportunity to embed our knowledge within each organisation. Any additional service requested, above the set limit, would become chargeable.

Regional Energy System Optimisation Planning (RESOP) modelling capability enables Whole System Services

RESOP is an ongoing Network Innovation Allowance funded initiative and part of the EV and Heat Strategic Partnership with Scottish Government and Transport Scotland. SSEN together SGN and Dundee City Council are developing a whole system planning tool during RIIO-ED1 to support the Council's net zero ambitions.

This will help inform the 'optimal' evolution of the electricity network in meeting net-zero targets alongside other components of the energy system. The definition of energy system includes energy use in buildings, energy use requirements from transport, distributed energy resources and storage and energy networks.

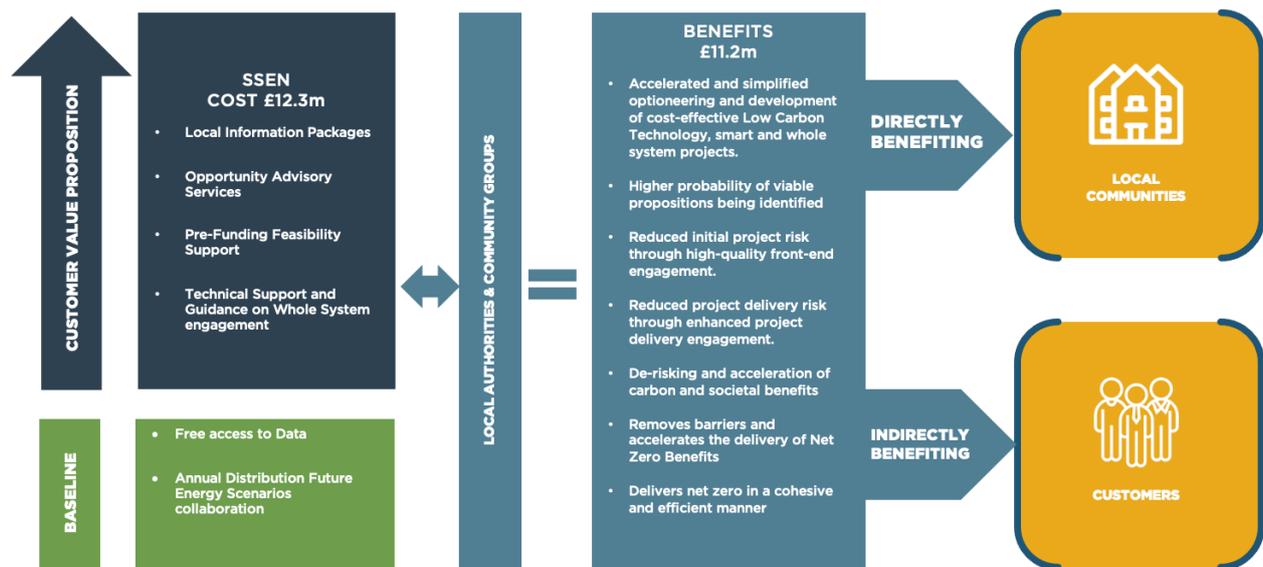
The RESOP tool represents a critical ongoing partnership between SSEN and Local Authorities in addressing long-term energy transition challenges through whole system thinking. As RESOP encompasses whole system modelling capability, the insights allow stakeholders to identify the appropriate type and timeline of investments needed to achieve low carbon transition of multiple sectors like heat, transport, network, and building simultaneously. This approach enables Local Authorities to have a holistic view of the entire local energy system, ensuring that local energy strategies are thoroughly considered and providing an evidence base that investments help deliver decarbonisation targets efficiently.

We plan to scale up the geographic coverage of the RESOP tool through RIIO-ED2 across the SSEN licence area. This capability will enable support for Local Authorities and Communities throughout the SSEN licence area, allowing them to better consider the impact of their plans on energy networks and the role of low carbon technologies in managing this impact. This will ultimately support the delivery of local objectives and to proactively identify the need for network investment. RESOP aims to integrate, evaluate, and prioritise:

- Heating and energy efficiency in buildings including building fabric insulation
- Energy network choices considering electricity distribution, district heating, natural gas and hydrogen
- Distributed Energy Resources (DER) and storage
- National boundary conditions influencing the Local Authority area (e.g. electricity prices and carbon intensity)
- Implications of Local Authority transport and industry energy demands

What we will provide

We will provide in-house support to Local Authorities and community groups from people within our business and apply our capabilities to optimise the electricity network and whole system opportunities to provide a sustainable and reliable energy supply and facilitate the net zero transition. Figure 1 illustrates our package of services we will provide as part of this CVP and some of the benefits that will be delivered through this approach.



Information, Advisory and Whole System Liaison Service

There is a growing recognition amongst Local Authorities and Communities of the role they must play in supporting the net zero transition. However, while awareness and ambition are growing there are skills and capability gaps in Local Authorities and Community Groups.

Significant funding is being made available to Local Authorities to undertake trials and other activities to enable them to transition to net zero, however we believe that additional value can be added by a more involved approach. However, we know from our participation in a number of Whole System pilots such as Project Local Energy Oxfordshire (LEO) and the RESOP project with Dundee City Council that local communities will require support from energy networks to help them design and implement projects effectively and to secure funding in order to support the net zero transition.

We will work with Local Authorities and Communities to facilitate the infrastructure investments of the future, underpinning the net zero transition as well as enabling the optimal placement of infrastructure. We are already working closely with a small number of Local Authorities and Communities on net zero related projects. Our proposed CVP reflects two key lessons from these initiatives:

1. There is a heavy reliance from Local Authorities and Communities on detailed and technical information and experience which resides in SSEN. In particular, where groups are tendering to participate in projects or secure external sources of funding, it can result in an increase in the number of requests for support. Where we provide the support, it has a material positive impact on their submissions. Building on our Whole System innovation project experience, we know there is a strong demand from Local Authorities and community groups for assistance in developing their thinking and planning. Examples of this assistance to date includes data, technical expertise and regulatory, commercial and engineering specialist advice.
2. Working in partnership on such activities is resource-intensive and there are limits to the level and speed of response which we can give from within our baseline funding.

Whilst historically we have been able to support a maximum of 2 significant Whole System projects concurrently, the net zero transition will see an increase in the projects, plans and initiative across the full 72 Local Authority areas in our license area. Our proposal is to provide support to Local Authorities and Communities from experts within our business who have access to the relevant experience of delivering networks from end-to-end, applying our capabilities to optimise the electricity network and whole system opportunities to facilitate the net zero transition.

The CVP support will start in one of two ways;

- We contact the Local Authority and/or Community groups in an area where we identify a network issue which could benefit from a Whole System solution.
- Support is provided in response to an external request for assistance from a Local Authority, Community Group or other 3rd party.

This blend of both proactive and reactive engagement will help to ensure no region is left behind in their ability to deliver Whole System outputs and reaching net zero objectives.

There are a range of services we will make available through the CVP, with stakeholders being able to choose the ones which meet their needs. This service will include:

1. Local Information Packages – customised local network data.

SSEN already makes standardised data about its network available to stakeholders including Local Authorities and Community Groups as part of baseline expectation and this will be readily available to stakeholders during RIIO-ED2.

This Local Information Package delivers additional value by offering tailored data sets matched to the stakeholder requirements with associated network insights along with expert guidance on the interpretation, application, and limitations of these data sets. Network data is complex and for those unfamiliar with the technical detail, it can be difficult to interpret.

This service will include providing detailed guidance on tools for the interpretation use of the data set to meet their local whole system aspirations. This will all be done with the aim of spreading best practice and accelerating the early stage in the development of viable whole system and net zero transition plans. It will help Local Authorities and Community Groups to make better decisions in identifying and designing projects that involve LCTs thereby bringing forward the benefits of deployment. In addition, we expect efficiency savings in these organisations by giving them access to our expertise and understanding, so they can form insights more quickly than would otherwise be the case.

2. Whole System Opportunity Advisory – scenario modelling and optioneering expert advice.

In the course of their day-to-day operations, Local Authorities and Community Groups regularly explore projects which are either indirectly related to the energy system, for example upgrading heating solutions in public owned housing stock, or directly such as initiatives to support Electric Vehicles (EVs) through installing additional EV charging points or trialing innovative projects to understand the potential of future changes to how energy is used in their community, for example the Reflex Orkney, or the Green Kirkcaldy project which examined the potential of solar generation, battery storage and EV charging⁴.

⁴ <https://www.localenergy.scot/media/110837/case-study-shine-on-greener-kirkcaldy.pdf>

Such projects are complex and especially for the “indirect” projects the whole system energy implications may be difficult to assess. For example, the levels of local congestion on the network and broader investment plans could have an impact on both the most cost-effective choices for heating system upgrades in different locations within a Local Authority. A key element of identifying viable whole system options and being able to identify which delivers the best overall outcomes for society and the community at large is the ability to identify synergies and opportunities. This package of support will enable Local Authorities and Community Groups to do this cost-effectively, by giving them access to SSEN experts to “be in the room”, through the use of our modelling tools and our assistance in the design of such projects. As part of this package, SSEN experts would be directly involved in scoping and optioneering workshops as local whole system solutions are identified to help ensure that all options are identified and that the full range of costs and benefits can be assessed by the stakeholder.

This service will offer technical input and scenario modelling to understand infrastructure sharing and flexibility opportunities. Using the in-house support expertise, this service with advice on best practice and collaborative options to ensure best value for money in terms of the network. It will offer stakeholders access to knowledge sharing around market segments, understanding any existing constraints, the time frames and sequencing impacts of investment. Early engagement will allow for targeted monitoring and network configuration optimise any whole system solution such as flexible connections, peer to peer trading facilitation, curtailment studies and active network management interface design. It will add value by helping to improve the design and selection of schemes that Local Authorities and Community Groups choose to promote in their areas.

3. Pre-Funding Feasibility Support – conceptual network feasibility support.

As part of the Government’s commitment to the net zero transition, it has launched a range of different funding schemes to support the deployment of LCTs and testing and trialling of new innovative technologies. Local Authorities and Community groups apply for a range of ‘green’ funds to support the roll out of LCT adoption. Over the ED1 period, we have regularly been asked to provide assistance and support in the creation of these applications, which we have sought to provide as effectively and promptly as possible. However, with the known increase in funding for these initiatives and a growing awareness of net zero and the role Local Authorities and Community Groups can play we expect a significant increase in requests for this kind of above and beyond support. Our baseline funding would not allow us to support such an increase in requests for support.

This support is critical to the success of local ambitions as a result as we seeking to offer more in house support to ensure success. We expect it will create value in two forms: firstly, in helping more Local Authorities and community groups to secure funding for projects and secondly, improving the quality of the projects that are successful so they maximise the benefits and minimise the costs.

4. Technical Support and Guidance on Whole System engagement – dedicated ongoing delivery support.

The other packages as part of this CVP focuses on providing support before projects are confirmed and initiated. However, there is a need – for the larger and more complex projects (like Project LEO) - for ongoing support during the delivery phase from SSEN to help ensure the interdependencies with broader SSEN activities are identified and managed and that any complementarities are realised.

Our experience in projects such as Reflex has shown that the level of support and coordination required during deployment is significant and the absence of this support can act as a barrier to the successful delivery of local whole system options. However, the level of coordination and detailed engagement has been limited by the availability of resource and funding as more projects move away from the definition innovation into commercially viable deployment the opportunity for us to support the delivery of these projects.

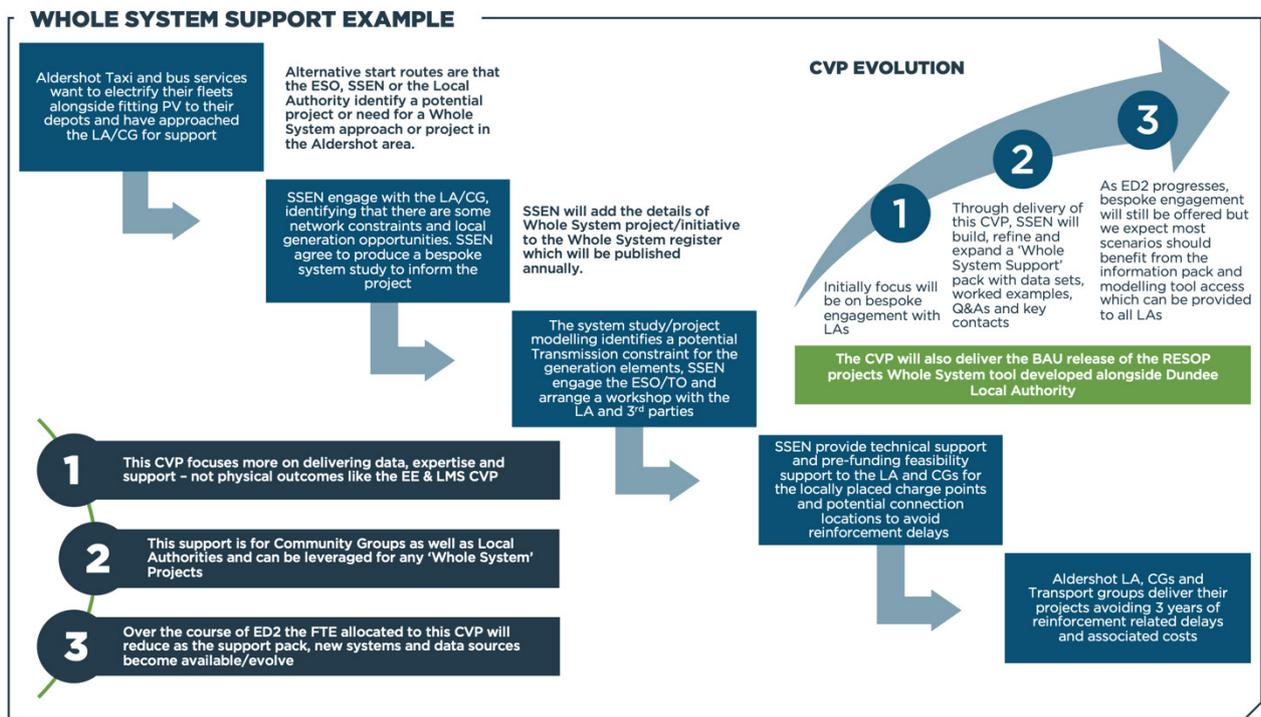
With the net zero transition (and increase in funding for such projects) increases, and these projects away move from being innovation-funded ones our baseline funding would not provide for SSEN to play a proactive role in the management of these project, for example– offering advice on regulatory issues, best practices, existing data models. A committed resource would build awareness amongst stakeholders on the considerations, options and data available from a network perspective to through the delivery of any local whole system initiatives. Over time, this capacity building will enable Local Authorities and communities to be able to deliver projects more effectively with less SSEN support.

Our RESOP tool

Whole system modelling capabilities, such as the one that can be provided by RESOP, are crucial to addressing the complexity of the energy transition. Traditionally, most decisionmakers within the energy system work in isolation. This lack of communication and engagement between key stakeholders across sectors often leads to sub-optimal planning outcomes as they do not always account for the impact on the wider energy system. For example, without representing long-term emission constraints, reflective of local and wider government decarbonisation targets, in energy system planning can potentially lead to stranded assets that ultimately incur greater costs for consumers. The aim of the RESOP initiative is to provide the capability for whole system planning, enabling Local Authorities and network owners to identify least regrets investments in the energy system that maximise system wide benefits as society progresses towards net zero.

The planned RESOP tool is designed to fulfil the current gap in the whole system energy modelling space. The overarching aim of the tool is to provide a sufficiently granular representation of local energy systems, whilst being deployable at scale across a DNO's network licence area. The proposed RESOP tool builds on the ESC's local area energy planning tool - EnergyPath Networks. EnergyPath Networks enables the gathering and analysis of a wide range of data to create a local representation of all energy demand and supply for a local area. It maps the impact of future growth on local energy systems and develops pathways for a cost effective, local, low carbon energy transition. These pathways identify which energy options are most appropriate for a local area and in what order they should be prioritised. Whilst at present, EnergyPath Networks would provide almost all of the core functionality to meet the requirements of the RESOP project, it is too resource intensive and complex to scale effectively to overall network licence area. The design principles of RESOP are therefore to retain the optimisation of key energy system choices whilst implementing greater spatial and temporal aggregation to ensure the scalability of the tool. These design principles allow the RESOP tool to support distribution system planning across the RII0-ED2 horizon within SSEN whilst structuring engagement with key external stakeholders such as Local Authorities to understand how other stakeholders' plans influence SSEN decisions.

The cross-sector view provided by RESOP also empowers Local Authorities with greater ownership of whole system planning while encouraging cross-sector engagement within a local area. As RESOP’s modelling capability sits within a wider whole system planning framework, the tool essentially serves as a platform that enables continuous data sharing and update between SSEN, relevant gas network operators, and Local Authorities. The collection of regularly updated data sets allows comprehensive modelling of energy systems within SSEN’s licence area, ensuring the relevant decision-making processes are robust and that the cost-efficient transition pathway across sectors is realised. Moreover, the insights generated from RESOP represents a crucial starting point to initiate cross-sector discussions and continuously foster dialogue between stakeholders. Ultimately, the cross-sector data sharing and engagement environment created by RESOP provides stakeholders with the ability to plan their strategies collaboratively with organisations from sectors other than their own, ensuring that local priorities are respected as appropriate development plans within each sector are proposed.



We have built detailed process maps which explore the end to end approach to delivering this proposal which has been summarised in the example above and shared with stakeholders across our engagements, receiving broad support. To simplify the process, during the initial engagement with the Local Authority or Community Group, the nature, level and duration of the required support will be explored, this scoping exercise may take a number of workshops or meetings to complete and could result a single element or a blend of all the suggested approaches above.

We have built detailed process maps which explore the end to end approach to delivering this proposal which has been summarised in the example above and shared with stakeholders across our engagements, receiving broad support. To simplify the process, during the initial engagement with the Local Authority or Community Group, the nature, level and duration of the required support will be explored, this scoping exercise may take a number of workshops or meetings to complete and could result a single element or a blend of all the suggested approaches above.

A summary proposal would be constructed, containing a breakdown of the project and the outcomes expected, where our support is required and to what extent with approximate costs for the time, funding or expertise required. Once agreed, the support would be offered with regular reviews from the CVP and Whole systems teams to ensure deliverables remain achievable, the level of support is not exceeded without due change management processes and associated approvals, and that the outputs continue to meet the expectations of our stakeholders. This regular review process is based on standard project 'gating' and is a tried and tested approach to delivery effective and efficient projects within set and strict budgets and resource allocations. We will be using accepted, embedded project delivery governance to build the CVP delivery process.

Post completion a review of the project and our supporting elements would be undertaken, to produce a completion document listing costs and benefits, lessons learned and key outputs which would then be reviewed, and summaries included within our annual reporting and for consideration as case studies within the 'Support Pack' proposed by our stakeholders.

Our Whole system 'Support Pack'

Feedback received on our CVP highlighted the opportunity to potentially reduce the level or frequency of bespoke support required by the construction and ongoing refinement of a Whole System 'Support Pack' as part of the CVP outputs. The information within the pack would contain introductory information on whole systems, frequently asked questions, case studies of projects delivered through the CVP, example data sets and roadmaps on where to access information and support in addition to guidance on the CVP itself.

Our stakeholders feel and we agree, that over time the increase of data availability, supporting systems and experience gained could mean more simple, accessible support through the support pack should take precedence over the bespoke, manual support required earlier in the RIIO-ED2 period. We commit to co-developing the support pack from lessons learned in delivering the CVP and our stakeholder feedback collected within the annual surveys and across the range of Whole System projects in RIIO-ED2. The support pack will be available to stakeholders at request through our regional Whole System Coordinators and wider Whole system teams, via our whole system webpages and will be shared with each Local Authority on a minimal annual basis during engagement.

Annual Reporting & Surveys

Alongside our annual Whole System activity report covered by Standard Licence Condition (SLC) 7a, we propose to collate and submit an additional annual 'Whole System Support CVP' report, covering details of all projects applying for assistance, projects receiving assistance and to what extent, costs and benefits and case studies. The report will be published on our website to provide a transparent update to the industry and our stakeholders on both our baseline and beyond baseline commitments within Whole System.

As part of our baseline and to ensure our Whole system approach meets the requirements of our stakeholders and that service levels are maintained we propose to carry out an annual satisfaction survey, covering our Whole System approach inclusive of the CVPs. This survey will be circulated to stakeholders involved across our whole system activities, with feedback informing our metrics, revision and refinement of processes in our baseline and CVP approaches. Outcomes of the survey will also be published within the annual report.

Stakeholder Panel & WS metrics

Our stakeholders feel that our CVP would benefit from the insights of and oversight from stakeholders, this would provide an additional layer of scrutiny and accountability on how the CVP funding and support was being offered while ensuring fairness and transparency within decision making. This group would also review our proposed Whole System metrics which we plan to collate based on our wider Whole System approach, stakeholder feedback and survey responses. During the phase 4 engagement process we have had offers from some stakeholders of their willingness to be involved in this panel dependent on the formation of proper terms of reference, a reflective range of stakeholder representation and agreements on meeting scope and frequency. We will continue to develop this panel to support this CVP and others detailed in this annex.

Cost Assumptions

Tables 4, 5 and 6 show our cost assumptions. Table 3 is our proposal for the upper limit per Local Authority and community group per price control for each service available under this CVP. We believe it is important to set limits on these services, to allow all the same opportunity to access and be fair for all. This is on a use it or lose it basis and any additional resource required above is chargeable. Table 4 shows our forecast uptake. It is expected that this service will be taken up incrementally and will gradually increase moving through the price control. The services will be offered to 72 Local Authorities and approx. 200 community groups. Table 5 shows the whole system support costs.

Services offered*	Limit (FTE Days)
Local Information Package	10
Opportunity Advisory Service	30
Pre-Funding Feasibility Support	5
Technical Support and Guidance on Whole System engagement	60
Total	105

Table 4 – Whole System support resourcing

	Year 1	Year 2	Year 3	Year 4	Year 5
Local Authority Uptake	20	15	15	12	10
Community Group Uptake	50	45	40	30	30

Table 5 – Whole system support forecast uptake

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CVP Costs	£3,979,759	£2,560,045	£2,346,708	£1,706,697	£1,706,697	£12,299,906

Table 6 – Whole System Support Costs

Consumer Benefits

This proposed CVP will provide substantial benefits to consumers and the wider society, by leveraging SSEN's interdisciplinary expertise to act as an enabler for Local Authorities and Communities to identify, enhance and improve delivery of initiatives that will promote greater adoption of low carbon and flexibility technologies like renewable generators, electric vehicles, and battery storage systems in a coordinated, sustainable and cost efficient manner. Benefits are as follows:

- **Cost and efficiency benefits** at the design, delivery, and operational stages. These will be achieved via the increased economies of scale from taking a joined-up approach to developing utilities.
- **Equitable access to low carbon technologies for all households and communities.** This can be achieved by enabling infrastructure as a universal service expectation
- **Ability to facilitate an accelerated uptake of low carbon technologies** which will lead to a faster rate of decarbonisation and journey to net zero.

Through the delivery of the our CVP, SSEN will allow Local Authorities and Communities to make the best use of energy system data to guide their investment and project decisions, while ensuring the relevant broader system implications are carefully considered. It will allow SSEN to provide ongoing support through the development and implementation of whole systems solutions and Local Energy Plans, removing barriers, reducing risk, and accelerating deployment. In event of non-delivery, we will still seek to advise local communities on their energy-related plans and partner with them to deliver educational materials to customers. We have grouped these benefits into 3 'impact categories':

- Environmental Impacts - Effects on the natural environment, include greenhouse gas (GHG) emissions and land use.
- Economic Impacts - Gross Value Added (GVA) activities, bill reductions, and avoided costs.
- Social Impacts - health, education, and employment.

Not every outcome has benefits in all three impact categories, but every outcome has at least one benefit which can be allocated to one of the three impact categories. There is consensus on the benefits of increasing both LCTs and flexibility, which gives us confidence that due to the low investment costs of this CVP and the significant funding it will leverage that there is significant potential for net benefits for consumers, which will exceed the Ofgem minimum threshold of £3m. Analysis on the overall benefits includes:

- A 2019 report by the Energy Data Taskforce which found that opening up today's energy system data would see net annual system benefits (of) £0.12bn in 2020, around £2bn in 2030, and in 2050 an increase to over £10bn per year."⁵ This CVP will help facilitate and speed up the realisation of these benefits, as it is focused on working with Local Authorities and communities to help them understand system data and make informed choices about investing in LCTs and other flexibility-enabling tech.

⁵ Energy Data Taskforce, "A strategy for a Modern Digitalised Energy System", 2019

As an interim indication of the scale of the benefit, if this initiative was able to reduce the average time to delivery of the benefits by 1 day this would equate to £27m of additional benefits.

- Research that was commissioned for Project LEO noted “introducing flexibility via demand-side response and smart charging can reduce overall electricity system costs by circa £4.55bn/year. These savings arise throughout the system, comprising ~£2.7bn avoided network capacity, £0.75bn in avoided generation peaking capacity, and ~£1bn from reduced curtailment of renewable energy.”⁶ Working with our local communities and Local Authorities to help them introduce smart charging and other flexibility services, through this CVP will help achieve these benefits.

Total cost, PV	Gross Benefit, PV	NPV	SROI
£11,670,540	£22,861,686	£11,191,146	£0.96

Table 7 – Net Consumer Benefits (2023-2028)

The main quantified benefits from the SIA analysis are as follows:

- Avoided cost for Local Authority or community groups who do not have to spend money on additional resource - £42,667 per Local Authority / community group⁷
- Avoided costs for LAs from Improvement in efficiency and optimisation of expenditure on Local Area Energy Planning - £320,000 per Local Authority
- Value of upskilling resources at Local Authorities and Community Groups - £2,470 per resource upskilled

It was difficult to attribute the network avoided costs to purely SSE Distribution through this analysis, but there are wider benefits that will be realised. Full details of the methodology are shown in Appendix D.

⁶ Piclo, “Modelling the GB Flexibility Market”, 2020

⁷ SSEN resource cost assumptions

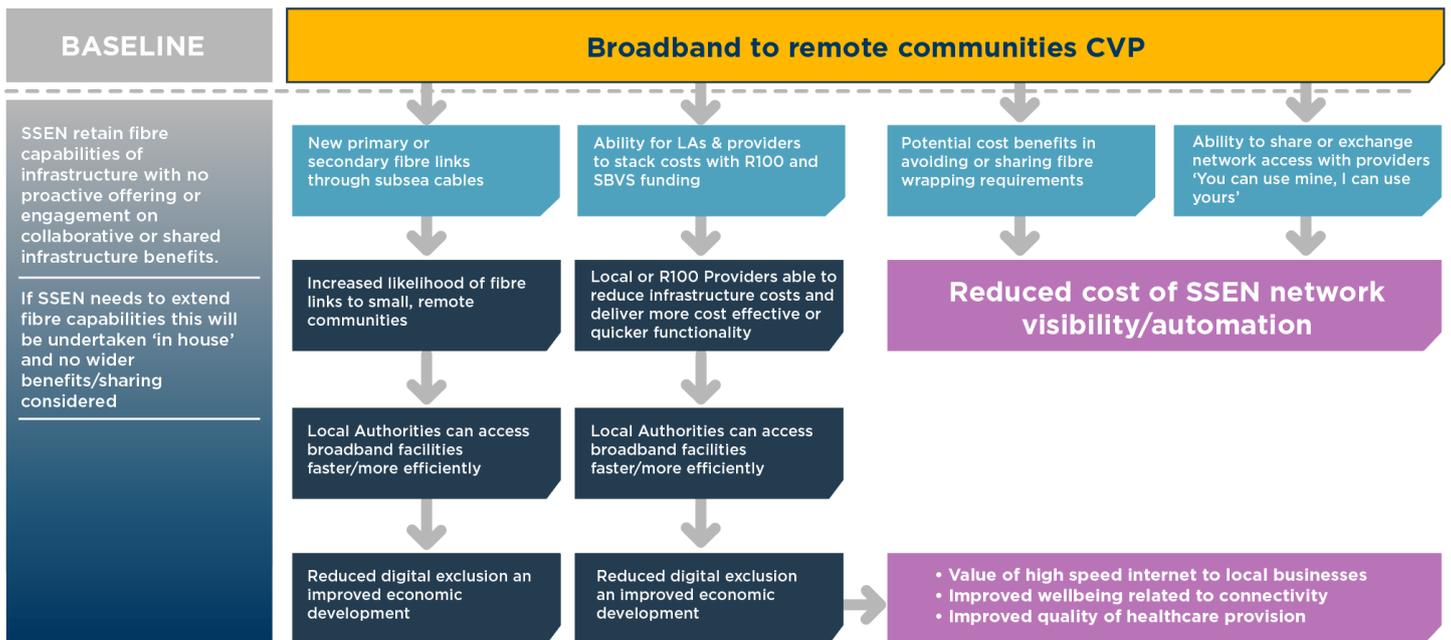
SUPPORTING BROADBAND TO ISLAND COMMUNITIES THROUGH OUR ASSETS

Our proposal

We are responsible for managing 454km of submarine electricity distribution cables, which provide power supplies from the mainland to 59 Scottish Isles. We replace submarine cables with cables that have fibre optic capability and have so far installed 83.3km of this type of cable. We already use a few of these fibre-optic communications cables to provide connections between major substations and control centres.

The key aim of the CVP is to utilise fibre optic cores in subsea cables to ensure that remote communities have access to multiple benefits arising from better connectivity, enabling broadband services to critical community sites and improving the service we provide to homes and businesses. Whilst we can install the infrastructure, providing the associated telecommunications service is outside of our business footprint. As with our 'proof of concept' in Shetland, we will therefore need strong partnerships with local Island Councils and broadband providers to deliver outcomes for customers.

BROADBAND TO REMOTE COMMUNITIES



Our Digital Strategy - informed by stakeholders - acknowledges that a fast and efficient broadband has become an essential part of modern living and the demand for faster internet connection will continue to increase. The fibre optic within our subsea cable assets provides an opportunity to enable additional broadband capability for many island communities which are digitally poor, if suitable partnerships can be identified.

We forecast that this CVP could provide this additional service to up to 14 remote island communities in ED2. We have identified islands where we can provide this increased level of service, through our subsea cables, and will proactively work with Island Councils and communities to improve the connectivity via our assets. We have assessed the potential project coverage, inclusive of location, population and likely costs as part of the CVP preparation. The Islands we can currently support are as follows;

Area	Island	Population	Cost for Connectivity (£m)
Shetland	Whalsay	1061	0.6
Orkney	North Ronaldsay	72	1.0
Orkney	Sanday	550	0.11
Orkney	Eday	130	0.102
Orkney	Westray	600	0.152
Orkney	Rousay	216	0.15
Orkney	Egilsay	26	0.002
Orkney	Stronsay	349	0.55
Orkney	Shapinsay	320	0.26
Orkney	Mainland	17162	1.155
Orkney	Hoy	272	0.725
Western Isles	Scalapy	291	0.85
Western Isles	Harris	21000	0.31

Importantly, our proposal seeks to identify opportunities where communities are excluded through the transformative R100 investment programme and are excluded from this due to their small size and lack of commercial viability. In addition to the R100 programme the Scottish Government have also introduced the Scottish Broadband Voucher Scheme (SBVS) which provide incentives to providers in constructing broadband links to remote communities, however even with this additional incentive many smaller island links remain uneconomic. This CVP could provide critical cost efficiency and strengthen the benefits case for those schemes.

This CVP proposal is consistent with Scotland’s Digital Strategy which describes the steps that the Scottish Government plan to take to ensure that Scotland can respond positively to the opportunities that the digital age presents to support issues such as digital technologies, business sector digital maturity; public services, public sector efficiency, non-personal data use; connectivity, education and training, diversity and inclusion. This strategy aims are that everybody can share in the social, economic and democratic opportunities of digital and ensure Scotland is a cyber resilient and secure nation.

The **Reaching 100% Programme**, more commonly known as R100, is the Scottish Government’s programme to deliver on our commitment to provide 100 percent superfast broadband access across Scotland, building on the Digital Scotland Superfast Broadband (DSSB) roll-out. The procurement strategy for R100 sees urban premises excluded, reflecting the view that public investment should be focused in areas where it is needed most – rural Scotland.

The **National Islands Plan** provides a framework for action in order to meaningfully improve outcomes for Scottish island communities. This includes 13 Strategic Objectives which will be critical over the next 5 years (to 2024) to improve the quality of life for island communities, as well as the key areas to achieve this. These statutory provisions have been augmented with priorities identified by islanders themselves and includes access to good quality digital infrastructure as being essential to improving the majority of other sectors on islands, including sustainable economic development, depopulation, health and wellbeing.

There are corresponding network benefits also, which could reduce long term network costs and benefit our customers through increased network telemetry and avoided/reduced cost of connecting specific transformer sites to operational communications and 'automation'.

In addition to the engagement with Scottish Government through the R100 programme, we are already engaging with several Councils who have registered interest for this type of work:

- Shetland Isles Council for potential additional opportunities
- Orkney Islands Council
- Western Isles Council for potential opportunities for Harris and Lewis

It's key to note that even if existing broadband links exist, this CVP could provide a low cost second route which improves the resilience of broadband services. While this approach would display fewer direct benefits, it may still be of interest to providers especially given the lower cost of implementation thanks to the nature of the CVP.



We have already demonstrated the ability to work with island communities to deliver the concept. In RIIO-ED1 we successfully worked with the Shetland Island Council and the local provider ‘Shetland Broadband’ to ensure high-capacity resilient connectivity for Yell and Unst which supported the delivery of:

- 95% Next Generation Broadband across Shetland by 2019 and 100% by 2021.
- Minimum of 100Mbps connectivity for Mid Yell and Baltasound Junior High and 10Mbps for all primary schools.
- Provided public access to high-speed broadband in all Council premises in Yell and Unst by 2020.
- Enabled high speed broadband and mobile coverage in all NHS locations across Yell and Unst by 2020.
- Enabled benefits to be delivered to Fetlar in a further phase

Sia Partners SROI analysis of SSEN’s Shetland Telecom project in 2021 estimated a net benefit of £2.8m delivered by the scheme. Following the success of the trial, the Shetland Island Council are keen to work with us to progress the potential to expand this offering across other small islands within the region.

Developments from Draft

We did not present this CVP fully at Draft, as we continued to engage and build our proposal. We have now been able to add further detail and as a result of engagement propose further improvements in our proposal. We maintain that it will be a use-it-or-lose-it allowance, with any reduction in cost being correspondingly returned to customers. We are hopeful that we can secure the sizeable consumer benefits, without needing to invest the £8m as requested, which is explained more below.



Whilst the focus of our CVP is in supporting broadband services, we recognise there could be wider customer benefits through using the fibre network to share data and enable systems, such as future flexibility markets, and this would provide additional benefits to customers and communities who are currently poorly served. The ability to provide information and data to customers will allow them to make more informed decisions as the future market opportunities develop and will help ensure that no one is left behind as future markets evolve.

The UK Government on 24 November 2021 published its review of the Access to Infrastructure Regulations Call for Evidence. The review noted: The government encourages all infrastructure operators in all sectors to work together on new innovative solutions and cross industry standards.

This will facilitate greater benefits from, and enable easier access to, sharing infrastructure, such as helping to reduce the costs and environmental impacts of deployment. Furthermore, by working across different sectors, operators can help unlock advantages from different technologies sharing space. For instance, telecoms is enabling greater monitoring of utilities infrastructure, including leak monitoring and energy usage, which may be particularly pertinent in light of industry's imminent retirement of analogue telephony networks. This will help operators improve efficiencies in their own network, but also prepare our nation's infrastructure for the challenges of the future as we move to a more sustainable world⁸.

We support this view and believe that our CVP is a positive step to help encourage true whole system thinking and coordination.

What we will provide

The ability to offer the functionality is entirely reliant on partnerships with broadband providers and Local Authorities. This is critical given that the 'provision' of broadband services is outside of our business footprint, so despite the technical capability of our cables to provide connection, the services themselves must be delivered by a local or central broadband provider.

We have constructed a document suite for this CVP already, using the Shetland trial to inform and refine contracts and information packs. This pack includes;

- A draft contract for the sharing of our infrastructure
- A technical information pack for providers
- An information pack for Local Authorities

Building on the positive engagement already undertaken, we propose to extend this engagement across other councils/Local Authorities where this proposal could supply new, or improved fibre links to gain support/interest in the CVP. We will continue to engage with the three existing authorities to progress these immediate opportunities as a priority.

In addition, SSEN will engage directly with the successful provider of the R100 scheme to identify direct opportunity for collaboration, and where this is unlikely to be taken up SSEN will engage directly with other, more local providers who may benefit from this collaboration.

It's critical to stress we will deliver this functionality in our subsea cables regardless of the CVP, however this does only provide the connectivity up to the cable 'beaching' point and island electrical network connection point. For some islands this may be close to population centres or existing 'local' communications networks, however in some locations this beaching point may be a significant distance away and could need additional infrastructure to provide a more 'local' connection point.

⁸ <https://www.gov.uk/government/publications/review-of-the-access-to-infrastructure-regulations-call-for-evidence/review-of-the-access-to-infrastructure-regulations-call-for-evidence-government-response>

BROADBAND TO REMOTE COMMUNITIES - EXAMPLE



* SSEN may undertake this work if an 'inland' substation needs connectivity - this cost could be shared if shared benefits can be realised or avoided if a local provider already has fibre laid in all/part of the route

As part of the CVP we have looked at our ability to connect between the 'stranded fibre' and local established networks using 'fibre wrapping' of our overhead cables. This may not be needed in all cases, and the lengths required may vary dependant on local geography, availability or maturity of existing local networks. However, we're confident this technique could offer a cost benefit against the traditional laying or stringing of new fibre lines so could be of additional benefit to providers looking to engage with the CVP.

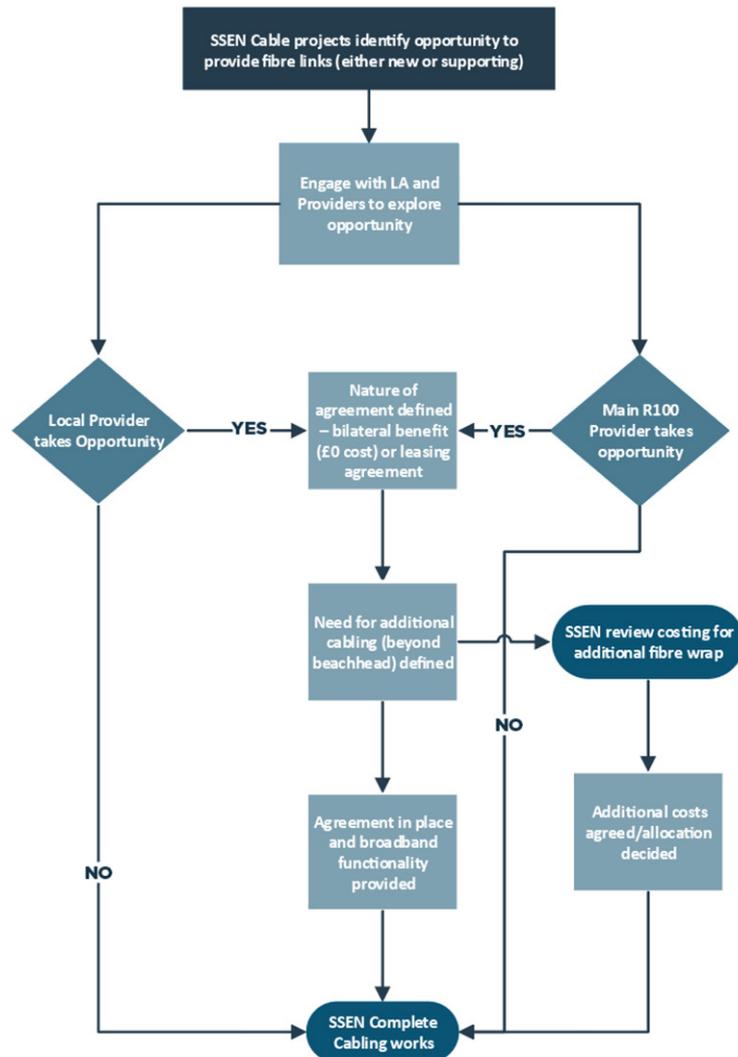
In contracting with broadband providers, we will pursue an appropriate cost sharing for any enabling works, with providers contributing based on the balance of need, avoidance of cost against alternative solutions and willingness to pay/ability to leverage R100 or SBVS voucher income. If there is an appropriate opportunity to 'share' infrastructure, i.e. we exchange the fibre capabilities of our subsea cables with the ability to use the providers local established networks to link additional SSEN substations to our network and increase visibility, this would be pursued as a preference.

Contracts will also explain obligations and responsibilities in the event of failures, the cables will remain at all times the property and responsibility of SSEN and will primarily be used in the distribution of electricity as per our licence. In the event of damage this could mean a divergence in the approach to repair and the timescales needed to restore the system to 'intact' from an electrical perspective and the additional broadband functionality. The engagement, agreement process and subsequent contract between SSEN and the Provider will ensure there is detailed understanding of these repair timescales and the steps which will be undertaken. In the worst case scenario the contracts will ensure that SSEN, and by default electricity bill payers, cannot be financially liable for the loss of broadband functionality in the event of extended faults.

Once contracts have been placed, any required enabling works inclusive of connection points can be completed and the functionality is provided to the local area.

Post completion engagement will gather feedback on the success of the project, any challenge points and improvements which can be taken back to refine our documentation and processes. This feedback will also form a section of the annual CVP reporting, which will also detail costs/benefits, projects in flight or in inception and case studies from completed projects.

A high-level process map and example case study is attached below:



Costs

The immediate cost of the connectivity functionality within our subsea cables is £0 for the CVP, as this is investment already allocated for electricity network provision. Administration for this CVP is marginal, extending to the need to keep documentation up to date, supporting and delivering engagements with providers and local authorities which could be combined with our wider Whole System baseline and Support CVP offerings, providing additional efficiencies.

However, the ‘baseline’ approach for cable installation does only provide the connectivity up to the cable ‘beaching’ point or island electrical network connection point. For some islands this may be close to population centres or existing ‘local’ communications networks, however in some locations this beaching point may be a significant distance away and could need additional infrastructure to provide a more ‘local’ connection point.

As part of the CVP we estimate that connection of stranded fibre to established networks can be achieved for approximately £50,000/km using fibre wrap on wood pole lines. This cost presents a significant saving against the laying of entirely new fibre cables so could present an additional saving point for broadband providers if local infrastructure is a significant distance from our connection point. We will pursue an appropriate cost sharing for these works, with providers contributing based on the balance of need, avoidance of cost against alternative solutions and willingness to pay/ability to leverage R100 or SBVS voucher income.

We estimate that we could use an average of 10-20km of fibre wrap per scheme to achieve connection, at a cost of £50,000 per km - equating to approximately £750,000 per scheme. Delivering this fibre wrap would also generate an additional engineering cost per scheme to design, plan and manage the works, at approximately £50,000 per scheme.

In the worst-case scenario, with SSEN picking up the whole cost of additional fibre wrapping we estimate that each scheme could cost up to £800,000. Costs are likely to vary on a project-by-project basis. In some cases, costs may be significantly less than those outlined above. If the costs are less, we will return any unused portion of this CVP.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Fibre Wrapping (total km)	30	30	30	30	30	150
Fibre Wrapping Cost (£m)	1.5	1.5	1.5	1.5	1.5	7.5
Installation and delivery (£m)	0.1	0.1	0.1	0.1	0.1	0.5

Table 8 – Supporting Broadband to Island Communities through our assets

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CVP Costs	£1,604,899	£1,604,899	£1,604,899	£1,604,899	£1,604,899	£8,024,493

Table 9 – Supporting Broadband to Island Communities through our assets costs

At this point in time we have a provisional list of candidate islands and communities, but we recognise that other locations could emerge or request broadband provisions through this proposal, so we remain open to flexibility in both location and connection costs. Should significant savings be generated per scheme we would look to expand the CVP offering to other remote communities subject to regulatory approval.

Administration for this scheme is marginal, extending to the need to keep documentation up to date, supporting and delivering engagements with providers and local authorities which should be combined with our wider Whole System baseline and Support CVP offerings.

Benefits

Digital infrastructure is key to supporting a progressive modern economy and everyone, no matter where they live, should get access to the benefits of faster broadband. This CVP will enable fibre optic broadband to be rolled out to the hardest to reach parts of the country and prevent digital exclusion. Our activity in these remote islands allows communities to access fibre at a significantly lower cost than if projects were started from scratch. Even so, many of the islands we are targeting are still outside of the thresholds deemed to be commercially viable. We know that many of our existing cables already have fibre included, and all RIIO-ED2 new cables will have the capability also. .

The CVP would provide investment, in the cases where communities want it, to extend the fibre connectivity beyond the landing point on the islands of our subsea cables and connect via underground cable or wrapping on wood pole lines to a suitable point on the island. This could be marginally closer to settlements or at a central substation on the island. We would invest to bring the capability closer to the communities through this CVP.

The National Islands Plan demonstrates that access to good quality digital infrastructure is essential to improving the majority of other sectors on island communities, including sustainable economic development, depopulation, education, and healthcare.

- **Sustainable economic development.** Communication technologies - including social media, cloud storage facilities, and applications - are increasingly being employed by local businesses. The benefits of being able to access and utilise these technologies are increased access to markets, reduced costs, and improved productivity. The National Islands Plan engagement exercise has demonstrated that there is a lack of on-island job opportunities, which may be linked to current inaccessibility of these benefits. Fibre optic broadband would help alleviate these pressures. Indeed, when surveyed with regard to the benefits of increased broadband speeds, businesses in Yell and Unst provided the following results:
 - 36% said they would increase their turnover;
 - 33% said they would increase their profitability;
 - 40% said they would be able to access new markets;
 - 56% said they would be able to provide new and improved services.
- **Depopulation.** Population decline is a threat to many of Scotland's island communities. Over the last 10 years, almost twice as many islands have lost populations as have gained. In particular, there are a relatively small number of children and young people, which will eventually translate into a small working-age population. This in turn will have implications for the wider economy. Indeed, in the National Islands Plan engagement exercise, depopulation was the top priority issue identified by respondents. Fibre optic broadband would help alleviate these pressures by making remote islands a more attractive place to live and work, and in turn aiding population retention. This will also impact on the working age population, helping to attain a healthier demographic balance.

- Education.** Good quality education is a key driver for socio-economic development. As part of the National Islands Plan engagement exercise, islanders stated that having thriving and successful schools contributes to the community in multiple ways - from workers to the population to using schools as a hub of extra-curricular activities. Secondary schools on islands need to be equipped and geared to prepare island-based pupils to the same quality as the mainland. People on islands should also have access to further and higher education throughout life. Fibre optic broadband would help alleviate these pressures by enabling increased use of remote technology to deliver learning opportunities, and as a result leading to greater equality of provision across Scotland.
- Healthcare.** The changing nature of care and increasing complexity of needs are just some of the challenges that must be met to ensure fair and accessible healthcare for those on Islands. As part of the National Islands Plan engagement exercise, islanders raised concerns about perceived centralisation of healthcare services - both in terms of these being moved to the mainland or the population centres of larger islands - with some islanders stating that there are a limited number of health and social care professionals. Fibre optic broadband would help alleviate these pressures by enabling modernising developments such as video consultancy and access to high definition scan results on remote islands. Similar connectivity requirements in terms of reliability, resilience and security are experienced by other public sector partners including emergency services. These services are included in national procurement arrangements which find it difficult to make use of local solutions.



Noted inputs to the benefits case;

- Openreach’s report on the impact of high-speed broadband for communities
- The Scottish Governments R100 programme
- Analysys Mason’s reporting on the benefits of broadband on behalf of the Digital Scotland Superfast Broadband programme

Associated Network Benefits: Where there are connections provided as part of this broadband connection we will look to improve our resilience and reliability of our network by utilising the broadband connections also, monitoring our subsea cables and potentially eradicating the requirement for satellite telemetry devices to be required at our remote substations. This has added benefits in having greater real time visibility on our network, which is a benefit for the island also.

Total cost, PV	Gross Benefit, PV	NPV	SROI
£7,499,818	£34,482,191	£26,982,373	£3.60

Table 10 – Net Consumer Benefits (2023-2028)

The main quantified benefits from the SIA analysis are as follows:

- Avoided cost for Local Authority/partner organisations to lay subsea fibre cables - £26,960 per substation
- Financial (business) value of high speed internet - £6,000 per business per year.
- Reduced digital exclusion and improved economic development - £1,092 per person per year.
- Improved quality of healthcare provision - £1,888 per person per year.
- Improved wellbeing surplus above bill payments - £230 per person per year.

A small network avoided cost of £269,000 was attributed to this CVP. This was held on the previous assumption of 10 island locations in RIIO-ED2. Full details of the methodology are shown in Appendix D.

PROTECTING MARINE BIODIVERSITY: LIFE BELOW WATER

Our proposal

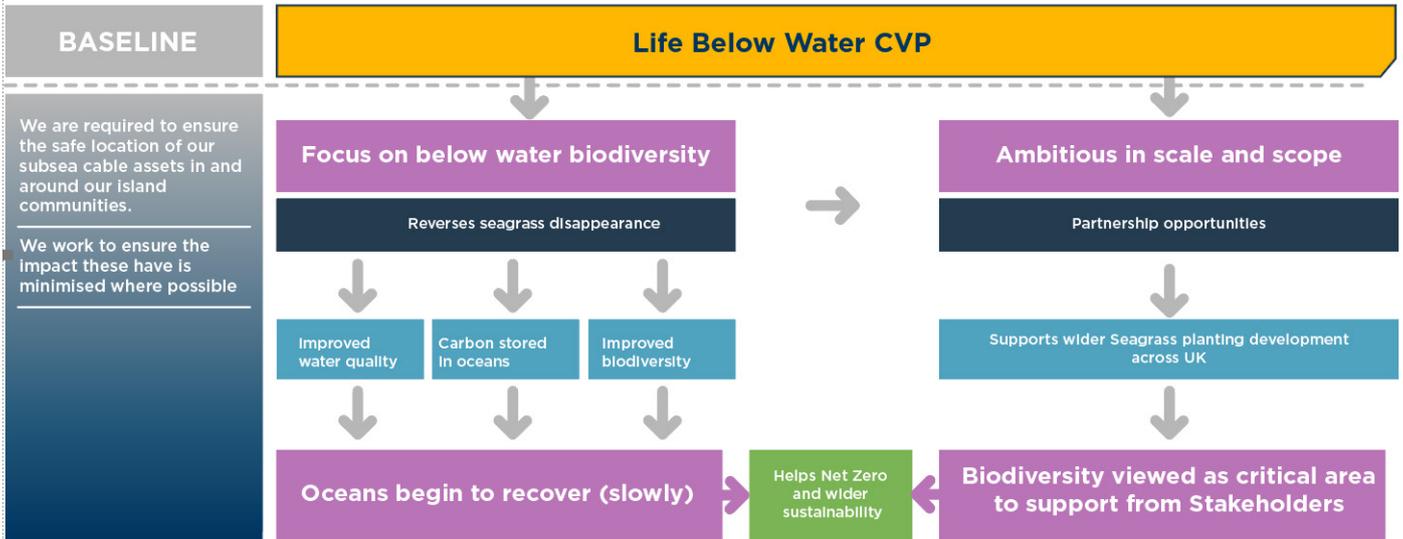
We have identified an opportunity in the biodiversity activity that DNOs undertake and have been challenged to address it by our stakeholders. Current legislation calls for a net gain on terrestrial projects at above ground assets, but there is a gap in legislation for below ground assets meaning we only do what is required through the planning process, no net gain below water means that we are deprioritising our impact on water courses and our oceans where the potential consequential benefits often exceed the benefits if land investment – hence why our stakeholders were keen to understand why we as an industry are ignoring this opportunity to build back much greener. Through this CVP we can put this right, not only by the work we do, but also by the awareness that it will raise within our industry and beyond should it be successful. The value doing this as part of the framework will escalate the societal benefit and strengthen the wider importance of this type of work in the journey to address climate change.

Our proposal is that in RIIO-ED2 we replant lost seagrass meadows in the area surrounding both our licence areas, as we seek to leave the ocean healthier than we found it. We are proposing to undertake a significant seagrass planting project during RIIO-ED2, that will unlock benefits for customers and communities for many years to come. This will add balance to our environmental proposals, ensuring we treat our above ground and below water activities on an equal basis. We want to ensure that biodiversity, no matter where it is found, is improved in our licence areas during RIIO-ED2 and beyond. This is above and beyond what we are required to do, but our stakeholders are pressing us to consider new ways to deliver environmental benefits and this is an exciting area of activity where we can explore real ambition.

We want to address the decreasing biodiversity and quality of our coastal waters through an ambitious seagrass planting programme at selected locations around our coastal networks. We will, in partnership with delivery specialists and local community organisations, undertake a significant and ground-breaking programme of activity around our coastal networks with the aim of replanting up to 17 hectares of seagrass meadows over the ED2 period, but understand that this is a long term investment that will deliver benefits well beyond ED2.

This CVP seeks to align with our corporate commitment to doing the right thing, but also respond to stakeholders and communities in delivering additional environmental benefits, out with that of the typical responses from a DNO, that will take proactive action to reverse climate change impacts. We understand taking action now takes time to deliver benefits, but waiting is not an option. These delicate ecosystems take time to recover and grow, so acting now will secure benefits sooner. Biodiversity needs time and consideration – it cannot be sped up or rushed by spending more later. We are passionate about doing the right thing, and this CVP explores the opportunity and value that could be delivered through targeted seagrass replanting.

We are determined to deliver a positive impact marine biodiversity. In line with this determination, should the costs of seagrass planting reduce during RIIO-ED2, in line with what we believe could be possible, we will correspondingly work to increase our size of planting to progressively deliver additional consumer benefits for current and future generations.



Developments since Draft

We did not present this proposal in full at Draft, as we sought to engage and develop our knowledge and understanding in this area. We have now developed estimated costs and explored areas where we could undertake activity, in partnership with organisations with the skills to help restore our coastal environments. This will complement our on land activities and emphasise our commitment to go above and beyond for our customers and the environment. It will demonstrate our focus towards encouraging others to think beyond typical activities, encourage a more holistic view on everyone’s impact on the environment and ensure prioritisation is not given at the expense of less visible, but equally important, environmental systems. This proposal is ambitious in scale, driving us forward to do the right thing in our coastal areas. To date only 3 hectares of seagrass meadows has been planted across the UK, so our proposal is a significant step up and commitment to deliver long lasting benefits to our customers and the wider environmental ecosystems.

How engagement has influenced our proposal since Draft

Theme	Engagement event(s)	What stakeholders said	What we are doing about it
<p>Biodiversity and Marine conservation</p>	<p>Bilateral engagements with:</p> <ul style="list-style-type: none"> Scottish Environmental Protection Agency NatureScot Project Seagrass (Ofwat innovation funded project) Seawilding 	<p>Our proposed CVP was positively received as biodiversity loss is viewed as a critical issue by stakeholders and several believed we could be doing more in this area (beyond our proposed Outputs).</p> <p>Marine conservation is starting to grow massively, with higher prominence being given across the public and private sector. The Scottish Government are very positive about marine protection and see it as a key activity in reversing biodiversity loss.</p>	<p>We have refined our CVP proposal to explore opportunities to support Seagrass Restoration across our two licence areas through engagement with coastal communities, conservation charities and government agencies.</p> <p>We recognise that we will need to work with specialist third parties to deliver this ambitious programme of activity.</p>
<p>Partnerships and delivery opportunities</p>		<p>Successful schemes build in not only environmental benefits but align with strong community presence and activity – key is stakeholder engagement.</p> <p>Alignment with ecological restoration opportunities and community is critical. The challenge is identifying locations that meet both.</p> <p>Several organisations were interested in forming partnerships as part of the CVP and were keen for further engagement as our proposal is refined. <i>e.g. NatureScot (Scottish Marine Environmental Enhancement Fund), Seawilding (seagrass bed and oyster bed restoration), Seagrass Project.</i></p>	<p>We have identified potential sites with partners across England and Scotland that require funding support and have potential to deliver significant environmental and societal benefits.</p>

Theme	Engagement event(s)	What stakeholders said	What we are doing about it
<p>Benefits of seagrass restoration</p>		<p>Lack of data currently makes it difficult to quantify benefits of seagrass restoration projects, however, work is currently underway (by organisations and universities) to develop baseline methodologies and low cost best practices.</p> <p>In addition to environmental benefits, social impact elements and the upsides of community lead schemes make for a strong benefits case.</p>	<p>We have calculated the costs of delivering our CVP and have undertaken initial benefits analysis using studies from the UK and abroad.</p> <p>We understand the range of benefits and the variation depending on location. We have prepared a proposal that seeks to gather a range of locations which will demonstrate the benefits from urban and rural locations.</p>

Background

To reduce the negative impact that our network operations have on the environment we looked for alternative ways in which we can have a positive impact on the operations we undertake. One particular area, and almost unique to our network, is the our island network cabling which links our Scottish Island networks to the mainland. This was our initial focus for the draft CVP, but we have since moved on from there and recognise that we have the potential to ensure our activities in both licence areas make positive investments to reverse the effects of climate change and human impact on our environment. Where we can we will work to align the two, but we will look to explore where we can have the best impact through this targeted investment. It should be noted and we take great care in ensuring that any new cabling that we lay or repair across our network has as little impact as possible, but through this CVP we are proposing a leading approach to enhance the islands, surrounding coastal areas and water quality by undertaking targeted seagrass bed planting, in partnership with select specialist partner organisations. We believe we can reverse the negative impacts of climate change in our seas by targeting the areas of the ocean that need improving the most and where we can have the highest biodiversity net gain impact.

We have been challenged by our stakeholders to explore ways to protect our environment and typically this has been considered as part of our over ground assets and limited land base that we have. We have limited land to enhance our activities through a biodiversity net gain approach. However, we know that the sea provides a critical lifeline in the battle against climate change and also has added network and customer benefits too, seagrass beds once matured provide coastal erosion protection on our coast which in time will provide protection to our assets and our communities

It is noteworthy that many other national and international initiatives advocate marine habitat restoration, including: the Leaders' Pledge for Nature; the Global Ocean Alliance and the '30 by 30' Initiative; the Post-2020 Global Biodiversity Framework; the UK Climate Change Act 2008; the 25 Year Environment Plan; the Marine Policy Statement, etc.

This also firmly supports SDG 14. Life Below Water, but also aligns to other SDGs⁹, namely:

	<p>1. No poverty. Seagrass meadows support communities and livelihoods. They provide vital nutrition for close to 3 billion people, and 50% of animal protein to 400 million people in the third world.</p>		<p>12. Responsible consumption and production. Working alongside natural resources - including seagrasses - during construction and operation of assets to minimise waste and adverse environmental impacts.</p>
	<p>2. Zero hunger. Seagrass meadows form the basis of the world's primary fishing grounds, supplying 20% of fisheries globally. Seagrass meadows indirectly support 1/3 of fisheries globally.</p>		<p>13. Climate action. Seagrasses are capable of capturing and storing a large amount of carbon from the atmosphere. While seagrasses occupy only 0.1% of the total ocean floor, they are estimated to be responsible for up to 11% of the organic carbon buried in the ocean.</p>
	<p>3. Good health and well-being. Seagrass absorbs vast amounts of carbon, helping in the fight against climate change, and in turn supporting good health and well-being.</p>		<p>15. Life on land. Seagrass roots trap and stabilise sediment, which not only helps improve water clarity and quality, but also reduces erosion and buffers coastlines against storms.</p>

⁹ [Project Seagrass](#)

Alignment with wider SSE vision and going above and beyond

In 2019, SSE set a new Group Environment Strategy which outlines Group-wide goals across three priority areas which represent the most material areas of environmental impact for SSE's activities. The Environment Strategy in part supports SSE's 2030 Goals and, like them, is linked to the UN SDGs:

Priority Area 1: Climate action (SDG 13)

Priority Area 2: Responsible consumption and production (SDG 12)

Priority Area 3: Natural environment (SDG 14. Life below water, and SDG 15. Life on land)

The 'Natural Environment' priority area incorporates Life Below Water, which we discuss in further detail below.

We are already active in supporting the wider corporate vision, including deliberate environmental planning during the design and construction phases of projects; reducing the amount of overhead line in designated areas e.g. areas of outstanding natural beauty and special scientific interest; reducing the amount of oil leakage caused by its assets; reducing our business carbon footprint; and continuously innovating to reduce our environmental impact.

However, our business-as-usual operations in this area concern our impact when developing, operating and owning energy and related infrastructure; and the way we interact with the environment from global climate change to local habitats. We are responsible for 454 km of submarine electricity distribution cables, providing power supplies from the mainland to 59 Scottish Isles. We also serve the Shetland Islands, which run as a separate electrical system without connection to the mainland. Our cable laying and maintenance activities fully comply with the relevant environmental legislation and guidance, and as such we undertake mitigation and compensation where required. Seagrass habitat doesn't tend to be affected / present in those areas. However, it may have been present in the past at a lot of our cable locations. Also, our customers have indicated that they are keen for seagrass to be restored in their seas (see stakeholder feedback). Thus, we have decided to go above and beyond our usual operations by investing in substantial and ambitious seagrass habitat creation projects.

This CVP therefore clearly goes beyond any self-imposed industry minimum requirements on biodiversity. Ofgem set only the following regulatory requirements in relation to biodiversity, which we have also surpassed:

- *Adopt appropriate tools to assess net changes in natural capital from different options for new connections and network projects.*
- *Adopt appropriate tools to monitor the provision of ecosystem services from network sites and report annually.*

What are Seagrasses?

Seagrasses, a functional group of marine flowering plants rooted in the world's coastal oceans. Seagrass communities are one of the most productive and dynamic ecosystems in the marine environment; they support marine food webs and provide essential habitat for many coastal species, playing a critical role in the

equilibrium of coastal ecosystems¹⁰. They also store pollution and carbon very efficiently and quickly, up to 30 times faster than forests¹¹.

In the UK, seagrass beds are considered to be a priority habitat¹², and many of the remaining (often small) meadows are designated features of Marine Protected Areas.

Current Seagrass Projects

In the UK, seagrass restoration is in its relative infancy, and efforts to date have been fairly small scale. UK wide, only around 3 ha have been restored so far, though several initiatives are currently ongoing which (cumulatively) will restore another 8 to 10 ha over the next two years¹³. In addition, several upscaling initiatives have shown promising initial results.

In Wales, Project Seagrass, as part of the Seagrass Ocean Rescue (with WWF, Sky Ocean Rescue, Swansea and Cardiff Universities) have restored 2 ha of seagrass near Dale, West Wales, using a technique whereby hessian bags filled with seeds are secured on the seabed. Testing this technique, Unsworth et al. (2019)¹⁴ found that when deployed in a suitable environment, 94% of bags developed mature seagrass shoots. The Project Seagrass restoration process has been done in collaboration with local people, students and volunteers. In November 2020, the last seed at the 2 ha site was planted (using more than 1 million diver-collected seeds in the process), and the first shoots from earlier plantings were successfully observed in the summer of 2020¹⁵. This scheme cost around £200,000 per ha (excluding monitoring)¹⁶. The European Life Recreation ReMEDIES has recently planted 1.2 ha of seagrass beds in Plymouth Sound (Devon), with further 6.8 ha to be planted in Devon and the Solent over the next year, using the same hessian bag technique as employed in Wales. Over 3 million seeds have either been collected by divers or grown at a dedicated nursery (at Plymouth Marine Aquarium), in order to facilitate this.

¹⁰ Short, F.T., Polidoro, B., Livingstone, S.R., Carpenter, K.E. et al., 2011. Extinction risk assessment of the world's seagrass species. *Biological Conservation*, 144 (7), 1961-1971.

¹¹ Young, E., 2021. Explainer Emissions - It stores pollution 30 times faster than forest. What is blue carbon? Sunday Morning Herald content available at: <https://www.smh.com.au/environment/climate-change/it-stores-pollution-30-times-faster-than-forest-what-is-blue-carbon-20210427-p57mx2.html>

¹² Or 'habitat of principal importance', both in England

(<https://webarchive.nationalarchives.gov.uk/ukgwa/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectionandmanage/habsandspeciesimportance.aspx>) and in Scotland (<https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>)

¹³ Pers. Comm. Natural England; Seawilding (Loch Craignish); Hampshire and Isle of Wight Wildlife Trust

¹⁴ Unsworth, R.K.F., Bertelli, C.M., Cullen-Unsworth, L.C., Esteban, N., Jones, B.L., Lilley, R., Lowe, C., Nuuttila, H.K. and Rees S.C., 2019. Sowing the Seeds of Seagrass Recovery Using Hessian Bags. *Front. Ecol. Evol.* 7, 311, 7p.

¹⁵ Project Seagrass, 2020. News. Available at: <https://www.projectseagrass.org/blog/>

¹⁶ Pers. Comm. Project Seagrass.



Taken by SkyOceanRescue, 2020

Image: Diver collecting seeds for Project Seagrass' Dale project (Wales)

Coastal communities, conservation charities and government agencies alike are currently very keen on exploring seagrass restoration, and as such, many projects are currently being initiated in the UK to investigate restoration opportunities. However, often the funds are lacking to pursue the myriad of opportunities which exist around the UK, and also to fund further research into upscaling.

SSEN would like to help make more seagrass restoration a reality. We will achieve this by carefully selecting delivery partners from established initiatives and provide funding for additional restoration sites. It is hoped that with our support, at a minimum, a further 11 to 17 ha of seagrass restoration would be achieved in Scotland and Southern England.

In doing so, we are fully aware that seagrass restoration in the UK is not without risks. The engagement undertaken for this CVP revealed that there are several key risks in relation to seagrass restoration here. Firstly, as noted above, it is still in its relative infancy in the UK, though the most popular restoration technique itself (hessian bags) is now quite well tried here and elsewhere. Secondly, there is potential for seeds not germinating properly, or being eaten by crabs and other fauna. Furthermore, pollution incidents or big storms can damage sites, as can trawling and inappropriate boat mooring / anchoring. Many of these risks can however be mitigated by careful site and technique selection, as well as community and user engagement.

In addition, undertaking (and funding) more schemes will facilitate lesson learning and upscaling. SSEN is keen to be at the forefront of this research through helping to fund several schemes during these early phases when other funders are often still reluctant to invest. This will provide wider benefits in helping to secure greater investment in the future.

In order to help us prioritise sites and reach out to potential partners, we have utilised existing data sets and consultation. We are planning to fund seagrass restoration in up to five areas in Scotland and Southern England, pending further engagement with potential partners.

Our research has shown that there are many locations in our licence areas where seagrass restoration could be undertaken. SSEN obtained habitat suitability modelling (HSM) data from three organisations¹⁷ and merged this data to determine locations with a high potential for restoration. This exercise demonstrated that there is a lot of theoretical potential in both Scotland and SSEN’s Southern English licence areas. Across Scotland, there are up to 25,000 ha with high potential, and in Southern England, up to 15,000 ha of high potential areas exist; these are shown in the maps below¹⁸. It should be noted that, with marine HSMs, there is a high degree of uncertainty (due to data gaps), and local surveys are always required to confirm actual suitability of a given high potential area. HSMs are support tools, but do not provide a definitive answer in the marine environment. This is why SSEN will work with partners who have (or will) undertake(n) the necessary local footwork to confirm wider suitability and identify the best individual sites.

Possible locations:

Initial discussions have now been held with potential delivery partners. The table below shows who was consulted and summarises the outcomes of these discussions. In summary, there are several established initiatives in both licence areas, some of which are effectively project ready, whilst some are still in the initial feasibility stages. All of these organisations and initiatives are actively looking for more funding partners, so we believe there is an opportunity to partner up on several projects in the short and medium term.

In Scotland, the Seawilding Loch Craignish project in Argyll and Bute is the best candidate for partnering in the short term, as they have already undertaken feasibility and site identification work, and also have practical restoration experience (and the necessary equipment). The Community of Arran Seabed Trust (COAST) and the Restoration Forth Initiative are furthermore likely to have other project sites identified for restoration in Scotland soon.

In Southern England, several relatively advanced seagrass restoration projects are all focussed around The Solent. Project Seagrass, the Hampshire and Isle of Wight Wildlife Trust and the Ocean Conservation Trust (with Natural England) are all pursuing projects here with effectively immediate investment potential. These Solent projects are aware of each other, and whilst there is some collaboration, they are largely working independently of each other. A map of the key areas with high potential in the SSEN licence regions is included below, also mapping existing seagrass beds.

Table 11: Seagrass restoration initiatives with investment potential in SSEN licence areas

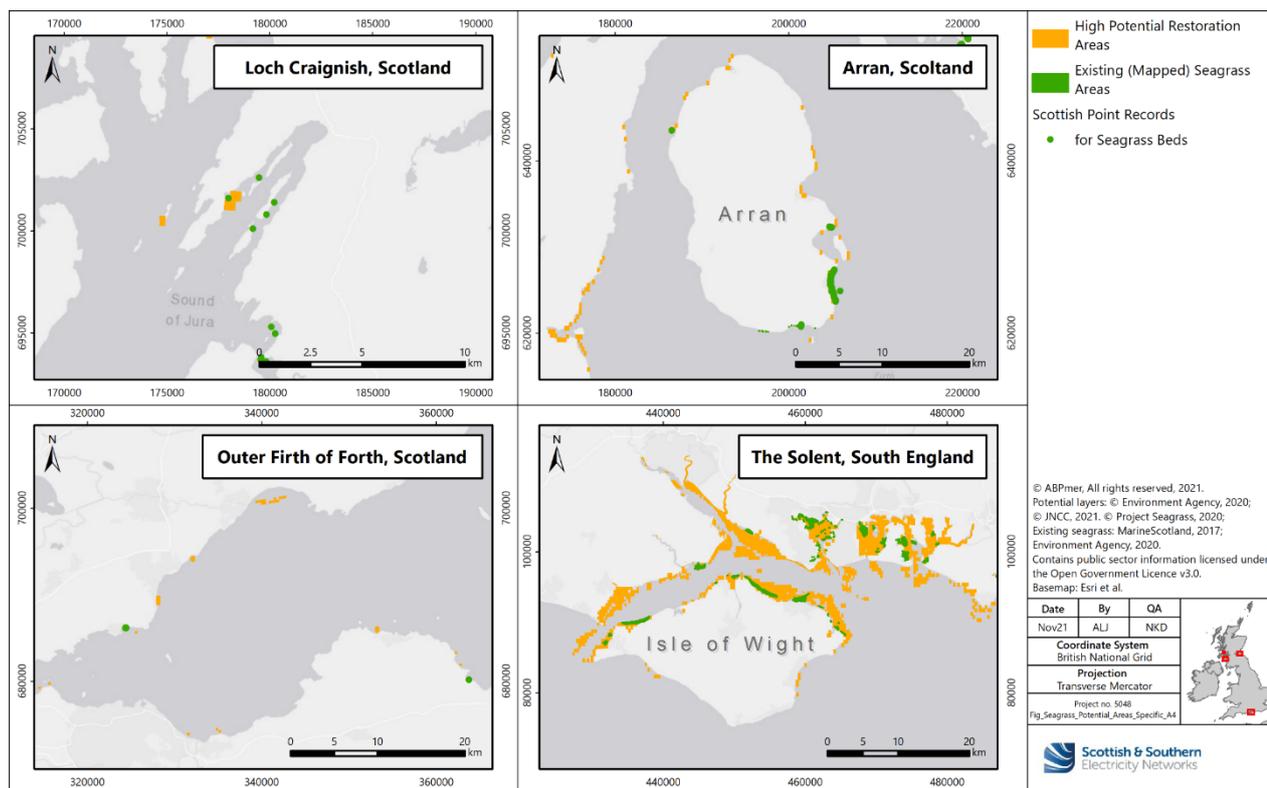
Name of Initiative	Area of Interest in SSEN licence areas	Existing partners (those underlined were consulted by SSEN and/or its consultants)	Summary of ongoing efforts and opportunities in SSEN licence areas
Seawilding	Loch Craignish, Scotland	<u>Seawilding</u> (lead), <u>Project Seagrass</u> , <u>NatureScot</u> ; Seawilding are also supporting several other seagrass restoration communities in Scotland (notably Community of	This charity is hoping to restore the seagrass meadows (and oyster beds) in Loch Craignish (Argyll and Bute) back to their former extent. At present, they have enough funding for 0.5 ha of seagrass restoration, which they started on this autumn (using the proven hessian bag technique, with advice from Project Seagrass). Seawilding are furthermore actively educating and supporting many other Scottish coastal communities in their marine habitat

¹⁷ Project Seagrass (England and Scotland), JNCC (UK wide) and Environment Agency (England only)

¹⁸ Noting that in Scotland, only subtidal areas suitable for *Zostera marina* were mapped, whereas in England, intertidal areas suitable for *Zostera noltii* were also included in the HSM by the Environment Agency. It is believed that there is considerable potential for *Zostera noltii* / intertidal seagrass restoration in Scotland, but further HSM work is required to determine this.

		Arran Seabed Trust (COAST))	restoration efforts, including COAST, who are about to embark on their seagrass restoration work by investigating suitable areas. Seawilding would ultimately like to reseed up to 85 ha of seagrass meadows in Loch Craignish. They have already investigated and clearly mapped suitable areas, and there is widespread community support. More funding is required to facilitate this.
Restoration Forth	Outer Firth of Forth, Scotland	<u>WWF</u> (lead), the <u>Royal Botanic Gardens Edinburgh</u> , The Ecology Centre (Fife) and the Scottish Seabird Centre (East Lothian)	This project was initiated in early 2021, and is still in the investigation/feasibility stages. Together with local coastal communities, it aims to co-design a blueprint to restore and sustainably manage seagrass and oyster habitats in the Firth. Whilst potential restoration locations are yet to be confirmed, the project partners are confident that there will be areas suitable for seagrass restoration in the project area, and that a lot more money will be needed to undertake meaningfully-scaled restoration (from 2023).
Project Seagrass	Solent / Isle of Wight, wider UK	<u>Project Seagrass</u> (lead), WWF, Sky Ocean Rescue	This charity, which pioneered seagrass restoration in the UK (and has successfully restored 2 ha in Wales), is investigating opportunities throughout the UK. In SSEN's licence areas, it is supporting Seawilding (and others) in Scotland (see above); it is also actively pursuing three sites around the Isle of Wight, having started initial trials (and stakeholder engagement) this autumn. If the seeding trials prove successful, then Project Seagrass would like to restore 2 to 5 ha at each of the three sites. However, they would need substantially increased investment to do it at all of these high-potential sites (and also to facilitate more upscaling research and seed nursery establishment).
Solent Seagrass Project	Solent / Isle of Wight	<u>Hampshire and Isle of Wight Wildlife Trust</u> (HIWWT) (lead), Boskalis Westminster	Starting at one site near Seaview on the Isle of Wight this autumn, HIWWT has consent to undertake initial trials at four more sites around the Solent. Community engagement has been initiated. HIWWT is keen to start restoring at scale (i.e. several hectares) at several of these sites soon, uniquely pursuing both intertidal and subtidal <i>Zostera</i> restoration. Much more funding is required to fulfil these (and further) seagrass ambitions.
Recreation ReMEDIES	Solent	<u>Ocean Conservation Trust</u> (OCT) (restoration lead), <u>Natural England</u>	The overall project is led by Natural England, though the restoration effort itself is overseen by the Ocean Conservation Trust (OCT). This project has funding to restore seagrass at several sites in England, including the Solent, where 4 ha will soon be planted by partners. OCT wants to build on ReMEDIES and upscale seagrass restoration at other identified Solent sites (and elsewhere). Substantial additional investment is being sought to enable this.
Blue Marine Foundation	Solent, wider UK	<u>Blue Marine Foundation</u> (lead); University of Portsmouth, Zoological Society of London	Having pioneered oyster restoration in the Solent, Blue Marine is keen to branch out into integrated restoration projects, focusing on saltmarshes and seagrass meadows along with native oysters (to maximize symbiotic benefits). Blue Marine are currently investigating opportunities in the Solent, but also in other UK regions. In the Solent, they are in the early feasibility stages for this integrated approach, having held a workshop on the subject in early 2021. Funding is being sought to facilitate this early work and ultimately implement projects in a few years' time. 2 to 5 ha of seagrass meadow restoration is targeted for the initial phase.

We therefore have developed this CVP to concentrate on the following potential locations, with the highest short/medium term potential in our licence areas.



Areas with good short- and medium-term seagrass restoration potential in SSEN licence areas

We are ready to take the next step with regards to the partnerships and locations, to develop a fully formed list of sites and partners. However, this is contingent on the acceptance of this CVP. Notwithstanding, we feel that we have both a strong set of candidate sites where we would like to plant seagrass, but also a strong list of partners who we can develop a deeper and stronger positive coastal impact with.

Supporting government targets

On 14 June 2021, the government in England committed to delivering a “nature positive future¹⁹” in its response to the Treasury-sponsored Dasgupta Review on the Economics of Biodiversity. After introducing a new legally binding target for species abundance for 2030 in the Environment Bill, it is to table a new amendment that expands the biodiversity net gain requirement to all new nationally significant infrastructure projects. Scotland has failed to meet international targets on biodiversity including those on extinctions²⁰. Habitat loss, invasive non-native species and climate change are all a major threat to native species such as red squirrel, wild cat, Atlantic salmon, the capercaillie and the freshwater pearl mussel. The Scottish government plan to publish a new Biodiversity Strategy after CoP10²¹ to address these changes and in support of their Climate Change Plan “Securing a Green Recovery on a Path to Net Zero²²”.

¹⁹ <https://www.gov.uk/government/news/government-commits-to-nature-positive-future-in-response-to-dasgupta-review>

²⁰ <https://www.nature.scot/scotlands-biodiversity-progress-2020-aichi-targets-conserving-genetic-diversity-development-national>

²¹ <https://www.gov.scot/publications/scottish-biodiversity-strategy-post-2020-statement-intent/pages/6/>

²² <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

SSEN recognises the need to act now to help enable governments to meet their obligations and targets aligned with UK and global commitments to prevent biodiversity loss and support environmental net gain. As Scotland and Southern England's electricity distribution network provider, SSEN have an opportunity to support both governments with their ambition.

Cost Assumptions

We have worked with consultants to build a programme of activity which we believe reflects both the current status of work in this area, but adjusts for an expected decrease in cost of undertaking seagrass planting.

A high level Social return on investment (SROI) valuation has been undertaken, against a range of cost estimates per hectare, based on an equal split in urban/rural locations across both licence areas at up to 5 sites. The results indicate that seagrass restoration can be cost effective, though costs are still relatively high. We used a cost estimate of £155,000 per hectare on the assumption that costs would reduce over time.

Should this CVP be successful, then SSEN will help to restore 11 to 17 ha of seagrass restoration in both urban and rural locations. This will be accomplished by selecting four, possibly five, of the sites with high suitability from the English and Scottish projects listed above.

Whilst seagrass ecosystem service valuation and monetisation is not yet very mature in the UK, enough transferable evidence from abroad (and some relevant UK studies) has been found to undertake an indicative, and relatively conservative, valuation of some of the benefits. It is worth noting that seagrass restoration has been found to be of higher value in/near urban locations when compared to rural locations. This is because water quality benefits can be particularly substantial in urban areas (such as the Solent), and there are also more people/households nearby who are potentially willing to pay for seagrass restoration (as determined through contingent valuation methods). The SROI undertaken assumed that 50% of the schemes / hectareage would be in urban areas, and 50% in rural areas.

Restoration cost wise, given that only one project has to date been fully implemented, there is limited UK cost information available, as noted above. For our CBA we developed two scenarios²³ 1) a low cost scenario, at £100,000 per hectare, and 2) a high cost scenario, at £210,000 per hectare (based on Project Seagrass' actual costs for their Welsh pilot site, including some allowance for monitoring). These scenarios include capital, staff and monitoring costs. It is assumed that the (relatively costly) currently practised seed collection, processing and planting techniques are employed. Should ongoing (promising) upscaling research by several organisations be successful, then costs are anticipated to fall far below the low cost scenario in the medium term (possibly as low as £20,000 per hectare). Importantly, these new upscaling techniques would greatly reduce diving hours (diving costs are a key factor in current methods being so costly).

Based on the above assumptions and expectation that with scale, costs will reduce, we have used a medium range assumption for costs of £155,000 in our SROI to calculate the consumer value. There are a range of benefits, where values could reasonably be transferred from existing studies; namely those related to: fish

²³ A cost literature review was undertaken; this shows that seagrass restoration has the capacity to be very expensive, in large part due to it normally requiring a lot of diving effort; thus, costs tend to be higher than terrestrial plant restoration. A 2016 global review of seagrass restoration (Bayraktarov et al.) quoted median to average per-hectare costs of between £88,000 and £322,000 for seagrass restoration (2020 prices). Bayraktarov, E., Saunders, M.I., Abdullah, S., Mills, M., Beher, J., Possingham, H.P., Mumby, P.J. and Lovelock, C.E. 2016. The cost and feasibility of marine coastal restoration. *Ecol Appl*, 26, 1055-1074

habitat/food provision, water quality, carbon sequestration, existence value and biodiversity net gain²⁴. It was assumed that it would take 10 years for the seagrass bed to develop sufficient density and quality to fulfil related ecosystem functions and SROI has been taken across 30 years to demonstrate the full benefits to consumers.

In support of this CVP, we have undertaken both CBA and SROI analysis. We have adjusted in our SROI calculations, to align with the SROI model and for consistency in cross DNO valuation to be applied, which changes the reduces the anticipated benefits. Our more modest assumptions, and medium cost forecast demonstrate that over 30 years the following benefits are anticipated:

Hectares of Seagrass planted	10 year SROI (2023- 2032)				30 year SROI (2023- 2042)			
	Total cost, PV	Gross Benefit, PV	NPV	SROI	Total cost, PV	Gross Benefit, PV	NPV	SROI
17								
Low Cost Scenario - £100k per hectare	£1,588,847	£372,121	-£1,216,726	-£0.77	£1,588,847	£5,829,161	£4,240,314	£2.67
Medium Cost Scenario - £155k per hectare	£2,462,713	£372,121	-£2,090,592	-£0.85	£2,462,713	£5,829,161	£3,366,449	£1.37
High Cost Scenario - £210k per hectare	£3,336,579	£372,121	-£2,964,458	-£0.89	£3,336,579	£5,829,161	£2,492,583	£0.75

Table 12: SROI Analysis on cost scenarios

Our analysis finds that depending on the mix of urban or rural location, there can be a large variation in terms of impact. Urban locations, such as the Solent, can produce more significant consumer benefits, far in excess of the rural locations.

For example, in the Solent, where water quality can be quite poor at times, more seagrass beds would be particularly valuable for their nitrogen burial and cycling, as well as filtering and oxygenation properties. They would also provide a more desirable habitat for numerous animal species, most notably juvenile fish, including cod, bass and plaice. Overwintering birds would be able to feed on these new beds, for example, many of the thousands of geese who use the Solent as their overwintering location may graze on them. Breeding Terns who have colonies in the Western Solent (near Hurst) and the harbours of the Eastern Solent (notably Langstone) would be able to find more fish to feed their young. If carefully managed, then the local economies could benefit from additional recreational users (e.g. snorkelers) visiting to see the new beds, and there would likely also be spill over effects for local fishermen. If local communities were to get involved in

²⁴ Transferring values from the following studies:

Armstrong, S., Hull, S., Pearson, Z., Wilson, R. and Kay, S., 2020. Estimating the Carbon Sink Potential of the Welsh Marine Environment. NRW, Cardiff, 77p.

Cefas, 2021. Blue Carbon stocks and accumulation analysis for Secretary of State (SoS) region. Cefas, Lowestoft, 44p.

Cole, S.G., and P.O. Moksnes, 2016. Valuing multiple eelgrass ecosystem services in Sweden: fish production and uptake of carbon and nitrogen. *Frontiers in Marine Science* 2:121

Kragt, M.E. and Bennett, J.W., 2009. Using choice experiments to value river and estuary health in Tasmania with individual preference heterogeneity. Environmental Economics Research Hub, Research report No. 16, Crawford School of Economics and Government, Australian National University, Canberra, Australia.

Tuya, F., Haroun, R. and Espino, F., 2014. Economic assessment of ecosystem services: Monetary value of seagrass meadows for coastal fisheries. *Ocean & Coastal Management*. 96.

Watson, S.C., Preston, J., Beaumont, N.J. and Watson, G.J., 2020. Assessing the natural capital value of water quality and climate regulation in temperate marine systems using a EUNIS biotope classification approach. *Science of the total Environment*, 744, p.140688.

the restoration effort(s), then there would be substantial ‘feelgood’ benefits, as well as valuable educational opportunities.

As noted above, there are still some risks and difficulties with undertaking seagrass restoration, however, substantial investment is needed as this point to help mainstream and de-risk it, and SSEN want to play a key role in this important undertaking.



Taken by Andrew Pearson

Image: Anemone, scallop and seastar in English seagrass beds

Benefits

While the delivery of carbon reductions via Nature-based Solutions (NbS), such as seagrass, has uncertainty factors there are a range of wider environmental benefits that can be delivered. Namely the enhancement of natural capital and delivery of multiple ecosystem services. It is largely agreed that well-designed NbS can make an important contribution to reaching net-zero emissions, if combined with dramatic cuts in greenhouse gas emissions (e.g. by burning less fossil fuel)²⁵. Natural capital can be defined as the in the “**world's stocks of natural assets** which include geology, soil, air, water and all living things”²⁶. It is these natural capital assets that deliver a flow of significant benefits, often called ecosystem services, which make human life possible.

Seagrasses are flowering plants that live in shallow sheltered areas of our coast. Two species of seagrass occur in the UK; eelgrass (*Zostera marina*) and Dwarf eelgrass (*Z. noltii*). *Z. marina* typically occurs in shallow subtidal areas down to around 5 m depth, whereas *Z. noltii* is normally found in intertidal areas, though it can occupy shallow subtidal areas.

Seagrasses produce a plethora of benefits, most notably, seagrass beds ...²⁷:

- are **hotspots of marine biodiversity**, including protected and charismatic species, e.g. seahorses and pipefish;
- provide **valuable nursery habitat** to many fish and support the improved growth rate and survival of several high-value fish stocks (e.g. cod, herring, sea bass, plaice, pollock), and other marine fauna.

²⁵ <https://www.naturebasedsolutionsinitiative.org/news/on-the-misuse-of-nature-based-carbon-offsets/>

²⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/909202/ncc-terminology.pdf

²⁷ **Project Seagrass**; United Nations Environment Programme (2020). Out of the blue: The value of seagrasses to the environment and to people. UNEP, Nairobi, 96p; Reynolds, P., 2018. Seagrasses and Seagrass Beds, Smithsonian NWNH. Available at: <https://ocean.si.edu/ocean-life/plants-algae/seagrass-and-seagrass-beds>

- One acre of seagrass can support upwards of 40,000 fish and 50 million small invertebrates. There is between 30 and 40 times more sea life found in seagrass, than a patch of seafloor that does not have vegetation.
- help **prevent costal erosion**, and provide some protection from floods and storm surges;
- are **important to people** – e.g. for recreation (diving, snorkelling, birdwatching and fishing); they also provide a sense of identity for coastal communities;
- substantially **improve water quality** – mainly as a result of remineralisation and burial of nutrients and nitrogen fixation, but also through water filtration and oxygenation (one square meter of seagrass can generate 10 litres of oxygen every day through photosynthesis);
- **sequester carbon**; they store large amounts of carbon in the biomass and sediment below, helping to mitigate climate change. While seagrasses occupy only 0.1% of the total ocean floor, they are estimated to be responsible for up to 11% of the organic carbon buried in the ocean. One acre of seagrass can sequester 740 pounds of carbon per year (83 g carbon per square meter per year), the same amount emitted by a car traveling around 3,860 miles (6,212 km). As noted above, seagrasses can store carbon much faster than terrestrial ecosystems/forests. Their roots and leaves store carbon, but the difference is that seagrasses (and other marine systems such as saltmarshes and mangroves) store most of the carbon in their soil. They also do this more quickly than new forests, as improved storage in the soil commences as soon as shoots have developed. And unlike that of land forests, that soil is constantly building, using particles from the ocean and sediment from land runoff.
- provide many other benefits, including disease control, reduced ocean acidification, sediment stabilisation, bird food provision (e.g. Brent Geese, Swans, Wigeon), etc.

The main quantified benefits from the SIA analysis are as follows:

- Carbon sequestration - varies per year but in range of £6,000 to almost £21,000 per hectare per year.
- Water Nitrogen and Phosphorus – societal benefit of £31,070 per hectare per year.
- Increase in commercial fishery stocks – £675.60 per hectare per year.
- Biodiversity net gain - £110,000 one off societal benefit attributed.

For consistency, there were no network avoided costs attributed to this CVP.

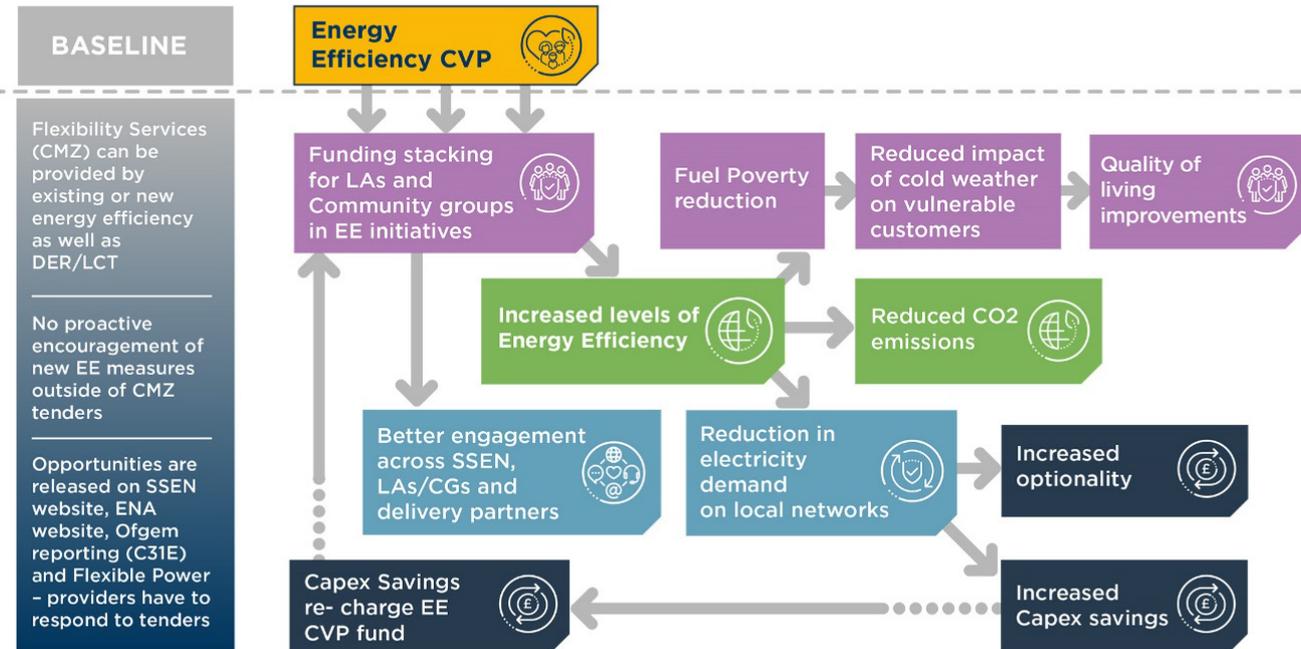
ENERGY EFFICIENCY ACCELERATOR FOR SMARTER NETWORKS

Our proposal

We will work with Local Authorities, Community groups and local partners to deliver specific energy efficiency interventions, providing a reduction in baseline and peak demands on the electricity network and delivering real benefits in alleviating fuel poverty and quality of living for our customers. Using knowledge gained from successful projects such as SAVE, where partnerships with locally recognised organisations improved acceptance and uptake of interventions, we will look to increase the level of energy efficiency measures in local areas through targeted funding, engagement, collaboration with wider initiatives supporting interventions through our partners.

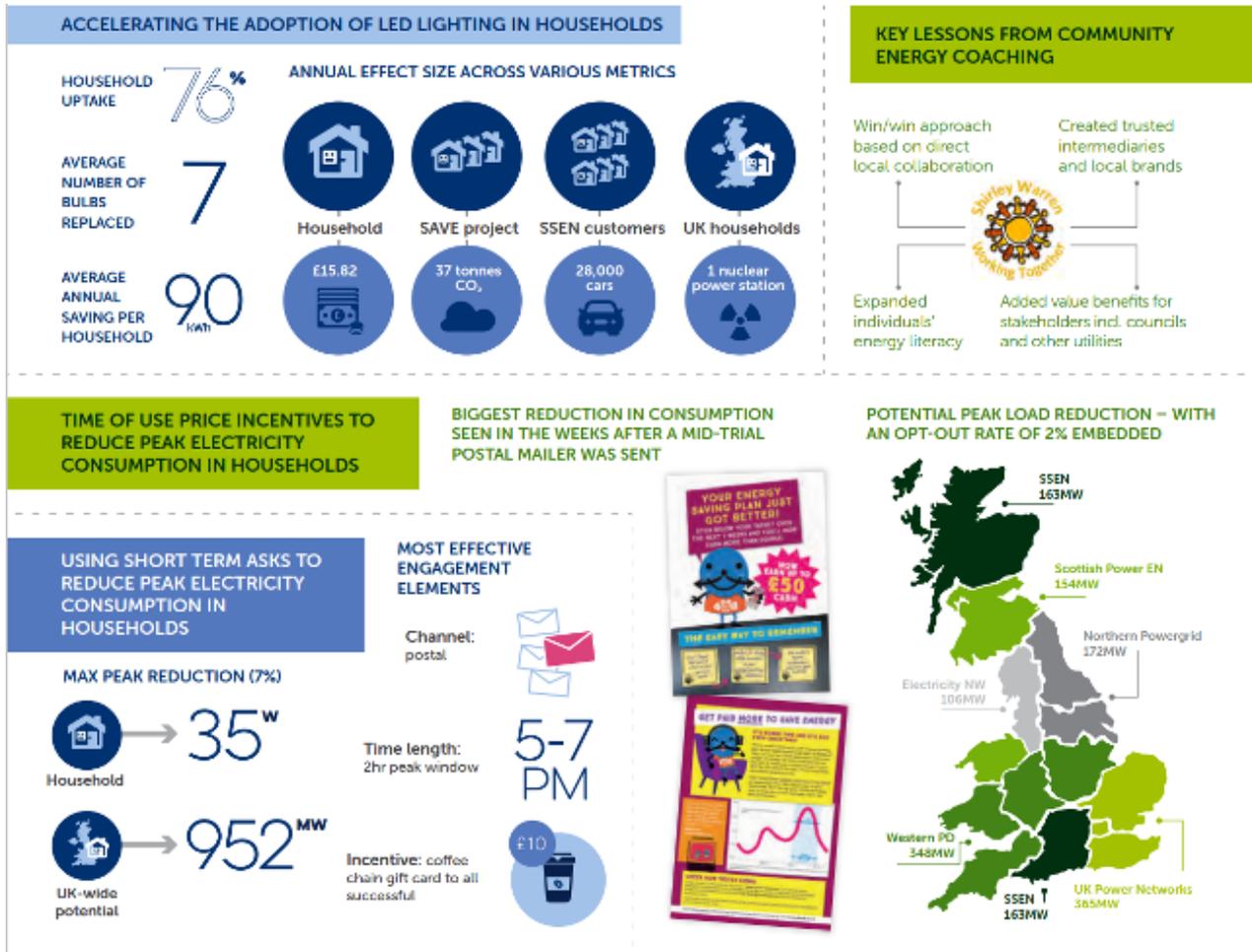
We will agree partnerships in identified areas with Local Authorities, Community groups and other organisations to identify optimum households, interventions, delivery processes and the opportunity to stack funding in a zone by zone basis. Energy Efficiency devices will be installed in customer properties by local partner organisations, properly vetted and contracted as part of the design phase of the proposals. These interventions will generate background and peak load reduction as the key benefit to our networks, while importantly reducing energy consumption for our customers, reducing fuel poverty and increasing levels of comfort and quality of life improvements.

ENERGY EFFICIENCY CVP



The SAVE project learning is crucial for this CVP as this is where we successfully trialled the implementation of Energy Efficiency indirectly through partnerships with locally recognised organisations, such as Local Authorities and Community Groups. Through these partnerships the project successfully delivered LED installations, price signalling and data informed events such as 'Big Switch off's' which targeted peak times to turn appliances down or off, community energy education and coaching.

The strength of the SAVE approach to delivering local interventions is the ability to inform and incentivise behaviours at the local level, using partnerships to break down engagement barriers so often apparent between customers and energy industry incumbents such as DNOs, providing a more accessible, effective engagement point for customers. The Project also successfully supported the formation of a new, active Community Group which were able to deliver the energy reduction/efficiency messaging as well as delivering specific societal benefits for the local community outside of the energy agenda. Overall, the SAVE project was a significant facilitator in how supporting Energy Efficiency can achieve network benefits as per the diagram below, but also the societal benefits and best routes in how these can be supported by networks.



The proposal does not focus on nor is it exclusive to one Energy Efficiency intervention over another, for example we recognise that LED lighting may have some impact in some properties but others may need insulation, glazing or new smart devices. We do however recognise the variation in cost and complexity in installing the range of solutions now available, and that these variances also impact the following Social Return on Investment (SROI) benefits which can be achieved. We have based the cost profile for the CVP and the resultant SROI on a conservative mix of different interventions to try and be as reflective as possible of the potential outputs of the proposal when implemented. Despite this, we feel it is critical to avoid limiting the proposal to one or two interventions, as we feel this could unnecessarily limit the customers who could benefit from this proposal and have instead opted to assessing the right interventions on a zone by zone basis in partnership with locally knowledgeable organisations and authorities.

We also recognise that more regional or national bodies, such as Community Energy, Community Energy Scotland and the Energy Hubs offer significant ability to support this proposal on a central and zone by zone basis, for example through experience of stakeholders, knowledge of funding opportunities and awareness of ongoing schemes and initiatives. Through our engagement we have received expressions of interest and support from these groups and consider their experience and support essential to the successful delivery of the proposal, as such we will maintain engagement on an overarching and zone specific basis with these regional and national groups as we move into delivery.

How engagement has influenced our proposal since Draft

Theme	Engagement event(s)	What stakeholders said	What we are doing about it
Engagement Approach	Flexibility CVP Local Authorities workshop Savanta Domestic Customer Energy Efficiency Survey Flexibility Academic Panel	<ul style="list-style-type: none"> SSEN should pursue a wide-ranging engagement approach in this area, which includes funding and creating synergies between local bodies. The latter being particularly important due to SSEN's intended role of acting as a hub for sharing knowledge. Engagement with landlords and affordable housing providers (via local authorities) was seen as an important way to create a clear picture of how initiatives would work within the local authority operating model and to ensure the largest effect with any projects. It was also suggested that SSEN consider engagement with its supply chain around upskilling, to solve difficulties faced by Local Authorities in finding workers with the skills to roll out energy efficiency projects. 	<p>We want to act to support energy efficiency and to complement and strengthen uptake, through matched support to already available funding streams. For clarity, we believe that our investment can pull schemes across the threshold of viability, and we are not seeking to compete with existing funding pots.</p> <p>We've reflected on how to present our ambition in this space and have provided a clearer narrative around our proposed actions.</p> <p>We have listened to feedback and recognise the potential for this CVP and the Flex market stimulation CVP to be delivered by a single team, enabling more sustained support to Local Authorities and Community Groups in the delivery of these initiatives.</p>
Energy Efficiency Measures	Savanta Domestic Customer Energy Efficiency Survey Flexibility CVP Local Authorities workshop	<ul style="list-style-type: none"> There is a lack of financial support and advice for vulnerable customers in increasing energy efficiency in homes, however, there is also huge demand but very little support and advice for the 'able to pay market' Stakeholders recommended we explore a dual approach targeting both vulnerable customers and the 'able to pay market' to deliver both additional financial and social benefits SSEN needs to consider how the EE CVP would interact with other energy efficiency mechanisms operating across its license areas to avoid duplication of efforts and similar energy efficiency mechanisms competing against each other 	<p>We have clarified that all TOTEX savings facilitated by energy efficiency deferring reinforcement will be used to 'top-up' the EE fund, expanding the fund and enabling more interventions over the price control</p> <p>This CVP will seek to target areas with high proportion of vulnerable and fuel poor first. We will expand our criteria to also prioritise customers that may be 'able to pay' but are potentially 'excluded' from the energy transition due other reasons (e.g. building constraints)</p>

What we will provide

We will target investment at network hotspots to address network constraint issues, attempt to defer investment, help to increase the uptake of energy efficiency measures more widely and for people to be encouraged to access funding routes, options that are available to them presently.

Initially we propose to fund four types of demonstrably effective energy efficiency interventions in the housing stock of our domestic consumers. The table below captures an example of four likely initial interventions along with a summary of their benefits. We have selected interventions that are proven, reasonably well understood and they are replicable and potentially scalable in different local community settings. We will add new interventions as we gain more experience and insights from our stakeholder engagement.

Intervention	Description	Typical installation cost per household
LED Light Bulbs	Compared to traditional incandescent bulbs, energy-efficient lightbulbs such as light emitting diodes (LEDs) can last 25 times longer and use about 80% less energy than traditional incandescent, saving customers money. As part of the SAVE project trial participants were offered different marketing strategies to test how these effected uptakes of energy efficiency. These included discounted LED bulbs and also LED bulbs installed at zero cost to the participants, each tested across two distinct trial periods. The network impact was assessed as taking 7% off the peak demand at the local substation.	£100-150
Smart Storage Heating	A collaboration with Shetland Islands Council, Hjaltland Housing Association and Shetland Heat Energy and Power. NINES replaced old inefficient storage and water heaters in 750 houses with modern 'smart' storage heaters which help to balance the electricity network. More information about NINES can be found here .	£10,000-12,000
Home Insulation	Benefits include reduced energy bills, a reduced carbon footprint and more obviously, a much warmer home. The UK has some of the oldest housing stock in the developed world and consequently has some of the most inefficient housing in terms of heat retention and energy consumption. Much of the heat lost in homes is through the walls and loft. Around 25% of the heat that is lost is through the roof with 35% lost through the walls and another 10% lost through windows. By having 10cm of fiberglass insulation fitted in the loft you can realise a potential reduction in heat loss of 75% in that area of the building. An estimated 35% of the UK's carbon emissions come from everyday things in the home. Insulated homes help to reduce this figure and, in return, reduce the cost of heating.	Loft - £300-500

Intervention	Description	Typical installation cost per household
Smart Controls	Energy bills can be reduced by using smart technological devices such as a smart thermostat, smart lighting, remote power management, water heaters, washing machines, and fridges as they can optimise the use of energy and in turn, use less of it to do more. Smart technology automates repetitive chores and eliminates lost or wasted time.	£250-500

Table 13 – Interventions

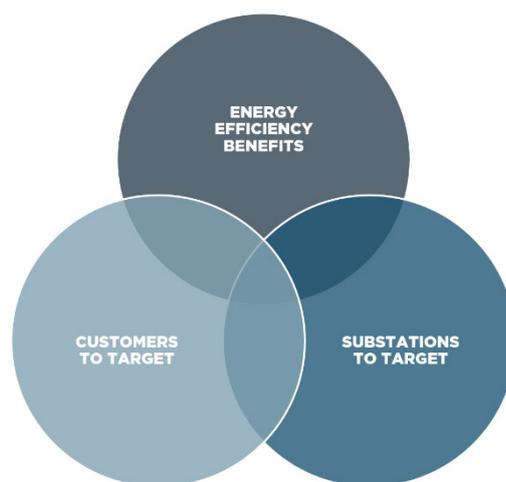
This CVP will help to drive a wider acceptance and interest in energy efficiency, beyond purely reduced consumer bills, although we acknowledge that this will be a primary driver in household invention uptake rates. We are developing a list of candidate sites (which we will refine between July and December), but using our triangulation approach we have a range of locations, which will require different levels of intervention. We will continue to evaluate and refine our interventions and measures throughout the period, to drive the behaviours that we are looking to see from an energy efficiency and network impact perspective.

Insights and Learnings

Throughout ED1 we have invested in the underlying core systems and knowledge needed for smart grids and development of DSO capabilities. **Learning by doing** has been a central part of this and we continue to play a lead role in over **22** innovation projects. Collaboration with our stakeholders, local authorities and partners, the Energy Innovation Centre and with other DNOs, through the Energy Networks Association’s Open Networks Project, has been central to this.

Using three key learnings, from our recent innovation and current investment in DSO capabilities, this Consumer Value Proposition (CVP) repurposes existing customer-funded work to promote energy efficiency and benefit domestic consumers, vulnerable customers and the network. These three separate outputs provide invaluable insight and enable us to identify opportunities for the deployment of energy efficiency interventions in our domestic customers’ housing stock.

The insights are summarised in the diagram on the left – in short, from **learning by doing**:



We have designed this CVP because we have confidence in the following:

- **We know the potential energy efficiency benefits** that can be realised in our license areas. Our industry-leading [work with Regen](#) has mapped the potential for demand reduction through a

range of energy efficiency interventions across our license areas and our innovation work under [Project SAVE](#) has demonstrated the potential of energy efficiency measures.

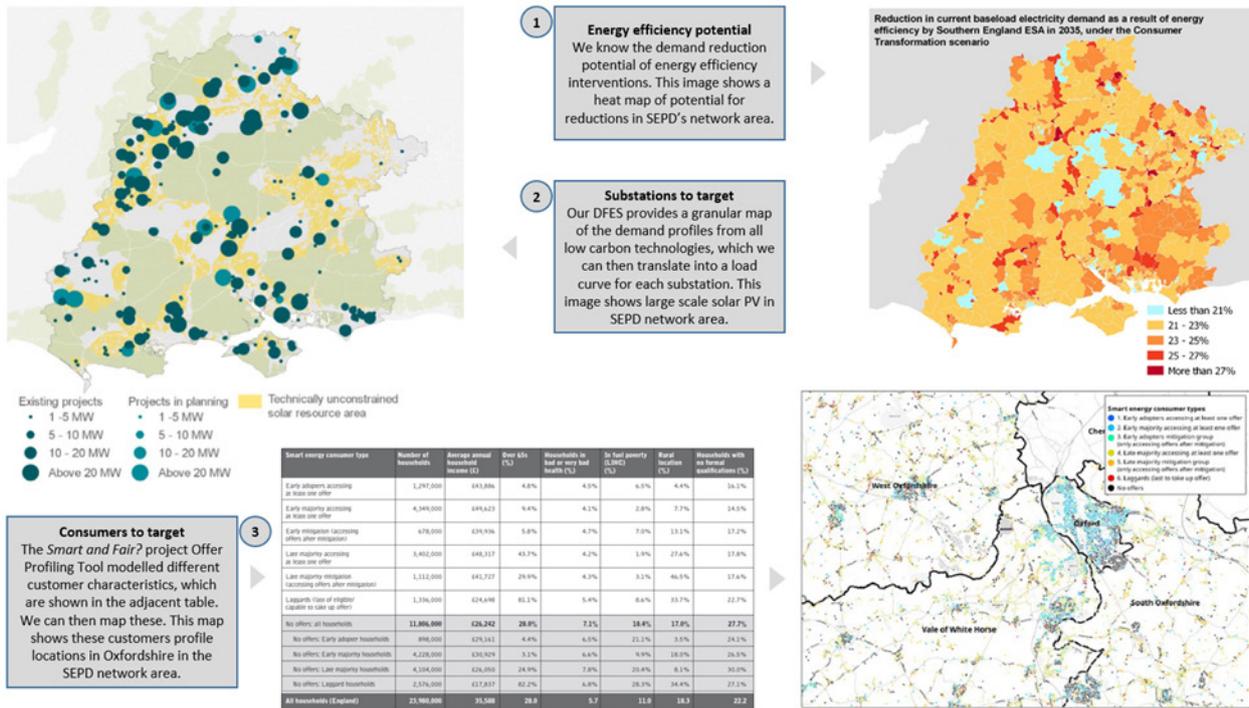
- **We know which substations to target** across our license areas. Our annual [DFES](#) maps the uptake of all Low Carbon Technologies (LCT) under a range of scenarios out to 2050 on our network down to 11kV and we increase the granularity down to LV feeders for EVs, Heat Pumps and Roof-top Solar. This analysis is translated in to a load-curve for each substation that identifies pinch-points on the network.
- **We know which customers to target** for the maximum consumer benefit. Since 2019 SSEN have supported the Centre for Sustainable Energy's innovative [Smart and Fair?](#) programme of work. Phase One successfully informed and moved forward the debate about how the transition to a smarter energy system can achieve fair outcomes and ensure that no one is left behind. By developing more comprehensive analytical techniques (Capability Lens, Offer Profiling Tool and Consumer Classification Model) and contributing new insights, the programme's work has already improved understanding amongst stakeholders and policymakers of the challenges and opportunities which need to be addressed as the system develops. Phase Two, which has just launched, will focus on; (a) extending and validating the data analytics to cover the whole of our license areas and enhance the reliability and accuracy of its predictive capability and (b) providing tailored strategic and operational inputs to relevant business plan outputs.

We bring together three learnings from our ED1 investments and experience. The diagram below shows that by triangulating the outputs from each we can identify high potential opportunities to deploy energy efficiency interventions.

We consider this CVP as an innovative, pragmatic and efficient use of our existing tools and knowledge that we can reuse to empower the communities we serve while addressing a particularly difficult decarbonisation challenge. At the same time, we can realise the full potential from our existing suite of tools through this CVP.

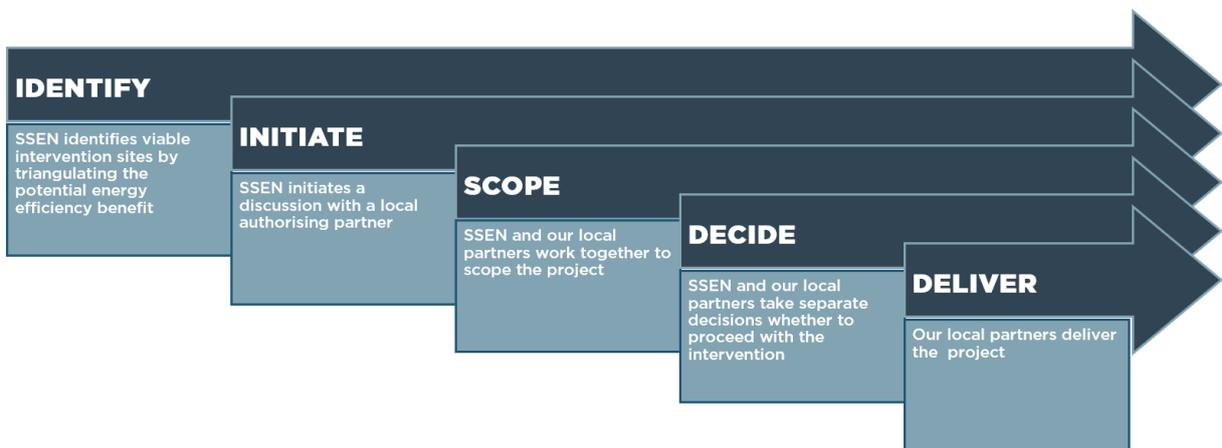
The Smart and Fair? work, in particular, adds valuable insights to the network analysis carried out by Regen. The illustrative results presented in this report demonstrate the Model's potential power in predicting how likely different consumers are to participate in the offers associated with the transition to a smarter energy system. It can reveal, profile and map the types of households who are most - or least - likely to be able to participate.

The specific results of this analysis reported here are subject to the significant caveat that they depend on the accuracy of the characterisation of the offers using the Offer Profiling Tool and of the association between attributes and consumer data in the Consumer Classification Model. This includes the positioning of consumers on the adoption curve. The analysis also assumes mitigation interventions as presented are fully effective.



By triangulating our knowledge, we can target specific hotspots on our network. We anticipate that to maximise benefits that this would be best delivered through a partnership approach, working with local enterprise partnerships and local authorities across our networks, to identify 'sweet spots' in funding and issues and then to roll out interventions through enabling partners. We anticipate that this investment will cost in the region of £23m when phased across RIIO-ED2.

Our approach will form 5 steps. The process is designed to be replicable and scalable with any of our interventions and identified local partners throughout RIIO-ED2.

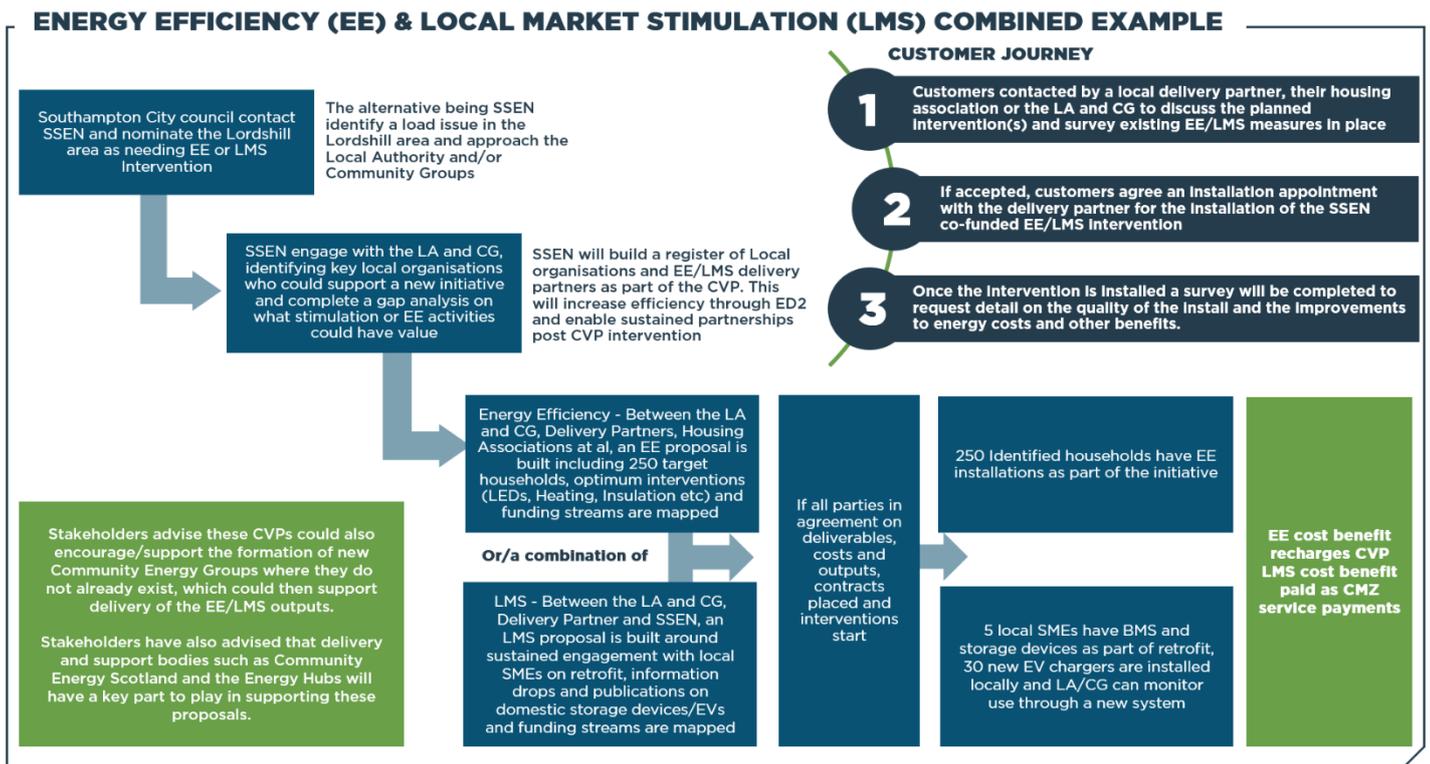


- 1. Identify** – A) We identify energy efficiency opportunities in our network area by triangulating the outputs from our demand reduction analysis, our DFES LV demand profiling and the suite of artefacts from the *Smart and Fair?* project. The output of this step can be thought of as developing a three-tiered overlapping heat map of different energy efficiency opportunities. This exercise can be repeated as and when new and better information becomes available. For example, when we publish an updated new DFES. B) A local Authority or Community Group

contacts us with details of an area to be considered for intervention, we then use the same triangulation method to review the opportunity alongside any local data provided as part of the submission.

2. **Initiate** - We will engage with local organisations and authorities to identify and initiate discussions with a lead local authorising partner on the identified energy efficiency opportunity. We will apply a set of criteria to evaluate which opportunities to start a dialogue with local partners to then scope and potentially deliver the energy efficiency project. We will then apply the same criteria to decide whether to approve the scoped project.
3. **Scope** - This step develops the identified opportunity into a proposed scope of work. Working with our local partners, we will work together to scope the project. As part of this step we would agree the project scope, including the intervention or interventions to deploy, to how many customers will be included, confirm the supply chain requirements, the delivery timeframe and milestones as well as exploring any additional sources of funding which could be stacked alongside the CVP funding and the formation and circulation of draft contracts and agreements.
4. **Decide** - In this step our local partners and ourselves take separate decisions whether to proceed with the project. This decision would need to follow the respective internal processes of each organisation. If agreed, we would enter into a contract with the local authorising partner to deliver the scope. We would then convert the approved scope of work into a contract and sign it with the local partner as a binding agreement to deliver.
5. **Deliver** - Our local partners deliver the energy efficiency project and provides updates at each agreed project milestones to us. We will transfer the funding to the local partner at the agreed project milestone.

- An example of how this CVP will be delivered is below;



1The value that we can unlock through this CVP²⁸ has been calculated to be up £7.1m (NPV) through SROI. We are proposing to bring together the three separate learnings from our ED1 investments and experience, as outlined above. This CVP as an innovative, pragmatic and efficient use of our existing tools and knowledge that we can reuse to empower the communities we serve while addressing a particularly difficult decarbonisation challenge. At the same time, we can realise the full potential from our existing suite of tools, on a larger scale, through this CVP.

Areas with a high percentage of demand reduction are typified by domestic homes not heated through electricity, where domestic electricity consumption is predominantly from appliances and lighting and therefore decreases relatively quickly. The interventions shown in Table 7 above will remain under review throughout RIIO-ED2 and we will explore the best way of addressing energy efficiency in the large number of homes we have off-gas in our Scottish license area. Table 8 provides more detail on the insights that underpin this CVP.

²⁸ The SROI shown is the combined Energy Efficiency Accelerator and Local and Community Flexibility Markets.

Project / Activity	About	Output	Key learning
Solent Achieving Value from Efficiency (SAVE)	This innovative programme evaluated the potential for domestic customers to actively participate in improving the resilience of electricity distribution networks and thereby defer the need for traditional reinforcement.	Greater control of peak load brings benefits to both DNOs and customers through monetary means but assumes a wealth of social benefits; mitigating the disruption caused by reinforcement works, limiting the most CO2 intensive forms of consumption, facilitating the adoption of low carbon technologies and allowing for a priority response to (vulnerable) customers in power outages.	The project installed 6,135 bulbs, with 76% of participants accepting the LED bulbs, across 882 properties for an average of 7 bulbs per household. The maximum observed change in energy consumption during the peak period was 47 Watts per household. The main rollout occurred between October 2017 and February 2018.
Northern Isles New Energy Solutions (NINES)	A collaboration with Shetland Islands Council, Hjaltland Housing Association and Shetland Heat Energy and Power. NINES replaced old inefficient storage and water heaters in 750 houses with modern 'smart' storage heaters which help to balance the electricity network.	This project deployed new technology on the network that will allow more small-scale renewable generators to connect to the network and introduced new commercial arrangements to encourage businesses to change the times at which they use most energy.	The importance of educating the tenants and end users in the 'proper' way to use any technology correctly to maximise its use.
Distribution Future Energy Scenarios (DFES)	We commissioned Regen to understand how the demands on our networks are likely to change over the next decade. This will help us plan how we will support our demand or generation customers through network investment or flexibility.	To support this process, we commissioned Regen to complete a set of future electricity scenarios for our Southern and Northern network distribution licence areas out to 2050. These studies are informed by National Grid's Future Energy Scenarios.	The analysis identifies key future pinch points on the network that enable us to plan ahead of time and assess a range of network solutions.

Project / Activity	About	Output	Key learning
Smart and Fair?	Since 2019 SSEN have supported the Centre for Sustainable Energy's innovative <i>Smart and Fair?</i> programme of work. Phase One successfully informed and moved forward the debate about how the transition to a smarter energy system can achieve fair outcomes and ensure that no one is left behind.	By developing more comprehensive analytical techniques and contributing new insights, the programme's work has already improved understanding amongst stakeholders and policymakers of the challenges and opportunities which need to be addressed as the system develops.	Building on the success of the first phase, Phase Two will focus on; (a) extending and validating the data analytics to cover the whole of our license areas and enhance the reliability and accuracy of its predictive capability and (b) providing tailored strategic and operational inputs to relevant business plan outputs.
Regen Energy Efficiency Analysis	We commissioned Regen to undertake a high-level scenario analysis of the impact of energy efficiency measures in SSEN's Southern England and North of Scotland license areas, expanding on the recently released 2020 edition of SSEN's Distribution Future Energy Scenarios.	There is uncertainty over the level of demand reduction that can be achieved through energy efficiency, which is reflected in the range of scenario outcomes. The impact of energy efficiency was modelled using existing and proposed policies, current trends and abatement measures identified as commercially feasible. By 2035, the impact of energy efficiency on the current baseload electricity demand ranges from 7% to 29%, depending on the scenario.	Regen's study uses extensive research and data analysis to look at how existing and future electricity demand for heat, appliances, lighting and industrial processes may change in the coming decades across homes and businesses in SSEN's license areas as a result of energy efficiency measures. Electricity networks are already expecting big increases to demand as electric vehicles, heat pumps and new developments come online - energy efficiency can help to mitigate some of this impact.

Table 14 – Insights and key learnings

Further Development

We recognise that local authorities and their communities have a role to play in supporting the net zero transition. Building on the experience gained from numerous innovation projects we know that collaboration and partnership working is a critical component of this CVP.

We will seek to work with local authorising partners as part of this CVP. We will take a different approach in each of our network areas, reflecting the differences between our licence areas in England and Scotland.

- In SEPD we will work through Local Authorities and Local Enterprise Partnerships (LEPs). LEP's are business led partnerships between local authorities and local private sector businesses. They play a central role in determining local economic priorities and undertaking activities to drive economic growth and job creation, improve infrastructure and raise workforce skills within the local area. There are 7 LEPs in the SEPD network area.
- In SHEPD we will work with the 13 Local Authorities in our network area. There is no LEP equivalent in Scotland.
- In both regions we recognise the importance of Community Energy Groups and other organisations, such as charitable groups and more regional partners such as Energy Hubs and Community Energy Scotland. We will work with these organisations and partners on a zone by zone and overarching basis to ensure the success of the CVP.
- We propose to work with all stakeholders to develop and implement a transparent and inclusive selection process for the interventions which could be applied from zone to zone, based on the economic, societal and carbon benefits of those interventions to ensure the optimum solutions are selected for each area. This will ensure a fair and transparent process of selection can be used in each area, despite the potential difference in the numbers and costs of intervention from one zone to the next.

In addition, in conjunction with our authorising partners, we will work with enabling partners who will deliver the intervention on the ground. This could be a community group or a commercial aggregator/supplier. We are confident this approach will accelerate many energy efficiency investment aspirations past the tipping point and make them a reality for our partners.

We envisage our CVP will be able to be used to deliver targeted energy efficiency interventions at areas of highest need. We continue to work on the list of candidate sites, that reflects current network constraints and issues. We will work with our local partnerships to target this investment to maximise consumer and network benefits. We will look to cap the level of investment for each location, at 10% across the 5 years, but our support at a partnership level will be within the range 25-50%. This is partly to encourage earlier uptake and provide a strong signal to our partners in both the value of the intervention and approach that we are setting out and to secure these benefits for all consumers as early as possible.

For the Energy Efficiency CVP we propose to 'recharge' the CVP budget by allocating the NPV achieved through demand reduction back into the CVP fund, this enables the potential to expand the interventions and societal benefits beyond initial expectation and also ensures the benefits from deferred or avoided network investment are properly allocated back to our customers. Energy Efficiency services which responded to standard CMZ procurement events or tenders would be subject to payments over time in response to the provision of those services, with no initial or front-loading of payments. Our CVP hopes to encourage the same services but will inject the initial finance required to accelerate the uptake of the Energy Efficiency interventions, while this negates the need for ongoing service payments we should still see benefits from the deferral of network investment, hence this recharge and subsequent reporting of these benefits will ensure transparency and fairness in the delivery of the CVP.

Cost Assumptions

Our CVP is based on the following costs:

- **Administrative costs:** These are fixed internal costs to SEN that cover our administration of the CVP. These costs include the total costs of 5 additional full-time equivalent staff members and minor annual updates to our energy efficiency and suite of customer profiling tools.
- **Energy efficiency investment costs:** This is the maximum amount we will contribute to energy efficiency projects over the course of RIIO-ED2 through this CVP. We consider this to be a single funding pot to invest from over the course of RIIO-ED2. We have set this invest out using an indicative backloaded profile as we anticipate that certain interventions will be replicable and scalable throughout the period.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Administrative costs	£554,793	£554,793	£554,793	£554,793	£554,793	£2,773,964
Investment costs	£1,004,359	£2,410,461	£4,017,435	£5,624,409	£7,030,511	£20,087,174
Total costs	£1,559,151	£2,965,254	£4,572,228	£6,179,202	£7,585,304	£22,861,138

Table 15 - Total cost breakdown

Table 16 sets out an indicative number of household installations we could deliver per year for this amount of financial investment, using a 50% co-funding model. We describe these different funding models in the benefits section below. As above, we apply the same indicative backloaded profile. This profile is indicative as the composition of the different interventions could change, new interventions could be added during RIIO-ED2 and the year to year deployment could change.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
LED light bulbs	5,000	12,000	20,000	28,000	35,000	100,000
Smart Storage Heating	100	240	400	560	700	2,000
Loft insulation	250	600	1,000	1,400	1,750	5,000
Smart controls	250	600	1,000	1,400	1,750	5,000

Table 16 – Household Installations

The investment required to deliver this CVP will be set initially at £20m, which will be utilised in projects that have a demonstrable benefit to the network in terms of reducing demand or slowing demand growth.

We have developed a simple set of approval criteria to evaluate energy efficiency opportunities and energy efficiency projects (opportunities that have been scoped with our local partner). This ensures the decisions we make hold up to both Ofgem and SSEN scrutiny while delivering the best possible outcome for consumers:

- **Outcome focused** - the project should encourage the delivery of the desired outcome
- **Value for money** - the project should deliver benefits to our consumers
- **Proportioned** - the project should not put an unreasonable burden on SSEN or our local partner (a key facet of this is the funding split between SSEN and our local partner)
- **Deliverable** - we are confident in our local partner's ability to deliver the project
- **Verifiable** - there should be milestones or data available to track the delivery of the project
- **Fundable** - there are enough funds available to commit to the project

Consumer Benefits

The benefits are as follows:

Environmental impact – through avoided carbon emissions as energy efficiency interventions are proven to reduce customers' energy consumption. This provides an additional benefit of less CO₂ being emitted into the atmosphere.

Economic impact through

- **Avoided network reinforcement** – Like flexibility services, energy efficiency interventions can provide benefits to network users in by deferring, displacing or avoiding the need for network reinforcement. In the context of this CVP these benefits relate to the need to reinforce local substations.
- **Lower bills** – Energy efficiency interventions are proven to reduce customers' energy consumption, which translates into lower final electricity bill. The magnitude of the benefit is dependent on the type of customer and their electricity consumption patterns.
- **Local Authorities and LEPs Investment savings** by contributing a proportion of their planned spend helps our local partners do more with the same budget.

Social impacts as the poorest households tend to pay the most in energy bills.²⁹ Using the analytical techniques developed as part of the *Smart and Fair?* programme of work we understand how a smarter energy system can achieve fair outcomes and ensure that no one is left behind. Fuel poor or vulnerable

²⁹ BEIS, Annual Fuel Poverty Statistics in England, 2020

customers stand to benefit the most from these interventions. Table 3 shows the estimated average annual benefit for each intervention split by each of the above benefit categories.

Benefit category	Environmental	Economic	Economic	Societal
<i>Benefit type</i>	<i>Estimated annual carbon savings per installation (kg CO2)</i>	<i>Estimated annual avoided network reinforcement per installation (£)</i>	<i>Estimated annual customer saving per installation (£)</i>	<i>Estimated average social benefit per installation (£)</i>
LED light bulbs	24.8	8.0	17.7	1.4
Smart Storage Heating	202.9	11.4	213.4	956.4
Loft insulation	48.4	0	9.7	947.7
Smart controls	320.0	0	75.0	962.9

Table 17 – Average annual benefits

The main quantified benefits from the SIA analysis are as follows:

- Annual customer bill saving from energy efficiency measures – £23.37 per household per year
- Behavioural change from energy efficiency advice (annual bill savings) - £44.80 per household per year
- Carbon benefits from energy efficiency measures (Greenbook traded carbon price – central scenario)
- Quality of life improvements due to energy efficiency measures - £13,200 per customer
- Reduction in negative impact of cold weather on customers' health (QALY) - £2,760 per customer³⁰
- Customers feel in better control of their lives – £82.1 per customer per year³¹

Our analysis was based on an average annual benefit per household installation, we think there are two areas we could potentially outperform the applicable average, thus increasing the net benefits for consumers.

- By applying our three key learnings we can identify and prioritise a higher proportion of vulnerable customers with our interventions thus increasing the social benefits.

³⁰ [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595339/IPOL_STU\(2016\)595339_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595339/IPOL_STU(2016)595339_EN.pdf)

³¹ <https://www.pssru.ac.uk/pub/uc/uc2018/sources-of-information.pdf>

- The avoided network reinforcement benefits are dependent on the selected sites, by targeting highly utilised parts of our network we could potentially increase the network benefit.

LOCAL AND COMMUNITY FLEXIBILITY MARKET STIMULATION

Our proposal

We will increase local flexibility market participation by empowering communities we serve – including vulnerable customers – to participate in the provision of system services. Utilising the learnings from our Northern Isles New Energy Solutions (NINES) innovation project and our work on a “Smart and Fair” transition, we plan to pursue opportunities to stimulate community flexibility markets.

We know that local energy market evolution will vary between region and city, we already see disparity in the numbers of Flexibility Service providers from zone to zone especially from a community based or domestic service perspective. We plan on releasing over £6m in Flexible Service payments across RIIO-ED2 and this CVP ensures as great a percentage as possible of those payments are able to go to communities and local areas ensuring that nobody is left behind. The images below show the comparison between Flexibility Service Zones we released in 2020, and those zones where we actually received Market responses.

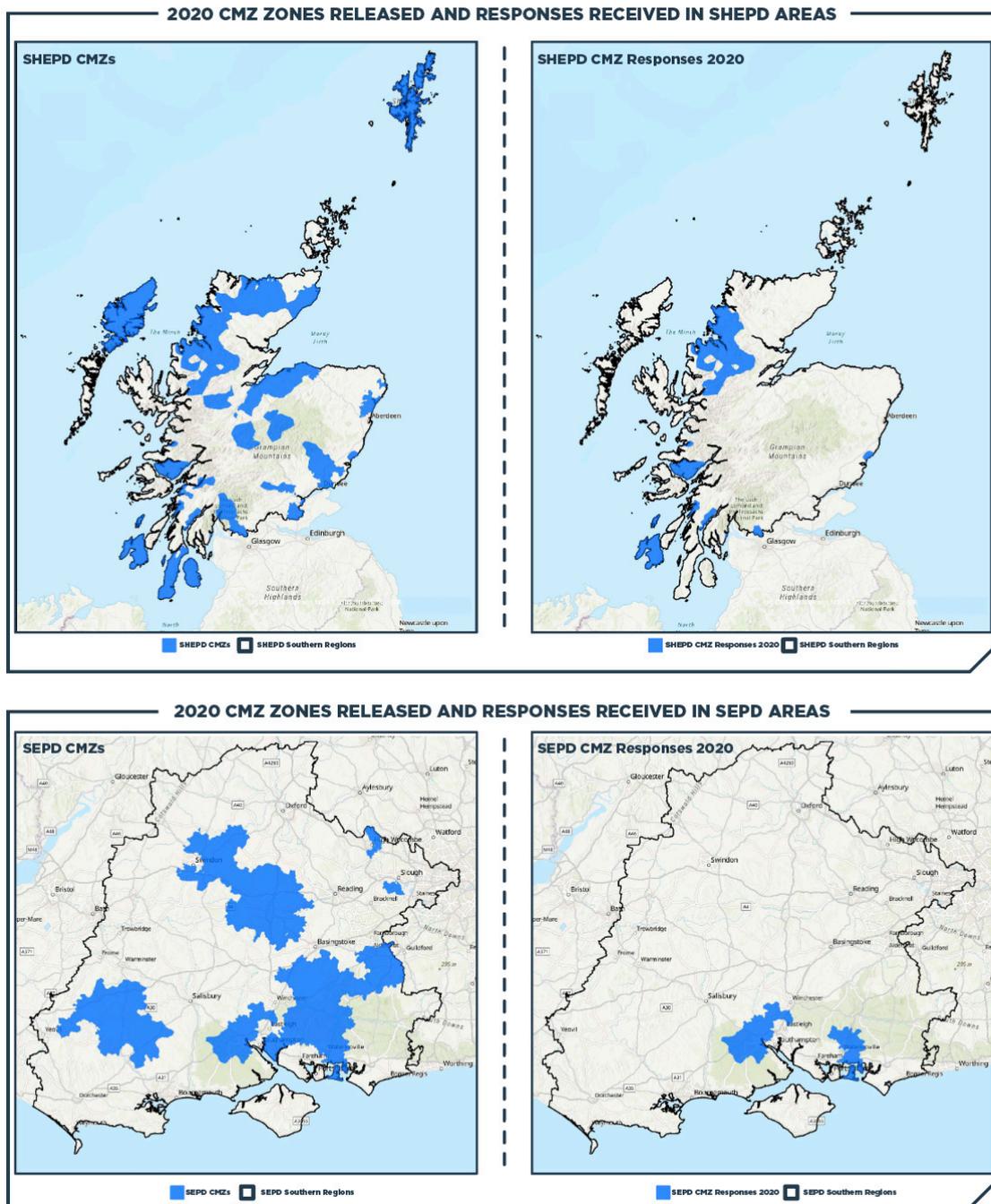
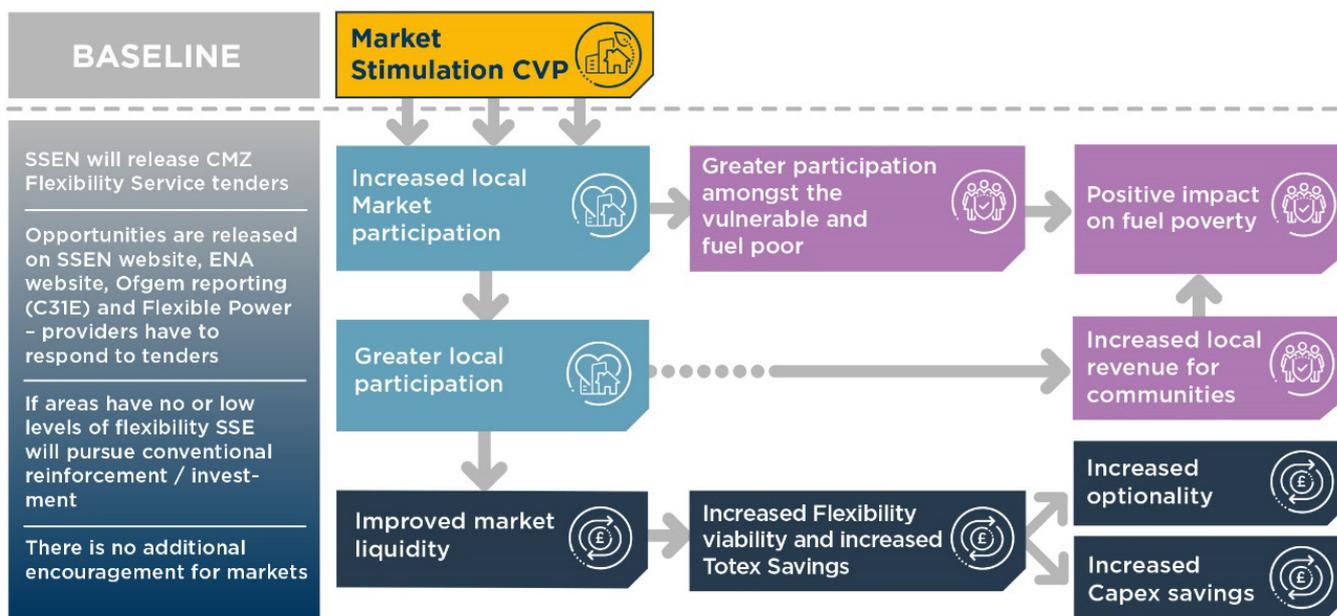


Figure (x) 2020 CMZ zones released and responses received in SEPD and SHEPD areas

This clearly shows that despite significant work to advertise Flexibility opportunities far more widely, using webinars, new systems such as Flexible Power, better website content as well as increased visibility on the ENA website and through regulatory reporting i.e. the new licence condition C31E Flexibility Service Procurement Statement, that the geographical distribution and liquidity of flexibility services is a major limiting factor in our ability to realise the full potential of Flexibility.

This CVP seeks to address these limitations allowing us to actively stimulate the market place while still maintaining the neutrality and transparency in the way in which run our flexibility procurement exercises. We propose to identify locations to target by assessing both the network benefit and the societal benefits to establish where we can expect the greatest impact for any given intervention and the greatest overall benefit.

MARKET STIMULATION CVP



We propose to identify locations to target by assessing both the network benefit and the societal benefits to establish where we can expect the greatest impact for any given intervention and the greatest overall benefit. Market stimulation activities could take a number of forms including but not limited to options from the following list:

1. Community engagement to promote awareness and create support links with partners, including producing local publications, focused mailing and pop-up walk-in centres with easily accessible information on local energy markets
2. Supporting the formation of local Community energy groups to embed initiatives from the bottom-up and encourage community support for the initiatives
3. Presentation of a range of flexibility service packages and information from simple appliance switching to full heating automation
4. Assistance funding for feasibility studies for homes, housing associations and authority stock and SMEs including retrofit
5. Consumer guidance on access to existing grants and funds
6. Incentivised installation of LCTs
7. Support in ICT or System adoption to manage or coordinate local assets

8. Flex deployment rewards on final commissioning of a flexibility service.

In line with our experience from innovation projects such as Solent Achieving Value from Efficiency (SAVE), Northern Isles New Energy Solutions (NINEs) and New Thames Valley Vision (NTVV) we intend to focus on a partnership approach to delivery this CVP. We will engage with suitably equipped domestic market Energy Retailers, Aggregators and flexibility solution providers to provide the technical capabilities. We will work with Local Authorities, housing associations and appropriate consumer support groups and specialists. Our engagement will be highly community focused to maximize local support. Liaison with the ESO will be an essential element of this activity to ensure that the Flexibility generated is able to access the full chain of flexibility value.

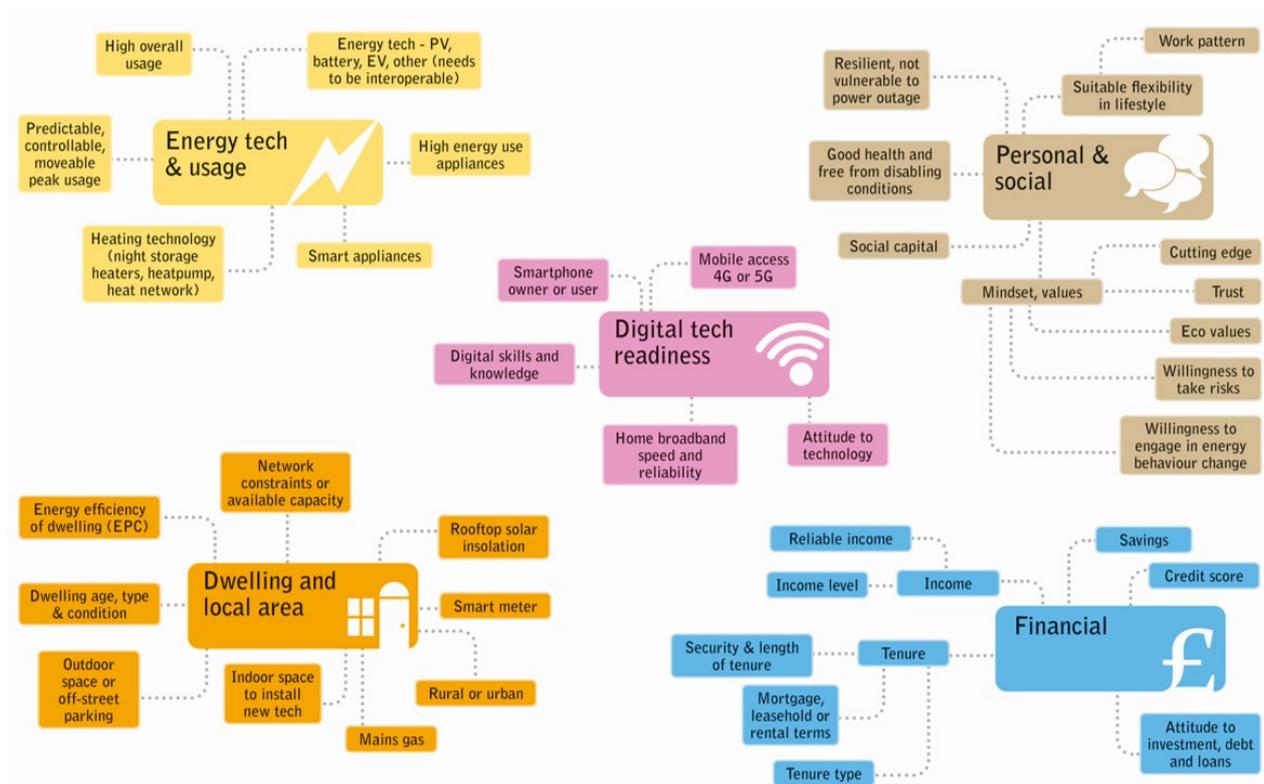
As part of the location selection process and to provide a baseline for measuring success we will survey target area prior to engaging. We will then survey post engagement to measure customer acceptance, willingness to engage and experience of the initiative against the measured network impacts which can be obtained through monitoring of the local networks constraint points, if any conventional support has been required (i.e. Mobile Diesel Generation) and the overall costs of the initiative against more conventional alternatives. This approach will generate a report on the success of the initiatives and enable the capture of any lessons learned, efficiencies and improvements which can be used to improve the ongoing programme of works.

What we will provide

Throughout ED1 we have invested in the underlying core systems and knowledge needed for smart grids and development of DSO capabilities. **Learning by doing** has been a central part of this and we continue to play a lead role in over **22** innovation projects. Collaboration with our stakeholders, local authorities and partners, the Energy Innovation Centre and with other DNOs, through the Energy Networks Association's Open Networks Project, has been central to this.

Our involvement with the Smart and Fair project, combined with our experience of running CMZ tenders has shown us that the geographical distribution and liquidity of flexibility services is a major limiting factor in our ability to realise the full potential of Flexibility. The reasons for this are:

- Limited Domestic based flexibility service availability.
- Low levels of knowledge and interest at a local level with the exception of highly engaged communities.
- Lack of up-front funding for the investment required to enable flexibility
- Lack of expertise and access to specialist skills.
- Lack of intermediaries providing appropriate products, services, tariffs and commercial arrangements to allow easy access to the market by domestic customers and SMEs.



This [diagram](#) shows the capability lens we developed as a way to think about the combination of personal characteristics and external factors that a consumer would need to take up future smart energy offers to achieve benefits for themselves. The lens encourages thinking around several interconnected clusters of characteristics and factors. It recognises that as well as a consumer’s personal attributes, including their attitudes, their financial situation, where they live, their digital engagement as well as their energy technology and usage all have a part to play in whether they can take part.

As we developed the lens we drew on evidence from consumer trials, academic literature and work led by others, including Citizens Advice, to get a sense of the range of different types of activities that consumers are expected to get involved in as part of a smart, low carbon energy system - towards delivering benefits for the network, wider policy goals of decarbonisation as well as to achieve direct financial and other benefits for themselves. We tried to identify the combinations of different personal characteristics and external factors needing to be in place for consumers to realistically join in. The lens was refined with the input of stakeholders at workshops.

We have designed this CVP because we have confidence in the following:

- **We know the benefits** that can be realised from emerging and evolving Local Energy Markets in our license areas. Our CMZ services have already released over £1m of payments to flexibility providers in ED1 and we’re forecasting in excess of £6m of Flexibility Payments in RIIO-ED2, this CVP is designed to ensure as much of those payments as possible goes to communities.

- **We know which substations to target** across our license areas. Our annual [DFES](#) maps the uptake of all Low Carbon Technologies (LCT) under a range of scenarios out to 2050 on our network down to 11kV and we increase the granularity down to LV feeders for EVs, Heat Pumps and Roof-top Solar. This analysis is translated in to a load-curve for each substation that identifies pinch-points on the network.
- **We know which areas to target and how to stimulate markets** based on responses to our Constraint Managed Zone (CMZ tenders), registrations on flexibility platforms such as Flexible Power and Piclo and through our innovations projects such as LEO and NINES.

We consider this CVP as an innovative, pragmatic and efficient use of our existing tools and knowledge that we can reuse to empower the communities we serve while addressing a particularly difficult decarbonisation challenge. At the same time, we can realise the full potential from our existing suite of tools through this CVP.

The Smart and Fair? work, in particular, adds valuable insights to the network analysis carried out by Regen. The illustrative results presented in this report demonstrate the Model’s potential power in predicting how likely different consumers are to participate in the offers associated with the transition to a smarter energy system. It can reveal, profile and map the types of households who are most - or least - likely to be able to participate in LCT uptake and energy markets.

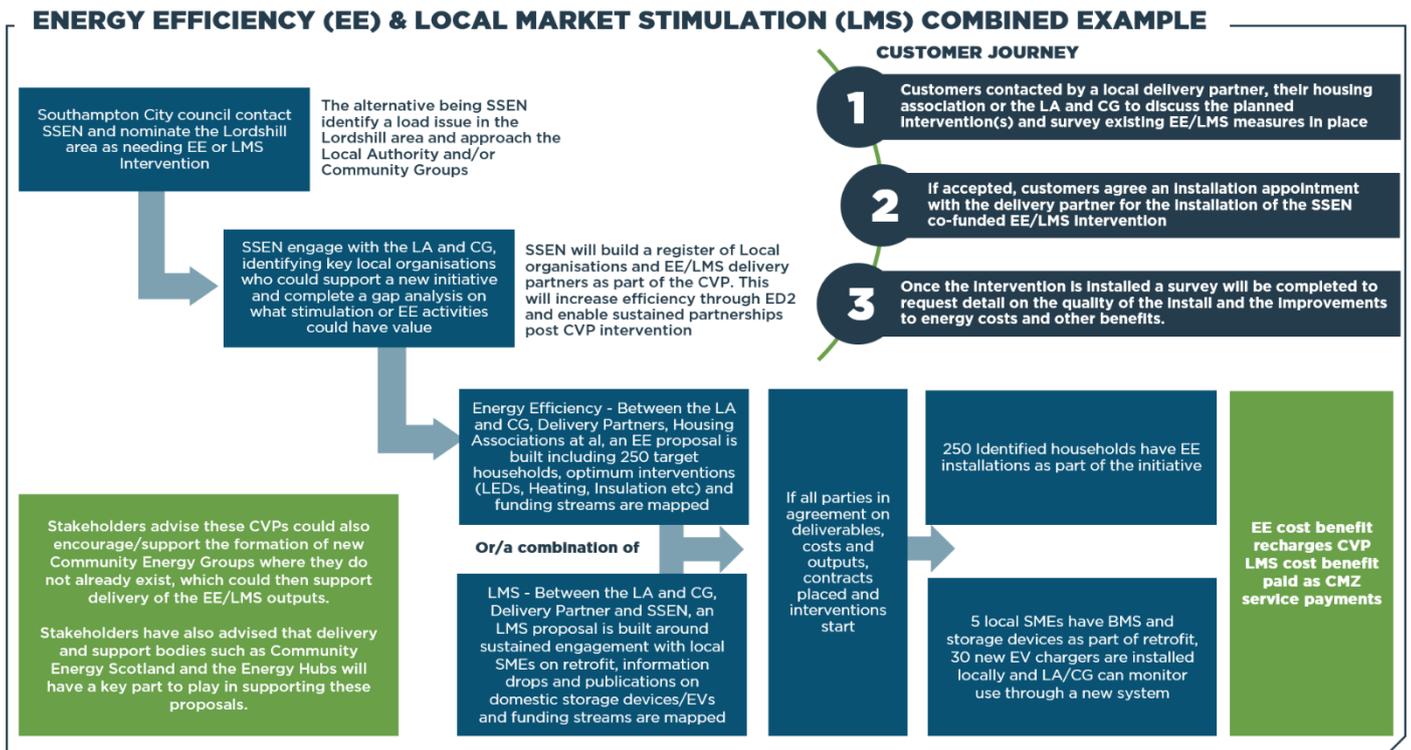
Our Local Market Stimulation CVP approach is similar to our Energy Efficiency Accelerator CVP, and will form 5 steps. The process is designed to be replicable and scalable with any of our interventions and identified local partners throughout RIIO-ED2.



1. **Identify** – We identify areas where Flexibility Service providers are not apparent or only in small numbers by assessing response to CMZ tenders and registrations on the System Wide Resource Register. Alternatively, Local Authorities and Community Groups can contact us with details of an area to be considered for intervention, we then use the same triangulation method to review the opportunity alongside any local data provided as part of the submission.
2. **Initiate** - We will engage with local organisations and authorities to identify and initiate discussions with a lead local authorising partner on the identified Market Stimulation opportunity. We will apply a set of criteria to evaluate which opportunities to start a dialogue with local partners to then scope and potentially deliver the project. We will then apply the same criteria to decide whether to approve the scoped project. Local Market Stimulation activities may be more complex or convoluted than Energy Efficiency solutions, and may involve sustained SSEN engagement and knowledge sharing alongside local partner efforts. As such the initiation and scoping stages may be more intensive.

3. **Scope** - This step develops the identified opportunity into a proposed scope of work. Working with our local partners, we will work together to scope the project. As part of this step we would agree the project scope, including the intervention or interventions to deploy, to how many customers or businesses can be included, confirm the supply chain requirements, the delivery timeframe and milestones as well as exploring any additional sources of funding which could be stacked alongside the CVP funding and the formation and circulation of draft contracts and agreements.
4. **Decide** - In this step our local partners and ourselves take separate decisions whether to proceed with the project. This decision would need to follow the respective internal processes of each organisation. If agreed, we would enter into a contract with the local authorising partner to deliver the scope. We would then convert the approved scope of work into a contract and sign it with the local partner as a binding agreement to deliver.
5. **Deliver** – The project is delivered and the involved partners produce updates at each agreed project milestones. We will transfer the funding to the local partners at the agreed project milestone.

An example of how the delivery of this CVP will work is shown below.



The interventions shown below will remain under review throughout RIIO-ED2 and we will explore new potential ways of stimulating markets throughout the delivery of the CVP;

- Community engagement to promote awareness and create support links with partners, including producing local publications, focussed mailing and pop-up walk-in centres with easily accessible information on local energy markets

- Supporting the formation of local Community energy groups to embed initiatives from the bottom-up and encourage community support for the initiatives
- Presentation of a range of flexibility service packages and information from simple appliance switching to full heating automation
- Assistance funding for feasibility studies for homes, housing associations and authority stock and SMEs including retrofit
- Consumer guidance on access to existing grants and funds
- Incentivised installation of LCTs
- Support in ICT or System adoption to manage or coordinate local assets
- Flex deployment rewards on final commissioning of a flexibility service.

Table 18 provides more detail on the insights that underpin this CVP.

Project / Activity	About	Output	Key learning
Constraint Managed Zones (CMZ) Flexibility Services	SSEN's suite of CMZ Flexibility Services secure demand response and generation services from 3rd party Distributed Energy Resources (DER) connected to our networks through competitive procurement processes.	Flexibility Services help us to defer and if possible, avoid investment on our networks, reduce or remove the need for mobile diesel generation and reduce Customer Interruptions and Customer minutes lost through commercially tendered procurement processes. These 'Market-based' services have also enabled us to develop new relationships with providers of services, informing new contractual processes delivered with the ENA Open Networks project and deliver new systems and customer interfaces to support scalability.	We have CMZ contracts with a range of providers, from large, national developers to small, community based schemes, each provider and each market area has slightly different priorities or requirements in how they engage with the opportunities presented by network services. This has given us insights leading to keeping an openness in what stimulation activities may be needed or may be successful from zone to zone.

Project / Activity	About	Output	Key learning
Solent Achieving Value from Efficiency (SAVE)	This innovative programme evaluated the potential for domestic customers to actively participate in improving the resilience of electricity distribution networks and thereby defer the need for traditional reinforcement.	Greater control of peak load brings benefits to both DNOs and customers through monetary means but assumes a wealth of social benefits; mitigating the disruption caused by reinforcement works, limiting the most CO2 intensive forms of consumption, facilitating the adoption of low carbon technologies and allowing for a priority response to (vulnerable) customers in power outages.	The project's key strength when considering market stimulation was the process of engagement and partnership with local organisations and how to effect real behavioural change across customer groups. This forms the template for engagement and delivery of our CVP.
Northern Isles New Energy Solutions (NINES)	A collaboration with Shetland Islands Council, Hjaltland Housing Association and Shetland Heat Energy and Power. NINES replaced old inefficient storage and water heaters in 750 houses with modern 'smart' storage heaters which help to balance the electricity network.	This project deployed new technology on the network that will allow more small-scale renewable generators to connect to the network and introduced new commercial arrangements to encourage businesses to change the times at which they use most energy.	The importance of educating the tenants and end users in the 'proper' way to use any technology correctly to maximise its use.
New Thames Valley Vision (NTVV)	This innovation project evaluated different technologies which could be used to deliver 'smart' grids at a local level, delivering net zero and customer benefits in addition to more efficient networks.	The project deployed new technologies on our network and in homes and businesses to better manage capacity at local levels and operate our networks in a smarter, more efficient way.	That SME's have a significant part to play, even if just through the retrofit of lighting or building management systems, that coordinating local responses can have a greater impact to upstream constraints, that the electrification of heat (and cooling) can be managed to avoid localised

Project / Activity	About	Output	Key learning
			constraints from increasing.
Distribution Future Energy Scenarios (DFES)	We commissioned Regen to understand how the demands on our networks are likely to change over the next decade. This will help us plan how we will support our demand or generation customers through network investment or flexibility.	To support this process, we commissioned Regen to complete a set of future electricity scenarios for our Southern and Northern network distribution licence areas out to 2050. These studies are informed by National Grid’s Future Energy Scenarios.	The analysis identifies key future pinch points on the network that enable us to plan ahead of time and assess a range of network solutions.
Smart and Fair?	Since 2019 SSEN have supported the Centre for Sustainable Energy’s innovative <i>Smart and Fair?</i> programme of work. Phase One successfully informed and moved forward the debate about how the transition to a smarter energy system can achieve fair outcomes and ensure that no one is left behind.	By developing more comprehensive analytical techniques and contributing new insights, the programme’s work has already improved understanding amongst stakeholders and policymakers of the challenges and opportunities which need to be addressed as the system develops.	Building on the success of the first phase, Phase Two will focus on; (a) extending and validating the data analytics to cover the whole of our license areas and enhance the reliability and accuracy of its predictive capability and (b) providing tailored strategic and operational inputs to relevant business plan outputs.

Table 18 – Insights and key learnings

Further Development

We recognise that local authorities and their communities have a role to play in supporting the net zero transition. Building on the experience gained from numerous innovation projects we know that collaboration and partnership working is a critical component of this CVP.

We will seek to work with local authorising partners as part of this CVP. We will take a different approach in each of our network areas, reflecting the differences between our licence areas in England and Scotland.

- In SEPD we will work through Local Authorities and Local Enterprise Partnerships (LEPs). LEP's are business led partnerships between local authorities and local private sector businesses. They play a central role in determining local economic priorities and undertaking activities to drive economic growth and job creation, improve infrastructure and raise workforce skills within the local area. There are 7 LEPs in the SEPD network area.
- In SHEPD we will work with the 13 Local Authorities in our network area. There is no LEP equivalent in Scotland.
- In both regions we recognise the importance of Community Energy Groups and other organisations, such as charitable groups and more regional partners such as Energy Hubs and Community Energy Scotland. We will work with these organisations and partners on a zone by zone and overarching basis to ensure the success of the CVP.
- We propose to work with all stakeholders to develop and implement a transparent and inclusive selection process for the interventions which could be applied from zone to zone, based on the economic, societal and carbon benefits of those interventions to ensure the optimum solutions are selected for each area. This will ensure a fair and transparent process of selection can be used in each area, despite the potential difference in the numbers and costs of intervention from one zone to the next.

In addition, in conjunction with our authorising partners, we will work with enabling partners who will deliver the intervention on the ground. This could be a community group or a commercial aggregator/supplier. We are confident this approach will help to accelerate market growth aspirations past the tipping point and make them a reality for our partners.

We envisage our CVP will be able to be used to deliver Market stimulation activities at areas of highest need. We continue to work on the list of candidate sites, that reflects current network constraints and issues. We will work with our local partnerships to target this investment to maximise consumer and network benefits.

Unlike the Energy Efficiency CVP where we have proposed a CVP 'recharge' by allocating the NPV achieved through demand reduction back into the CVP fund, the LMS proposal will directly award successful Flexibility services within the standard CMZ process. Once the CVP has successfully stimulated markets and the ability to provide services has emerged in a local area, these devices and service providers will be invited to respond to Flexibility Service tenders. These tenders will be standard CMZ procurement exercises, compliant with legislation, fair and transparent so no preference will be shown to devices or providers generated or stimulated through the CVP. Given that the CVP will mainly focus on those areas with no or a low response to existing market testing, it is however fair to expect a reasonable level of success in responding to these tenders. In the event CVP stimulated devices or providers are successful, then the provision of services will generate an income to those devices/providers and into the local market, encouraging further growth.

Costs

We have developed a simple set of approval criteria to evaluate energy efficiency opportunities and energy efficiency projects (opportunities that have been scoped with our local partner). This ensures the decisions we make hold up to both Ofgem and SSEN scrutiny while delivering the best possible outcome for consumers:

- **Outcome focused** - the project should encourage the delivery of the desired outcome
- **Value for money** - the project should deliver benefits to our consumers
- **Proportioned** - the project should not put an unreasonable burden on SSEN or our local partner (a key facet of this is the funding split between SSEN and our local partner)
- **Deliverable** - we are confident in our local partner's ability to deliver the project
- **Verifiable** - there should be milestones or data available to track the delivery of the project
- **Fundable** - there are enough funds available to commit to the project

We set out the following expected costs to facilitate and deliver the CVP:

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Administrative costs	£670,488	£670,488	£670,488	£670,488	£670,488	£3,352,440
Support Elements	£75,000	£85,000	£95,000	£105,000	£115,000	£475,000
Investment costs	£1,080,000	£1,600,000	£2,120,000	£2,640,000	£2,660,000	£10,100,000
Total costs	£1,825,488	£2,355,488	£2,885,488	£3,415,488	£3,445,488	£13,927,440

Table 19 - Local and Community Flexibility Market Stimulation costs

We have included 7.5 FTE resource within this CVP (25% efficiency applied on merging CVPs together) and have included support elements of £475,000 across RIIO-ED2 to include the surveying, canvassing and publication costs. Our Investment cost element includes £0.6m of IT/OT system development and support costs also.

We have developed our costings for the CVP based on the following LCT installation assumptions:

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Battery and Solar PV	263	395	526	658	658	2,500
Smart Storage Heating	211	316	421	526	526	2,000
Smart Controls	263	395	526	658	658	2,500
Total	737	1,105	1,474	1,842	1,842	7,000

Table 20 - Local and Community Flexibility Market Stimulation assumed LCT installations

Benefits

There are many benefits associated with stimulating community flexibility markets. The most significant of these are:

- **A local, balanced energy system.** The traditional energy system is susceptible to disruptions caused by sharp changes in energy supply and demand. This problem will only worsen as the energy system increasingly relies on renewable energies, the generation of which can vary greatly depending on the weather. Local flexibility markets are one way to maintain balance on the energy grid by incentivising aggregators to smooth demand across peak periods.
- **A more robust energy ecosystem.** The traditional approach to increasing network capacity is by reinforcing, upgrading or expanding existing infrastructure. Yet traditional networks are still prone to grid congestion and to widespread disruption. A more cost-effective and robust solution is to embed local flexibility services into the energy ecosystem by decentralising the generation and consumption of energy.
- **Lower energy inequality.** Community flexibility schemes enable households to aggregate their energy generation to reduce their energy costs at peak times. Since energy costs comprise a larger proportion of lower households' income, flexibility services provided the greatest proportional benefits to lower income households. Furthermore, the energy efficient technologies that often accompany flexibility services – such as hybrid heating systems and LED lighting - are typically energy saving, again providing the greatest cost benefit to lower income households.
- **Societal Benefits.** We will use data sets to identify those locations where the greatest societal benefit can be generated from Flexibility Market Stimulation including; Fuel Poverty, Vulnerability, Low engagement with previous global calls for flexibility and Forecast enduring flexibility need (at least 3 years) with unconstrained access to the ESO markets beyond that point (to ensure that engaged customer will have access to an enduring flex income stream)

- **Network benefits** - We propose to use two criteria to rank sites in order of overall potential benefits and focus our market stimulation to achieve the maximum benefit per pound spent; (1) 'Network Savings achievable with a liquid local market' and (2) 'a minimum 2-year lead-in time to the forecast needed to deploy flexibility. This will ensure that time required to stimulate the market is credible.

The main quantified benefits from the SIA analysis are as follows:

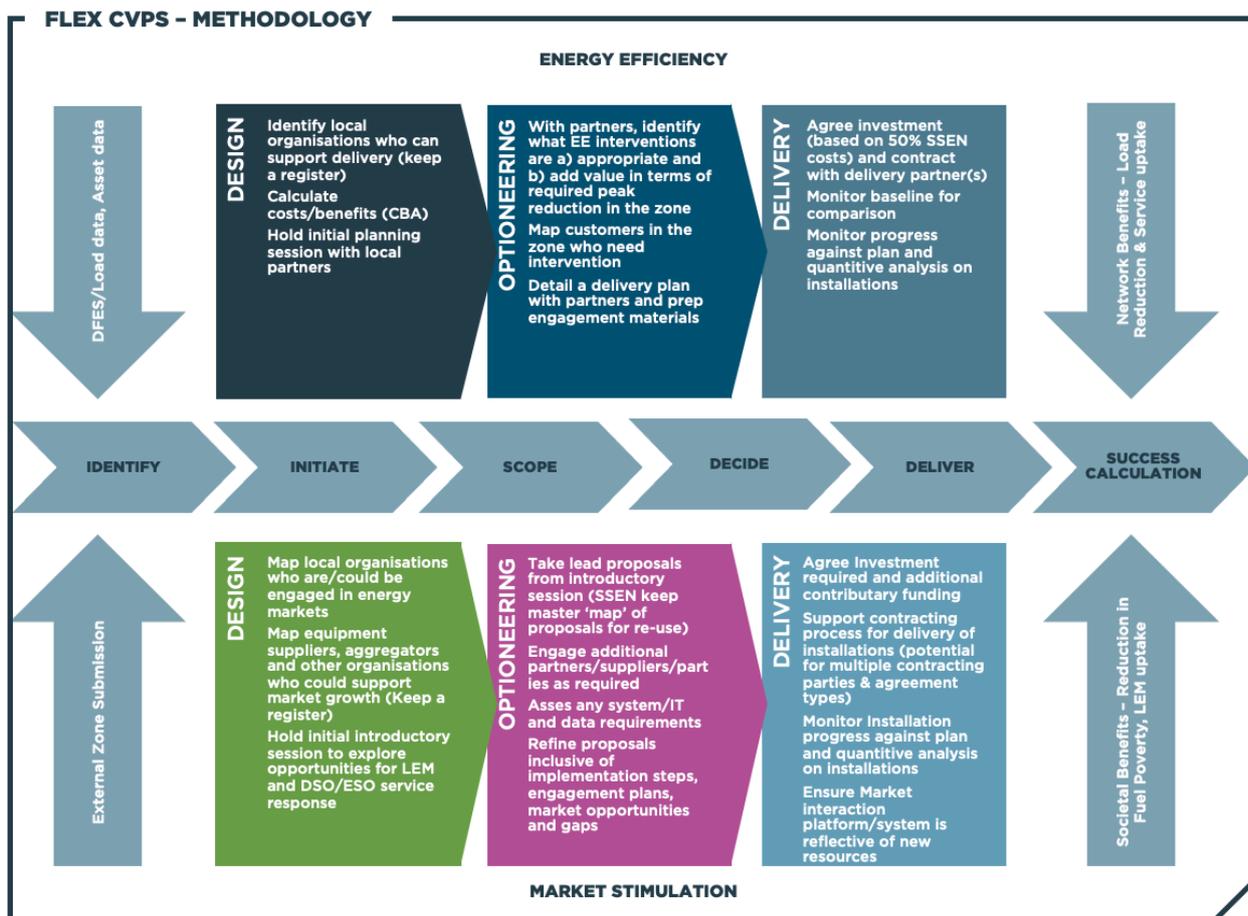
- Network avoided costs – deferred reinforcement - £6,600 per MW.
- Annual customer bill savings – £271.93 per measure.
- Annual customer bill savings – Time of use tariffs - £37.50 per household.
- Value of stimulated flexibility market services - £150 per MW per year.

For consistency, there were no network avoided costs attributed directly to this CVP.

DECISION TO MERGE ENERGY EFFICIENCY AND LOCAL MARKET STIMULATION CVPS

Following sustained engagement with our stakeholders, who offered universal support for the two DSO CVPs but questioned if there would be benefits from merging the approaches, we have decided to follow this feedback and combine the Energy Efficiency (EE) Accelerator and Local Market Stimulation (LMS) CVPs. These both had very similar delivery processes, both relied upon local engagement and the support of Local Authorities, Community Groups and delivery partners. While we feel the intervention types (EE and LMS) are separate and should remain so from a funding and reporting perspective, we feel combining the CVPs is best for our stakeholders. We also believe we can leverage a 25% reduction in the cost of delivering the CVPs. The combined CVP has the potential to reduce potential of stakeholder fatigue from local partners being approach multiple times for different interventions and could improve the efficiency of implementing both interventions in areas which could benefit from a dual approach.

We believe the combined approach demonstrates a stronger commitment to addressing both issues, from different angles, as part of a wider support of delivering Net Zero either directly, or indirectly through households and businesses or indeed through local authorities actions.



Annual Reporting

As part of the feedback leading to the merging of these two CVPs, our stakeholders were also keen to see specific reporting, covering details of all projects applying for assistance, projects receiving assistance and to what extent, the costs and benefits logged and supporting case studies. We agree this would provide additional transparency and accountability and propose to produce this annually with the specifics on circulation and publication to be agreed as part of the stakeholder panel.

Stakeholder Panel

Our stakeholders feel that these CVPs would also benefit from the insights of and oversight from stakeholders, this would provide an additional layer of scrutiny and accountability on how the CVP funding and support was being offered while ensuring fairness and transparency within decision making. This group would also review our proposed Whole System metrics which we plan to collate based on our wider Whole System approach detailed further in our Whole System (Annex 12.1), stakeholder feedback and survey responses. During the phase 4 engagement process we have had offers from some stakeholders of their willingness to be involved in this panel dependent on the formation of proper terms of reference, a reflective range of stakeholder representation and agreements on meeting scope and frequency. We will continue to develop this panel to support this CVP and others detailed earlier in the annex.

Table 21 shows the 10 year cost, benefits and SROI calculations of the combined CVP approach. Full details of the methodology are shown in Appendix D.

Total cost, PV	Gross Benefit, PV	NPV	SROI
£33,753,868	£40,867,350	£7,113,482	£0.21

Table 21 - Net consumer benefits (2023-2032)

PERSONAL RESILIENCE PLANS

Our proposal

Our CVP seeks to introduce a step change in PSR service, delivering a tailored resilience plan specific to each customer, providing guidance and information on what to do in an emergency situation. Through the use of modern battery packs, we also have a desire to introduce a proactive support for our most medically vulnerable customers, to assist them at their time of greatest need. The provision of these battery packs will ensure that customers have immediate power supply, in the event of an interruption, thus helping ensure that the key medical equipment they require is able to remain operational. This peace of mind provision, particularly for those who are at risk during night hours whilst sleeping, is a significant step up in proactive delivery. This is a step change in our service provision, removing the need to react to emergencies and issue generators for these customers. This subtle, but significant shift, has the potential to reduce stress for many of our most vulnerable and pushes the boundaries of what is a typical activity or response by a DNO in an interruption.



Improvements since Draft

At Draft we had a well formed proposal, which has been nearly universally supported. We have taken the time since July to continue our stakeholder engagement, undertake a small trial of the battery packs to ensure they work as proposed and to refine how we could deliver and ensure as many PSR customers as possible could see real benefits from the PRP in RIIO-ED2. We have also clarified that we have the intention, where possible, to ensure that all PSR customers have the option to receive a PRP and we will work during RIIO-ED2 to ensure up to 1m customers received this.

We are committed to ensuring all of our PSR customers receive this level of additional service. Through this CVP we will start the process of ensuring all new and existing customers on the PSR receive a PRP. We forecast that through our data cleanse process we will capture a further 208,000 existing customers, in addition to the 168,000 new PSR registrations during RIIO-ED2 and the 44,000 existing PSR1+ customers. Our ambition is to see all PSR customers with the level of additional detail and where possible we will work to ensure this is achieved through informing customers through contact, through our social media channels and all other touch points to add this value for all.

We will utilise any savings from the battery pack provision to help increase the number of PRPs we issue, with the ambition to hit all 1 million customers by the end of RIIO-ED2.

How engagement has influenced our proposal since Draft

Theme	Engagement event(s)	What stakeholders said	What we are doing about it
Personal Resilience Plans	Personal Resilience Plan and Battery Backup Surveys Bilateral and Surveys of Draft Outputs Customer Service and Consumer Vulnerability Internal Engagement	<ul style="list-style-type: none"> We were challenged by stakeholders about why we were prioritising the provision of Personal resilience plans for PSR1+ customers and were encouraged to expand this to include more general PSR customers Vulnerable customers like the PRP’s personal approach and think tailored advice is more helpful. Some think that more information on emergency contact numbers, and advance warning/estimated restoration time would be useful. Support could also be aligned with emergency services and energy needs, and eligibility for Warmer Homes Scotland (for those on health-related benefits). Citizens Advice welcomed the intent to support PSR customers in a personalised way as shown in the CVP however, the way in which this differs from existing support could be better demonstrated alongside the associated costs for RIIO-ED2 (Citizens Advice) 	<ul style="list-style-type: none"> We have expanded our CVP offer to all PSR customers. For customers already on the register we will notify them on how to obtain a PRP during our data cleanse process. These costs have now been factored into the CVP. We will also directly offer the PRP to PSR1+ customers with medical equipment and make them aware of the battery provision fund in the first year of RIIO-ED2. We have engaged with partners and industry to seek feedback on how we can further tailor our PRP. We believe our tailored plan proposal responds to individual needs and will provide reassurance over a range of issues that customers value. We will continue to refine this, subject to the CVP being accepted, to ensure it achieves peace of mind to our PSR customers.
Battery back ups	Personal Resilience Plan and Battery Backup Surveys Bilateral and Surveys of Draft Outputs Customer Service and Consumer Vulnerability Internal Engagement Live battery pack customer testing trials	<ul style="list-style-type: none"> Customers expressed during the live battery backup testing trials that the upfront cost of the battery packs is a significant barrier to uptake but if there was support towards the cost, this would make the proposal very appealing. 30% of PSR1+ customers suggested they would be interested obtaining a battery back up in RIIO-ED2. Vulnerable customers expressed they were happy to purchase the backup pack using vouchers provided by SSEN but most did not know where they would purchase the pack from, highlighting that providing advice on this or using a trusted provider would be useful. 	<ul style="list-style-type: none"> As part of the CVP, we are proposing to fund the provision of 21,000 battery packs to new and existing PSR1+ customers over RIIO-ED2 (approx. 30%). These customers will receive a £300 battery at zero cost. We are trialling and engaging with partner organisations to refine the way we will inform customers and deliver the battery packs. We believe that using a trusted provider will increase the uptake.

Stakeholder feedback

This CVP was formed after listening to our employees, external organisations, customers and stakeholders, which indicated that customers wanted us to be more proactive in our support as well as being able to provide help such as generation.

Since we published our draft proposal, we have completed further engagement to make sure that the above and beyond service we provide in this CVP remains the right approach to take.

We engaged with 15 partners ranging from experts in vulnerability to cross utility organisations such as water, gas and energy. 7 of the 15 we engaged with rated this CVP 9 and 10 out of 10, being a benefit to customers in vulnerable situations. The overall rating was 8.53 out of 10.

Gas Distribution Network	“having tailored advice rather than generic advice personalised it and would make customers feel more valued and looked after”
Expert in vulnerability	“The plans are key to supporting customers and providing proactive communications and advice”
Water company	“PRP is really good to have a tailored service for those most vulnerable, that provides such reassurance. That seems like a really exciting idea”

Explain conducted research with 400 of our customers, across both SEPD and SHEPD areas, to understand their views on the principle of the PRP and the likelihood to take up the service, gather insight on the proposed process and their views on the battery backup provision. Of the 400 customers, 150 were non PSR customers, so we could gain insight to understand if they were willing to pay for this service in their bill.

88% of PSR surveyed customers in SEPD and 86% in SHEPD felt the PRP is a good idea. 85% in both SEPD and SHEPD thought it would be useful to receive a PRP.

Of the 150 non PSR customers surveyed, 85% in SEPD and 89% in SHEPD felt the PRP was a good idea. 75% in SEPD and 86% in SHEPD would be willing to pay the extra cost on their bill for the PRP and battery backup. One customer told us, “it is a good idea for those that do need them, it would provide security to stop worry and anxiety”, another customer said, “I just think these people in that situation need all the help they can get. It’s a worrying time if you’re in that situation and the electricity goes off”.

What we will provide

Our proposal is to provide Personal Resilience Plans (PRPs) for all newly registered Priority Service Register (PSR) customers, including notifying all existing PSR customers how to obtain one, in RIIO-ED2.

Our PRP will contain the following information, including but not limited to:

- PRPs would assess the customer's circumstances and provide them with simple tailored advice on what they should do in a power cut, such as who to call, including numbers for SSEN, Oxygen providers, emergency services and options for the customer to add family members details.
- It would also provide information on what the Priority Services Register can do for them, such as power cut advice and preparing for a power cut.
- When compiling the PRP's we will signpost to other charities and organisations relevant to their needs, such as Silverline for those who are elderly and isolated and Macmillan who offer a wide range of assistance including bereavement and financial support.
- This could also signpost to the partners we work with who offer fuel poverty advice and support, signposting them to our web pages or contact telephone numbers if they want to make a referral to receive this additional support, such as energy efficiency, grant information, switching tariffs and benefit checks to name a few.

Currently when a customer registers on the PSR we will issue them a welcome letter which contains generic advice about what to do if they have a power cut and how to prepare for power cuts. It also includes our contact numbers. Those who are registered with a need(s) code which rates them as a PSR 1+ or 1 (see our Vulnerability Strategy (Annex 4.2) which details how we prioritise our customers), they also receive a pack containing a handy torch (which also acts as a glowstick and has a whistle) and a fridge magnet with the 105 telephone number so they know who to call if they have a power cut. In doing so, this meets our licence obligations by sending this letter as well as the additional services to PSR 1+ and 1 customer's, making sure we look after our customers in vulnerable situations, but through this CVP we want to ensure our support does not stop there.

For our PSR1+ customers generation is most often the required support during a power cut as a continuous supply of electricity is vital to support their needs, such as those on palliative care. Without power this could result in irreversible health implications. During a power cut we focus our engineering resources into repairing the fault and restoring supplies as quickly as possible to all customers.

On occasions when customers are reliant on medical equipment, or multiple pieces of medical equipment and are at home on end of life care, we will make every effort to get support them either through switching the network to get them on quicker, providing small suitcase generation and in some cases larger generation.

Currently if we are made aware either through pro-active calling or customers calling us, that a customer requires support, we can offer various levels of tailored welfare such as hot water, hot food, suitcase generation, overnight stays and sometimes just a friendly ear. We have enhanced our provision of welfare and training for staff during RIIO-ED1 however, we believe we can go further in RIIO-ED2.

Our CVP will see all newly registered customers issued with a Personal Resilience Plan (PRP) in RIIO-ED2. We are proposing to retrospectively ensure that all current PSR customers also received notification on how to obtain one in the first two years of RIIO-ED2, via our data cleansing process. New customers on the PSR will receive this as standard going forward. Our ambition is to provide every PSR customer with a tailored PRP in RIIO-ED2.

We recognise the role we play in keeping people safe. Electricity is critical, and even more so to our customers who are registered on the PSR. We use the PSR to notify our customers in vulnerable situations of the tailored services we provide in the event of a power outage and provide additional support equipment to our most vulnerable customers (PSR1+ and PSR1).

We already have an automated service which issues a welcome letter when a customer is registered on our PSR. We would improve this automated service so that it delivers a PRP along with the welcome letter. We would further enhance this service by pro-actively calling those customers who are registered for priority services and who we have as a priority PSR1+ to discuss their needs, review their personal resilience plan and where appropriate will offer the relevant support so they are prepared for a power cut. The proactive call will be to review and discuss the PRP in more detail, make sure that all the data we hold on our system is up to date and clean and depending on the customer's needs, we can use the opportunity to signpost to any additional support that our partner organisations can offer such as doing an energy efficiency referral. We will work with NHS, local authorities and charities to help to facilitate the right advice being offered, and where necessary provide funding to those who cannot access battery backup, due concerns such being in financial difficulty

Whilst we gauge that each call will be 30 minutes, some maybe shorter and some maybe longer but this should even out over the total calls made and will take into account any additional calls that are required in the headcount should we have more than expected over RIIO-ED2. We forecast that there will over 44,000 PSR1+ customers at the start of RIIO-ED2. We will provide PRPs for each customer and proactively contact them to discuss their PRPs. All PSR1+ customers will be contacted in RIIO-ED2.

Our CVP also seeks to reduce customer stress by working with delivery partners to provide battery backup supplies to those PSR1+ customers that have been unable to obtain one. We are working out the logistics of this scheme, and the criteria that we will apply to ensure that those who need it the most, and have no alternative means to source one, will be covered at their times of greatest need.

Proposed Customer Journey:

1 Customer registers for the PSR service.

How to register

- Get the online or mobile app
- Call us on 0800 294 3259
- Write to us
- 0800 316 5457

Benefits of joining our Priority Services Register

- Get extra support during power cuts
- Get a priority call when you need us
- Get a priority call when you need us
- Get a priority call when you need us

2 Application processed by SSEN PSR team

Get free extra support during power cuts. Register for Priority Services.

3 Customer issued with a Personal Resilience Plan

Your Personal Resilience Plan

Thank you for registering for our Priority Services Register. You've been added to our database as a priority customer and should be able to receive a call from us if we have any issues with your registration form, we will also use a personalised resilience plan to provide you with advice on what to do during a power cut.

Important Numbers

We have provided a few below but add your own such as, family, friends, neighbours, local Radio stations, carers/childminder, vets, doctor/healthcare centre.

Report a power cut	305
Priority Services Team SSEN	0800 294 3259
Text Phone facility SSEN	0800 316 5457
Dolby Vivisol	0800 917 9840
Air Liquide London	0800 142 9924

Preparing for a power cut

The evening (you're) leads in the unlikely event of a power cut, you should follow the advice below:

- You should ensure you have a backup oxygen tank. You should already have this, but if you don't or have already used it, you should contact Dolby Vivisol or Air Liquide, this is the company that usually provides your oxygen on behalf of the NHS. You can find their telephone number noted on the last page.
- Your oxygen provider can help you with advice on reducing your oxygen flow if required.
- We highly recommend you purchase a backup battery for your sleep apnoea machine. These can sometimes be provided by the NHS if your medical condition means you may be a serious health risk without the equipment. You may be eligible for our fund, contact us on 0800 294 3259 and a member of the dedicated PSR team can discuss this further.
- If you have a child under the age of 5 years old, what would your child need if there was a power cut. Some things you could do are:
 - If you are worried about overheating, open all the windows and doors in each room, but have an electric blanket on.
 - If you are worried about a heating fire, make sure you wrap your child in a blanket, and if you can get a battery in a heater, have it on warm.

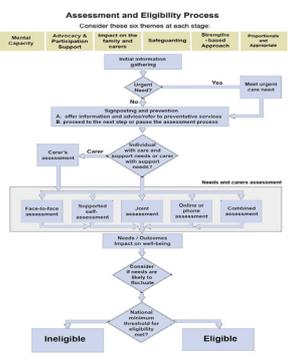
4 Those on medical equipment receive a proactive call



5 In-depth discussion with customer on the plan

- You should make sure you have a backup oxygen tank, you should already have this, but if you don't or have already used it, you should contact Dolby Vivisol or Air Liquide, this is the company that usually provides your oxygen on behalf of the NHS. You can find their telephone number noted on the last page. Your oxygen provider can help you with advice on reducing your oxygen flow if required.
- We highly recommend you purchase a backup battery for your sleep apnoea machine. These can sometimes be provided by the NHS if your medical condition means you may be a serious health risk without the equipment. You may be eligible for our fund, contact us on 0800 294 3259 and a member of the dedicated PSR team can discuss this further.
- How can Dementia impact you or someone around you in a power cut? If you don't have one already, you could consider fitting a carline alarm so that if the power goes off, a loved one can be notified and check on you quickly. Let our dedicated PSR Team know about an alternative contact, so we can speak to them on behalf of the person who is living with Dementia.

6 Eligibility assessment for battery back up fund



Testing

We obtained 4 small battery packs and conducted testing via our occupational therapy partnership and with PSR customers who had medical equipment, during planned and unplanned power cuts.

Equipment tested (all equipment noted can be kept charged for at least 4-6 hours successfully)	<ul style="list-style-type: none">• Feeding machines• CPAP machines• Tele Care alarms• Heart Monitors• Airflow mattresses
Feedback	<ul style="list-style-type: none">• Easy to use• Easy to move/handle• Charge lasts many hours with most equipment• Customers would keep it charged if owned• Most customers could not afford one themselves
Customer comments	<ul style="list-style-type: none">• "I live in a remote area, I have a spinal tumour, this device is fantastic and having the option of a battery in addition to just comms was far superior, also in comparison to other utility operators"• "CPAP user, the battery offers piece of mind as the only back up we have been offered by the NHS lasts 2 hours, your battery lasts 6-7 hours"• "I cannot afford the battery myself at £300 but if there was support towards the cost this would make it more appealing"• "Feeding machine user – Brilliant!"

We realise that customers who are at risk overnight are those who use sleep apnoea/CPAP monitors. The battery was tested by a customer who uses an CPAP monitor and who is a member of the Sleep Apnoea Trust. They noted that the battery was very light and perfectly portable, it is very neat and compact and ran the apnoea monitor for over 12 hours with 36% charge still left on the battery. The customer thought the unit was ideal, gave them at least one night of unworried sleep, possibly two and if used in a power outage would allow the necessary time to make other arrangements if the outages extended beyond 24 hours. The customer noted that the model we had chosen was especially good and met with their emergency protective needs precisely.

Cost Assumptions

The PSR has 37 needs codes each one identifying a defined vulnerability that customers can register for additional help and support in power cut. These codes are prioritised PSR1+, 1s and 3. PSR1+ customers are those who we consider being at highest risk of detriment if they have a power cut and are dependent on equipment such as heart or lung ventilators, dialysis, feeding pump and automated medication and Nebuliser and Apnoea monitors. This equipment requires a constant supply of electricity in order to support a customer, depending on frequency and level of dependency. In some cases, a customer is solely reliant on the equipment and in more severe cases are at home on palliative care.

PSR 1 customers are those with stairlift/hoist/electric chair (or bed). We also have an additional code called “high priority” which is for any customers identified by our people who do not fit the criteria of being a PSR1+ but who they deem as being so frail or vulnerable that they would not cope if they experienced power loss.

Table 22 shows how many new PSR1+ and total PSR registrations we expect in RIIO-ED2.

	2020/21	RIIO-ED2 Start	RIIO-ED2 End	RIIO-ED2 Change
PSR1+	32,312	44,773	72,107	27,337
Total PSR	770,844	833,744	1,000,000	166,256

Table 22 – Forecast PSR Register RIIO-ED2

We estimate the following costs associated with this CVP:

Item	Description	Cost £m (as per M21)	Cost £m (PV)
1.	Provision of battery backup packs to PSR1+ customers (based on 100% take up rate of 30% of PSR1+ customers, or approximately 20,000 customers during RIIO-ED2)	6.5	6.1
2.	Personalised resilience plans for all new PSR customers and existing PSR1+ customers (more than 420,000 PRPs across RIIO-ED2, including systems upgrades)	0.4	0.4
3.	Resource requirement to support proactive communication strategy (3 FTEs for PSR1+ customer calls)	0.3	0.3
	Total	7.3	6.8

Table 23 – Personal Resilience Plan Costs

1. Cost to supply battery back up to PSR1+ customers

- Subject to clarity on legal ownership and maintenance responsibilities, we propose to allow PSR1+ customers without access to alternative back-up generation to purchase battery packs using a voucher to the value of £300 for medical equipment. We will partner with a supplier who provides small battery backup so that customers will only need to access their website and redeem the voucher. For those customers who have no access to the internet we will support them by doing this on their behalf or offer to help them bridge the digital gap session through one of our digital ambassadors (see our **Customer Vulnerability Annex 4.2**). We estimate we will have more than 72,000 PSR1+ customers in RIIO-ED2 and that up to 30% of these customers do not have battery packs. Based on a 100% uptake equating to over 20,000 batteries, we estimate this will cost £6.5 million to deliver. We are investigating the most efficient mechanism for roll out including using a third party.

We remain hopeful that we can secure the battery packs for less than £6.5m. If we do, we propose to utilise the additional funds to ensure up to 1 million PSR customers can receive a PRP without additional funding. We believe a 10% efficiency in battery packs could provide this additional funding to allow this to happen. **This is an increase in commitment since our Draft Plan.**

2. Personalised resilience plans for all PSR customers

- The roll out of tailored personalised plans to all of our customers in RIIO-ED2 will require 1 million packs to be produced. We have estimated in the cost of this CVP that this translates to 420,000 PRPs at an estimated cost of 80p per customer, equating to a total delivery cost of £0.3 million. We will also upgrade our systems and web portal to allow production requiring a one off investment of approximately £100,000. We are mindful of our ongoing data cleanse activity around the PSR and see an opportunity to advertise PRPs more widely with our customers as part of our wider commitment to reviewing their requirements and needs. We have factored in additional costs to ensure that all existing PSR registered customers are notified on how to obtain a PRP via our existing data cleanse process and estimate a 25% update in the first two years of RIIO-ED2.

We estimate a further £0.5m in associated costs to deliver PRPs for the estimated 1m customers – which is not built into this current CVP. However, as noted above we are looking to use efficiencies from reduced costs of the battery packs to offset this additional cost

3. Proactive communications strategy

- We aim to contact all PSR1+ customers to discuss their individual needs about battery backup provision. We estimate a phased approach across RIIO-ED2 with 3 additional FTEs will cost £0.3million to support.

Consumer Benefits

We consider that our proactive approach and PRPs will deliver the following benefits:

- Alleviate stress for customers and carers as they will be more prepared;
- Minimise time without power in the event of a power cut;
- Greater resource and cost efficiencies from reduced calls to SSEN
- Reduced workload on the NHS and SSEN through greater clarity on responsibilities and better customer signposting for support e.g. Dolby Vivisol and the NHS who provide and oxygen and equipment
- Removes any concern about the advice we offer as this will be in the plan and be robustly checked internally and by external experts.

Ofgem minimum requirements

Table 24 below sets out Ofgem’s principles-based licence obligation in relation to the standards of performance DNOs are expected to deliver for consumers in vulnerable situations against how this CVP proposal goes above and beyond. We have only included baseline standards relevant to this CVP proposal. Please see our Vulnerability Strategy which sets out in full in Annex 4.2.

Principle	Ofgem Guidance	How our proposal goes Above and Beyond
1	Deliver a wide range of support during, or in relation to a supply interruption that reflects different customer needs and is, at minimum, in line with existing provision.	We will offer welfare tailored to those with medical equipment, proactively call PSR1+ customer’s to discuss their requirements and facilitate customers receiving battery backups.
	Have clear link between the information held about PSR customers and how this is used to target, or prioritise, support.	We will target those dependants on medical equipment to offer the proposed benefits
	Provide a wide range of support, which could include, but is not limited to, crisis packs, hot meals and drinks, mobile generation, alternative accommodation or on-site welfare units.	Make a step change from providing generation on request for PSR1+ customers to proactively discussing with customers their needs for medical equipment, offering a more tailored service and potentially providing additional welfare items e.g. in-house battery backup. For all other new PSR customers offering a more tailored personal resilience plan, relevant to their specific needs.
	Have multi-channel information provision during supply interruptions which could be delivered directly or through partner agencies.	We will work with partners to provide tailored advice for the PRP’s. We will identify opportunities to have the tool online, providing more access channel.
2	Maintain a good understanding of the social issues associated with the scope of the DNOs role, the prevalence of these within the consumer base and how they are evolving.	Through the development of PRP’s we will increase our understanding of our customers’ needs
3	Have an extensive network of partnerships with a range of organisation types, from multiple sectors including other utilities.	We will work with NHS, local authorities and charities to help facilitate the right equipment and access. This will reduce the impact on customers within our licence areas should there be an interruption to supply.
	Make use of referral channels and signposting support for customers, maximising consumer touchpoints.	We will work with our partners and extend them so that we can provide tailored signposting on the PRP’s when issued.
	Be involved in two-way flow partnerships supporting vulnerable customers, in line with companies’ understanding of social issues in the region. This should include direct involvement in the end-to-end process of delivering support, providing expertise, and co-creating schemes. Where appropriate, Ofgem expects to see example schemes where the DNO is taking a leading role.	We will use our current partnerships to ensure that the tailored advice we provide is accurate and extend our partnership range to meet the needs of vulnerable customers, enhance our employee’s knowledge and enhance partnerships.
4	Have processes in place for embedding a commitment to protecting the interests of vulnerable customers within the company's culture. Seek opportunities to protect vulnerable customers through their capabilities.	We will ensure that every customer gets a tailored plan to help them prepare and cope in a power cut. As a result, we will enhance the knowledge of our staff enabling us to identify opportunities to work with organisations in enhancing our services and protecting customers beyond the PRP.

Table 24 – Ofgem Guidance

Total cost, PV	Gross Benefit, PV	NPV	SROI
£6,795,675	£10,696,431	£3,900,756	£0.57

Table 25 – Net Consumer Benefit (2023-2028)

The main quantified benefits from the SIA analysis are as follows:

- Financial value of free backup pack - £300 per battery pack
- Reduction in stress during outages – £35 per customer per year³²
- Customers feel in better control of their lives – 82.10 per customer per year³³

It was also possible to quantify the network avoided costs through this CVP, which totals in the region of £0.2m.

³² DNO Social Value Proxy Bank: <https://www.reed.co.uk/courses/stress-management>

³³ DNO Social Value Proxy Bank: <https://www.pssru.ac.uk/pub/uc/uc2018/sources-of-information.pdf>

APPENDIX D – CONSUMER BENEFITS METHODOLOGY

This document serves as a methodology appendix to the Social Return on Investment (SROI) model for all of our CVPs. It provides an explanation of the SROI model inputs and calculations including proxy values used, the estimated scale of impact and underlying assumptions related to benefits measured from this initiative.

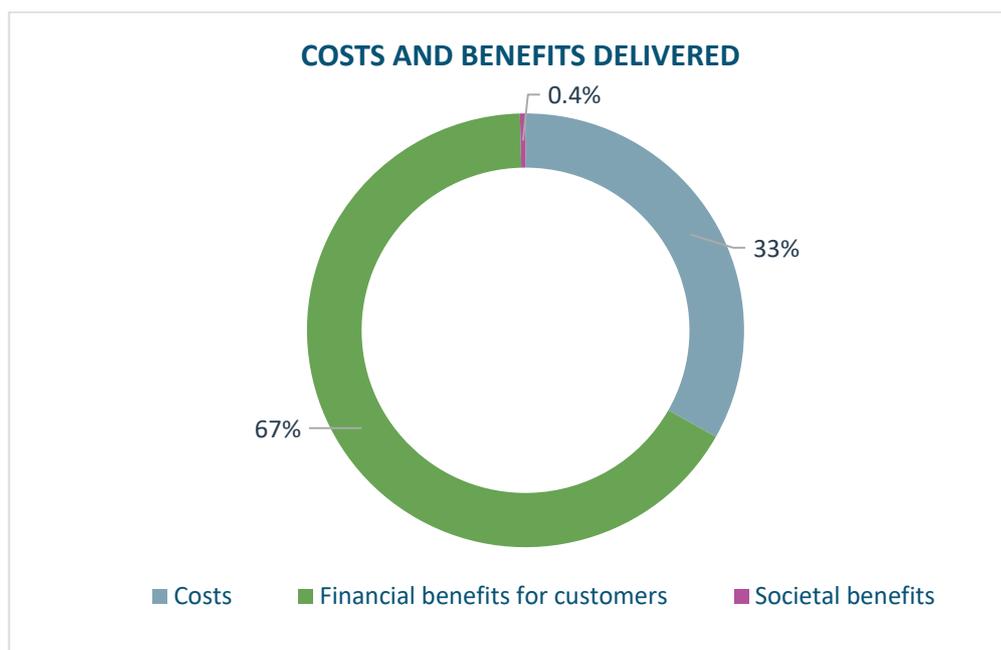
EMBEDDED WHOLE SYSTEM SUPPORT SERVICES FOR LOCAL AUTHORITIES

SROI calculations

Total cost, PV	Gross Benefit, PV	NPV	SROI
£11,670,540	£22,861,686	£11,191,146	£0.96

Table 17 – Embedded Whole System Support Services Consumer Benefits RIIO-ED2 (2023-2028)

- **Total costs, PV** are discounted to 2023 prices (as per Ofgem’s guidance). Non-discounted figures are also provided for each activity below
- **Gross Benefit, PV** is the value in 2023 prices of all future benefits forecast.
- **NPV** is the value in 2023 prices of all future benefits, net of costs.
- **SROI** is the value in 2023 prices of all future benefits, net of costs, divided by the cost



Costs

Investment of £12,299,906 over RIIO-ED2.

This is made of up resource costs to provide support to Local Authorities and Community Groups over the 5 year period. The projected uptake of groups and the estimated resource costs per year is provided below:

	2023	2024	2025	2026	2027	RIIO-ED2 total
<i>Local Authority Uptake</i>	20	15	15	12	10	72
<i>Community Group Uptake</i>	50	45	40	30	30	195

Table 18 - Local Authority and community group service uptake projection

	2023	2024	2025	2026	2027	ED2 total
<i>Annual resource cost to provide support</i>	£2,986,719	£2,560,045	£2,346,708	£1,706,697	£1,706,697	£11,306,866
<i>Cost of RESOP Whole System Modelling Tool</i>	£993,040					
Total costs	£3,979,759	£2,560,045	£2,346,708	£1,706,697	£1,706,697	£12,299,906

Table 19 - Cost breakdown of service over RIIO-ED2

Network avoided costs

None quantified

Financial benefits

Avoided costs for LAs from Improvement in efficiency and optimisation of expenditure on Local Area Energy Planning - £320,000 per Local Authority

- Description of proxy:
 - In 2018, Energy Systems Catapult undertook pilot studies across three Local Authorities to understand the impact of structured Local Area Energy Planning and the relevant costs involved³⁴.

³⁴ <https://es.catapult.org.uk/reports/local-area-energy-planning/>

- The latest study in Bury (which is deemed the most reflective of expected costs of scaling across other Local Authorities), found that planning related expenditure was £570k.
- This included a number of one-off costs and scope for efficiencies (for example, reduced data collection and processing costs through standardisation, consultancy fees incurred in the pilot study for software development and support and engineering consultancy services).
- In the same report, Energy Systems Catapult estimated that for a scale-up across local areas in the UK, a structured, efficient process of Local Area Energy Planning would have an average cost of between £100k and £250k per local area.
- The average efficiency benefit of a structured process is therefore estimated at £570k (inefficient process) minus the top end of the estimate, £250k (structured process) ~ £320k per local area.
- The benefit is achieved in the short term, relating to avoided consultancy fees and data costs, and does not model for long term (i.e. 5-year plus staff costs of maintaining the planning).
-
- Scale of impact values:
 - Success %: 100%
 - It is assumed that this benefit will apply to each Local Authority that is provided with the Information, Advisory and Whole System Liaison Service.
 - This benefit has not been assigned to Community Groups as it is assumed this is covered by the portion claimed by Local Authorities.
 - Deadweight %: 0%
 - 0%. Deadweight constitutes the percentage of the expected benefits that would have occurred without SSEN's intervention. We assume that the LA's supported would not have received this benefit without SSEN's CVP, hence deadweight is set at 0%.
 - Drop off %: 100%
 - The benefit is claimed in the short term and drops off after 1 year.
 - Attribution %: 100%
 - SSEN claims the entire benefit from this intervention (0% is delivered by partner or other organisations).
 - Optimism bias %: 10%
 - as per Social Valuation Framework guidelines.

Societal benefits

Value of upskilling resources at Local Authorities and Community Groups - £2,470 per resource upskilled

- Description of proxy:
 - Training for staff is an important means through which employers can help tackle skill shortages – either those faced through an inability to recruit sufficiently skilled labour, or those that are present in the existing workforce – as well as to generally develop workforce skills to increase productivity and expertise.

- Based on the 2018 Department for education employer skills survey, the average value of expenditure for organisations undertaking resource training is equivalent to £2,470 per person trained per annum.³⁵
- Scale of impact values:
 - Success %: 80%
 - It is assumed that 1 person from each Local Authority or Community Group will be upskilled over RIIO-ED2.
 - Based on the 2018 Department for Education employer skills survey, employers in Public Administration stated that 80% of resources would benefit from upskilling. It is therefore assumed that 80% of resources trained / upskilled will benefit from this intervention³⁶.
 - Deadweight %: 0%
 - 0%. Deadweight constitutes the percentage of the expected benefits that would have occurred without SSEN's intervention. This is set at 0%, as we assume that none of the staff impacted at Local Authorities or Community groups would equivalently upskilled without SSEN's intervention.
 - Drop off %: 100%
 - It is assumed that 1 person from each Local Authority or Community Group will be upskilled over RIIO-ED2. This is assumed to take place in the first year of support.
 - Attribution %: 0%
 - SSEN claims the entire benefit from this intervention (0% is delivered by partners or organisations)
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

³⁵

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746493/ESS_2017_UK_Report_Controlled_v06.00.pdf

³⁶

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746493/ESS_2017_UK_Report_Controlled_v06.00.pdf

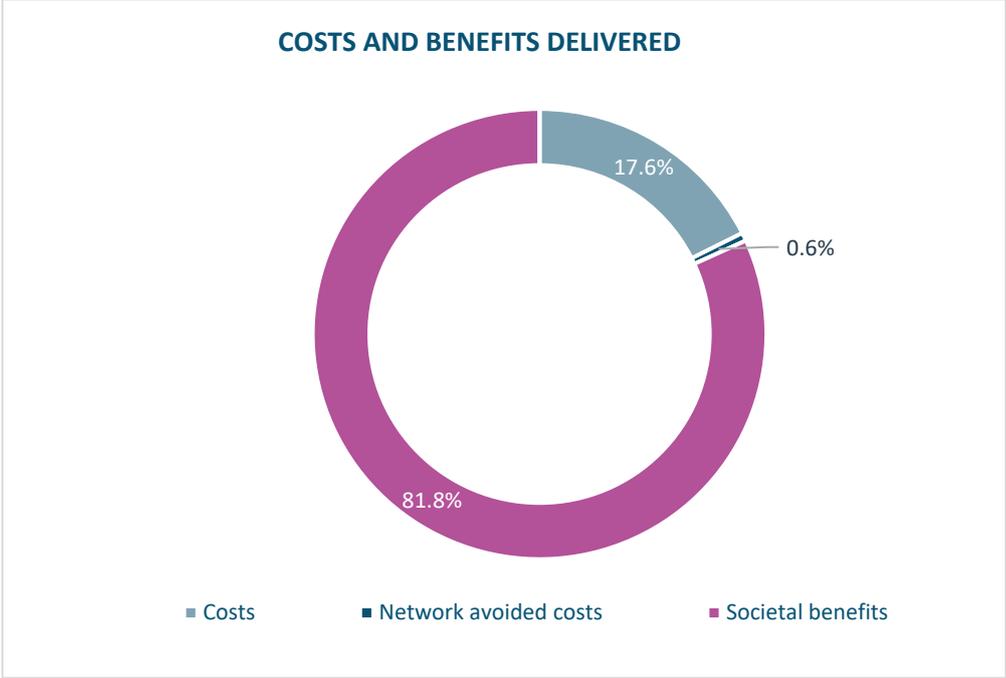
SUPPORTING BROADBAND TO ISLAND COMMUNITIES THROUGH OUR ASSETS

SROI Calculations

The table below provides the summary of results (these are also found in the 'programme reporting' tab of the associated SROI model).

ED2 (2023 - 2027)			
Total cost, PV	Gross Benefit, PV	NPV	SROI
£7,499,818	£34,482,191	£26,982,373	£3.60

- **Total costs, PV** are discounted to 2023 prices (as per Ofgem’s guidance). Non-discounted figures are also provided for each activity below
- **Gross Benefit, PV** is the value in 2023 prices of all future benefits forecast.
- **NPV** is the value in 2023 prices of all future benefits, net of costs.
- **SROI** is the value in 2023 prices of all future benefits, net of costs, divided by the cost



Costs

This section summarises the cost inputs to the SROI model. The overall cost is made up of two components:

- 1) Fibre wrapping costs
- 2) Resource costs

A breakdown of each component and a forecast of total costs across ED2 is provided below. The forecast assumes a uniform roll-out across ED2 of two schemes per year.

Table 1. Breakdown of fibre wrapping costs

Cost Element	2023	2024	2025	2026	2027	ED2 Total
Zones installed	2	2	2	2	2	10
Fibre wrapping - £50k per km, assuming each zone requires 15km	£1,500,000	£1,500,000	£1,500,000	£1,500,000	£1,500,000	£7,500,000
Installation and delivery - £50k per zone	£100,000	£100,000	£100,000	£100,000	£100,000	500000
Total fibre wrapping costs	£1,600,000	£1,600,000	£1,600,000	£1,600,000	£1,600,000	£8,000,000

Table 2. Breakdown of resource costs

Cost Element	2023	2024	2025	2026	2027	ED2 Total
Zones installed	2	2	2	2	2	10
FTE requirement (IT/OT, Legal, SP, engagement)	20	20	20	20	20	100
FTE cost (Grade OA17)	£3,768	£3,768	£3,768	£3,768	£3,768	£18,841
Business Support Plus cost (30% of FTE cost)	£1,130	£1,130	£1,130	£1,130	£1,130	£5,652
Total resource costs	£4,899	£4,899	£4,899	£4,899	£4,899	£24,493

Table 3. Breakdown of overall costs

Cost Element	2023	2024	2025	2026	2027	ED2 Total
Fibre wrapping costs	£1,600,000	£1,600,000	£1,600,000	£1,600,000	£1,600,000	£8,000,000
Resource costs	£4,899	£4,899	£4,899	£4,899	£4,899	£24,493
Total costs	£1,604,899	£1,604,899	£1,604,899	£1,604,899	£1,604,899	£8,024,493

Network avoided costs

Avoided substation cost - £53,920 per year

By wrapping subsea cables with fibre-optic broadband, SSEN will benefit from having high-speed broadband connections from the mainland to each substation on the islands. This provides enhanced remote monitoring and communication between the control room and the substations. By installing fibre for the communities of each island, SSEN are avoiding the future cost of connecting substations.

- There are 18 substations located across the 14 islands/zones shortlisted for fibre connection³⁷³⁸, working out at an average of 1.3 substations per zone. This has been rounded down to 1 substation per zone as a conservative estimate.
- The estimated cost of installing fibre at each substation is £26,960 as quoted in the IT/OT strategy for the RIIO-ED2 Business Plan.
- Assuming 2 zones are connected per year a part of this CVP, this comes to an annual network avoided cost of $2 * £26,960 = £53,920$.

Societal benefits

There is an estimated population of 42,049 people across the 14 islands/zones shortlisted for fibre connection as part of this CVP. Taking an average, we assume that 3,003 people benefit from each zone being connected. Assuming 2 zones are connected per year, this results in a total of 6,006 customers reached per year.

Avoided cost to LAs/partner organisations to lay subsea fibre cables – £1.5M per year

- Description of proxy: The cost incurred by SSEN to connect the islands to fibre broadband would otherwise have been paid for by the Local Authorities/telecom providers, therefore the cost incurred by SSEN is considered an avoided cost for these parties.
- The estimated cost of fibre wrap is £50,000 per km. Assuming each zone requires 15km of fibre, the average cost per zone will be £750,000. We have estimated that 2 zones will be rolled out per year with a benefit of $£750,000 * 2 = £1.5M$ per year. This is a total of £7.5M across all 10 zones in ED2.
- Scale of impact values:
 - Success %: 100%
 - It is assumed that this benefit applies equally across 100% of the zones.
 - Deadweight %: 0%
 - It is assumed that this benefit will not be delivered without the delivery of this CVP (i.e. without SSEN's intervention, the beneficiaries would have paid the full fee of fibre installation)
 - Drop off %: 100%
 - This benefit is only accrued once so there is 100% drop off after Year 1.
 - Attribution %: 100%
 - It is assumed that 100% of this benefit is attributable to SSEN as it relates specifically to the cost and effort from SSEN only.
 - Optimism bias %: 0%
 - As per Social Valuation Framework guidelines.

³⁷ <https://www.ssen.co.uk/GenerationAvailabilityMap/?mapareaid=3>

³⁸ <https://www.ssen.co.uk/GenerationAvailabilityMap/?mapareaid=2>

Financial (business) value of high speed internet – £6000 per business per year³⁹

- Description of proxy: The high-speed broadband enabled by fibre optics drives productivity improvements in businesses. According to Openreach, a typical small business can expect to save around £6000 from productivity improvements as a result of fibre broadband connection⁴⁰.
- Scale of impact values:
 - Success %: 1.43%
 - This benefit is accrued by 100% of businesses that receive the improved broadband connection.
 - There is a total of 602 businesses across the 14 islands/zones shortlisted for fibre connection as part of this CVP⁴¹⁴²⁴³. We have assumed that an average of 43 businesses benefit from each zone being connected.
 - Assuming 2 zones are connected each year, this is 86 businesses per year.
 - The SROI model works on per person benefits, so to convert this benefit from per business to per person, we need to divide the 86 businesses by 6006 customers.
 - Success % = $86 / 6006 = 1.43\%$
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 0%
 - No drop off is applied as it is assumed this benefit is accrued every year that there is high-speed broadband.
 - Attribution %: 25%
 - This initiative is an investment in the cables required for fibre-optic broadband. For this service to be provided to customers, further investment would be required by partner organisations (e.g. telecoms providers and local authorities). Without detailed data on the investment or cost breakdown of an end customer broadband bill, the attribution of benefits to SSEN has been estimated as 25%. In Ofcom's 'Pricing trends for communications services in the UK' report published in July 2021⁴⁴, the regulator estimated that the average listed price for a dual-play residential landline and broadband bundle increases by approximately 40% when moving from a standard to superfast broadband package. A core reason for this increase is due to the additional installation cost of fibre infrastructure and we therefore consider a 25% societal benefits claim for SSEN (due to fibre cable investment) to be reasonable and conservative.
 - Optimism bias %: 15%
 - As per Social Valuation Framework guidelines.

³⁹ <https://www.pssru.ac.uk/pub/uc/uc2018/sources-of-information.pdf>

⁴⁰ Openreach, "The Impact of High-Speed Broadband for Communities", 2018

⁴¹ <https://directory.shetlandtimes.co.uk/commercial>

⁴² <https://www.orkney.com/life/businesses/search?keyword=&service=&area=hoy-graemsay>

⁴³ <http://www.businesshebrides.co.uk/search/>

⁴⁴ https://www.ofcom.org.uk/__data/assets/pdf_file/0013/222331/Pricing-trends-for-communications-services-in-the-UK.pdf

Reduced digital exclusion and improved economic development – £1,062 per customer per year

- Description of proxy: According to Openreach, residents in communities receiving fibre have indicated that fast and reliable broadband is intrinsic to community cohesion, making people feel more socially connected and involved. This includes benefits associated with increased confidence, reduced isolation, time saved by accessing government services online, increased access to hobbies, financial savings from shopping online, and online job searches⁴⁵.

Table 1. Breakdown of outcomes that comprise the overall digital exclusion proxy

Outcome	Value	Likelihood	Source	Total
Confidence	£707	34%	Magnitude in change in confidence	£240
Reduced Isolation	£1,055	24%	% more active in their community & socialising more	£253
Time Saving	£785	37%	% using government services online	£290
Hobbies & Reduced Boredom	£77	57%	% reporting engagement in online hobbies	£44
Financial Savings	£560	31%	% shopping online	£173
Online Job Search	£1,325	4.7%	% of workforce that are job seekers	£62
			Total	£1,062

- Scale of impact values:
 - Success %: 100%
 - This benefit is comprised of six separate outcomes that already have a success % applied individually. The overall success % is therefore 100%.
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 0%
 - No drop off is applied as it is assumed this benefit is accrued every year that there is high-speed broadband.
 - Attribution %: 25%
 - This initiative is an investment in the cables required for fibre-optic broadband. For this service to be provided to customers, further investment would be required by partner organisations (e.g. telecoms providers and local authorities). Without detailed data on the investment or cost breakdown of an end customer broadband bill, the attribution of benefits to SSEN has been estimated as 25%. In Ofcom's 'Pricing trends for communications services in the UK' report published in July 2021, the regulator estimated that the average listed price for a dual-play residential landline and broadband bundle increases by approximately 40% when moving from a standard to superfast broadband

⁴⁵ Openreach, "The Impact of High-Speed Broadband for Communities", 2018

package. A core reason for this increase is due to the additional installation cost of fibre infrastructure and we therefore consider a 25% societal benefits claim for SSEN (due to fibre cable investment) to be reasonable and conservative.

- Optimism bias %: 15%
 - As per Social Valuation Framework guidelines.

Improved quality of healthcare provision – £1,888 per customer per year

- Description of proxy: According to a nationwide trial conducted by Nuffield Health, the overall costs of delivering healthcare services for users with COPD, heart disease or diabetes was £1,888 lower when using virtual appointments versus when not⁴⁶.
- Scale of impact values:
 - Success %: 3.43%
 - This success rate has been calculated based on the % of population with COPD, heart disease or diabetes that are likely to benefit from improved telehealth services due to faster broadband
 - Based on Diabetes UK, an average of 4.5%⁴⁷, 4.3%⁴⁸, and 4.6%⁴⁹ of the population in Western Isles, Shetland and Orkney respectively are diabetic.
 - Based on Scottish heart disease statistics, 0.359% of the Scottish population suffer from heart disease⁵⁰.
 - 71% of GP appointments in the UK are virtual⁵¹.
 - Success rate = (4.47% + 0.359%) * 71% = 3.43%
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 0%
 - No drop off is applied as it is assumed this benefit is accrued every year that there is high-speed broadband.
 - Attribution %: 25%
 - This initiative is an investment in the cables required for fibre-optic broadband. For this service to be provided to customers, further investment would be required by partner organisations (e.g. telecoms providers and local authorities). Without detailed data on the investment or cost breakdown of an end customer broadband bill, the attribution of benefits to SSEN has been estimated as 25%. In Ofcom's 'Pricing trends for communications services in the UK' report published in July 2021, the regulator estimated that the average listed price for a dual-play residential landline and broadband bundle increases by approximately 40% when moving from a standard to superfast broadband package. A core reason for this increase is due to the additional installation cost of fibre infrastructure and we therefore consider a 25% societal benefits claim for SSEN (due to fibre cable investment) to be reasonable and conservative.

⁴⁶ Openreach, "The Impact of High-Speed Broadband for Communities", 2018

⁴⁷ https://www.diabetes.org.uk/in_your_area/scotland/diabetes_in_your_area_scotland/western_isles

⁴⁸ https://www.diabetes.org.uk/in_your_area/scotland/diabetes_in_your_area_scotland/shetland

⁴⁹ https://www.diabetes.org.uk/in_your_area/scotland/diabetes_in_your_area_scotland/orkney

⁵⁰ <https://www.isdscotland.org/Health-Topics/Heart-Disease/Publications/2019-01-29/2019-01-29-Heart-Disease-Report.pdf>

⁵¹ <https://www.jdsupra.com/legalnews/telehealth-in-the-united-kingdom-6783629/>

- Optimism bias %: 15%
 - As per Social Valuation Framework guidelines.

Improved wellbeing surplus above bill payments – £230 per customer per year

- Description of proxy: An evaluation of the Economic Impact and Public Value of the Superfast Broadband Programme carried out by the Department for Digital, Culture, Media and Sport states that the increased value of consumer wellbeing from having high speed broadband is £230 per customer per year⁵².
- Scale of impact values:
 - Success %: 41.7%
 - This benefit is accrued by one customer per household that receives the improved broadband connection.
 - The SROI model works on per person benefits, so to convert this benefit from per person to per household, we need to divide by the average household size.
 - The average household size is assumed to be 2.4⁵³.
 - Success rate = $1 / 2.4 = 41.7\%$
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 0%
 - No drop off is applied as it is assumed this benefit is accrued every year that there is high-speed broadband.
 - Attribution %: 25%
 - This initiative is an investment in the cables required for fibre-optic broadband. For this service to be provided to customers, further investment would be required by partner organisations (e.g. telecoms providers and local authorities). Without detailed data on the investment or cost breakdown of an end customer broadband bill, the attribution of benefits to SSEN has been estimated as 25%. In Ofcom's *'Pricing trends for communications services in the UK'* report published in July 2021, the regulator estimated that the average listed price for a dual-play residential landline and broadband bundle increases by approximately 40% when moving from a standard to superfast broadband package. A core reason for this increase is due to the additional installation cost of fibre infrastructure and we therefore consider a 25% societal benefits claim for SSEN (due to fibre cable investment) to be reasonable and conservative.
 - Optimism bias %: 10%
 - As per Social Valuation Framework guidelines.

⁵² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734858/BDUK_SF_EVAL_ANNEX_C_-_SUBJECTIVE_WELLBEING_ANALYSIS_-_EXECUTIVE_SUMMARY.pdf

⁵³ <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2020#:~:text=The%20average%20household%20size%20in,1.1%25%20in%20the%20West%20Midlands.>

PROTECTING MARINE BIODIVERSITY: LIFE BELOW WATER

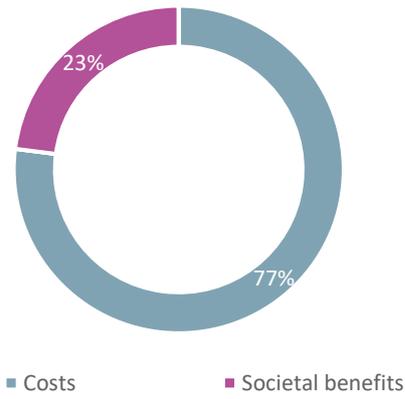
SROI Calculations

The table below provides the summary of results (these are also found in the ‘programme reporting’ tab of the associated SROI model).

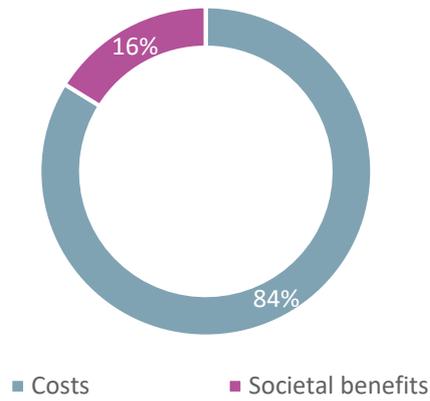
	30-year Benefits Profile (2023 – 2052)			
	Total cost, PV	Gross Benefit, PV	NPV	SROI
Low Cost Scenario £100k per hectare	£1,588,847	£5,829,161	£4,240,314	£2.67
Medium Cost Scenario £155k per hectare	£2,462,713	£5,829,161	£3,366,449	£1.37
High Cost Scenario £210k per hectare	£3,336,579	£5,829,161	£2,492,583	£0.75

- **Total costs, PV** are discounted to 2023 prices (as per Ofgem’s guidance). Non-discounted figures are also provided for each activity below
- **Gross Benefit, PV** is the value in 2023 prices of all future benefits forecast.
- **NPV** is the value in 2023 prices of all future benefits, net of costs.
- **SROI** is the value in 2023 prices of all future benefits, net of costs, divided by the cost
- Due to the nature of this CVP, a 30-year time horizon has been used in the SROI model. We have assumed that benefits begin to accrue in year 10.
- All costs and benefits (except biodiversity net gain) are modelled on a per-hectare basis. The total costs and benefits are based on the assumption that 17 hectares of seagrass will be planted in total.

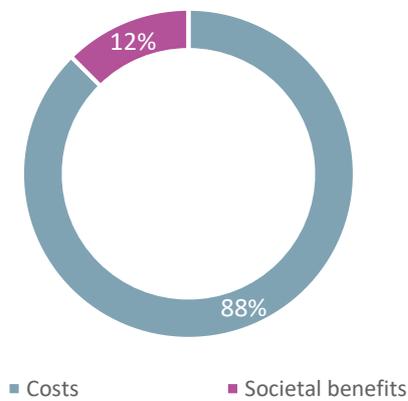
Low Cost Scenario: Costs and Benefits delivered



Medium Cost Scenario: Costs and Benefits delivered



High Cost Scenario: Costs and Benefits delivered



Costs

This section summarises the cost inputs to the SROI model. Given that only one seagrass restoration project has to date been fully implemented, there is limited UK-specific cost information available. Three scenarios have been used to provide a view of the potential Net Present Value and SROI of the project at a range of cost levels. Note that the costs have been modelled on a per-hectare basis assuming a uniform profile across ED2. The scenarios include capital, staff and monitoring costs.

- 1) Low Cost Scenario - £100,000 per hectare
- 2) Medium Cost Scenario - £155,000 per hectare
- 3) High Cost Scenario - £210,000 per hectare

The High Cost Scenario is based on Project Seagrass’ actual costs for the Welsh pilot site (including some allowance for monitoring). It is assumed that the currently practiced seed collection, processing and planting techniques are employed. Should ongoing upscaling research by several organisations be successful, then costs are anticipated to fall far below the low-cost scenario in the medium term (possibly as low as £20,000 per hectare). Importantly, these new upscaling techniques would greatly reduce diving hours, which are a key driver of costs.

The cost profile of each scenario is presented below, with both the per-hectare and total figures. The total figures assume a total seagrass area of 17 hectares.

Table 1. Per-hectare and total costs across ED2 for Low, Medium and High Cost Scenarios

Cost type	Scenario	2023	2024	2025	2026	2027	ED2 Total
Per hectare costs	Low Cost	£20,000	£20,000	£20,000	£20,000	£20,000	£100,000
	Medium Cost	£31,000	£31,000	£31,000	£31,000	£31,000	£155,000
	High Cost	£42,000	£42,000	£42,000	£42,000	£42,000	£210,000
Total costs	Low Cost	£340,000	£340,000	£340,000	£340,000	£340,000	£1,700,000
	Medium Cost	£527,000	£527,000	£527,000	£527,000	£527,000	£2,635,000
	High Cost	£714,000	£714,000	£714,000	£714,000	£714,000	£3,570,000

Societal benefits

Carbon sequestration

- Description of proxy: According to CEFAS, seagrass accumulates carbon at an average rate of 86 gC/m²/yr⁵⁴. This is equivalent to 0.86 tC/ha/yr, or 3.1562 tCO₂e/ha/yr. This has been multiplied by the yearly traded price of carbon to determine the value of this rate of sequestration.
- Scale of impact values:
 - Success %: 100%
 - This is the confirmed volume of carbon sequestration per hectare of seagrass planted.
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 100%
 - We have assumed that the life of seagrass extends to full timeline of project with no drop off in benefits.
 - Attribution %: 0%
 - SSEN are covering the full cost of the seagrass planting programmes per hectare, therefore 100% of benefits have been attributed to SSEN.
 - Optimism bias %: 5%
 - As per Social Valuation Framework guidelines.
 -

Removal of nitrogen and phosphorus from marine ecosystems – £31,070 per hectare per year

- Description of proxy: Based on a study by Watson et al in 2020⁵⁵ and Cole et al in 2016⁵⁶, the economic value captured by the removal of phosphorus and nitrogen from marine ecosystems can be calculated and averaged across rural and urban areas. The two types of biotopes included in this project are seagrass and subtidal sediments. The total value captured by removing nitrogen and phosphorus from urban marine ecosystems are £73,116 per hectare and -£11,562 per hectare respectively, with negative value meaning phosphorus is being released into the ecosystem instead of removed. Removal of nitrogen and phosphorus from rural marine ecosystems gave an average value of £536.1 per ha. This gave a final average net value added of $((£73,116 - £11,562) + £536.1) / 2 = £31,070$ per hectare.
- Scale of impact values:
 - Success %: 100%
 - This is the confirmed value of nitrogen and phosphorous removed per hectare of seagrass planted.
 - Deadweight %: 0%

⁵⁴ Cefas, 2021. Blue Carbon stocks and accumulation analysis for Secretary of State (SoS) region. Cefas, Lowestoft, 44p

⁵⁵ Watson, S.C., Preston, J., Beaumont, N.J. and Watson, G.J., 2020. Assessing the natural capital value of water quality and climate regulation in temperate marine systems using a EUNIS biotope classification approach. *Science of the total Environment*, 744, p.140688

⁵⁶ Cole, S.G., and P.O. Moksnes, 2016. Valuing multiple eelgrass ecosystem services in Sweden: fish production and uptake of carbon and nitrogen. *Frontiers in Marine Science* 2:121

- It is assumed that this benefit would not be accrued without the delivery of this initiative.
- Drop off %: 100%
 - We have assumed that the life of seagrass extends to full timeline of project with no drop off in benefits.
- Attribution %: 0%
 - SSEN are covering the full cost of the seagrass planting programmes per hectare, therefore 100% of benefits have been attributed to SSEN.
- Optimism bias %: 15%
 - As per Social Valuation Framework guidelines.

Increase in commercial fish stocks – £675.50 per hectare per year

- Description of proxy: The economic value of seagrass meadows for local fisheries. In a study of fisheries around the island of Gran Canaria in 2014, the monetary value of the biomass of commercially-targeted fish in seagrass areas was calculated to be €866 per hectare⁵⁷. In 2014, converting this to Pounds Sterling results in a value of £675.50.
- Scale of impact values:
 - Success %: 100%
 - This is the confirmed value of increased fish stocks per hectare of seagrass planted.
 - Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
 - Drop off %: 100%
 - We have assumed that the life of seagrass extends to full timeline of project with no drop off in benefits.
 - Attribution %: 0%
 - SSEN are covering the full cost of the seagrass planting programmes per hectare, therefore 100% of benefits have been attributed to SSEN.
 - Optimism bias %: 40%
 - As per Social Valuation Framework guidelines.

Biodiversity net gain – £110,000 one-off benefit

- Description of proxy: As per Defra’s Biodiversity Metric⁵⁸, ten biodiversity credits are earned from this project based on biodiversity net gain. Assuming a value of £11,000 per credit as per the best estimate in the government’s net gain impact assessment⁵⁹, the total value captured is £110,000, payable in year 15 (2038).
- Scale of impact values:
 - Success %: 100%

⁵⁷ Tuya, F., Haroun, R. and Espino, F., 2014. Economic assessment of ecosystem services: Monetary value of seagrass meadows for coastal fisheries. *Ocean & Coastal Management*. 96

⁵⁸ <https://www.gov.uk/guidance/biodiversity-metric-calculate-the-biodiversity-net-gain-of-a-project-or-development#what-the-metric-is-for>

⁵⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

- Assuming 10 biodiversity credits are awarded, this is the confirmed value to SSEN.
- Deadweight %: 0%
 - It is assumed that this benefit would not be accrued without the delivery of this initiative.
- Drop off %: 100%
 - We have assumed that the life of seagrass extends to full timeline of project with no drop off in benefits.
- Attribution %: 0%
 - SSEN are covering the full cost of the seagrass planting programmes per hectare, therefore 100% of benefits have been attributed to SSEN.
- Optimism bias %: 5%
 - As per Social Valuation Framework guidelines.

ENERGY EFFICIENCY ACCELERATOR FOR SMARTER NETWORK & LOCAL AND COMMUNITY FLEXIBILITY MARKET STIMULATION

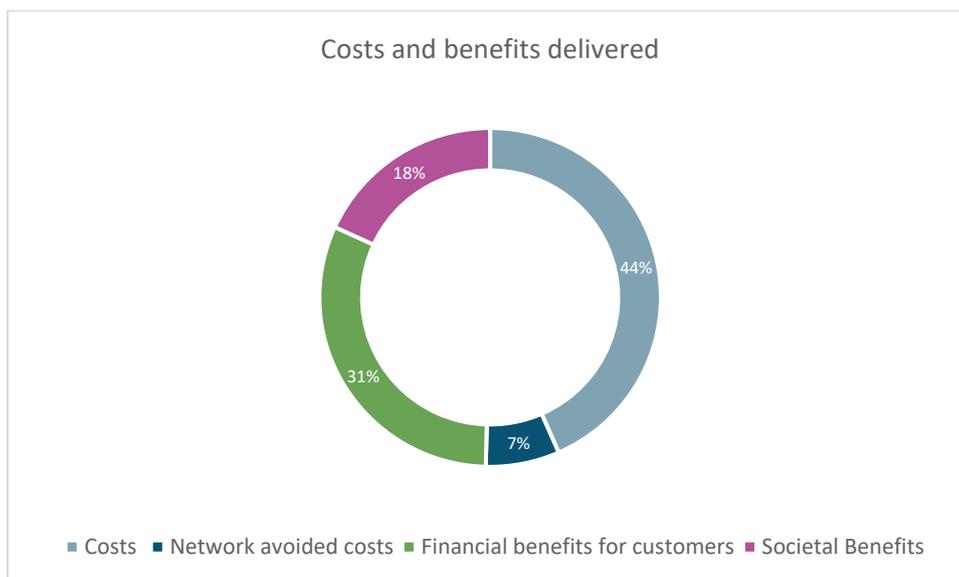
SROI Calculations

The table below provides the summary of results for the combined energy efficiency and flexibility market stimulation CVP (these are also found in the 'programme reporting' tab of the associated SROI model).

Total cost, PV	Gross Benefit, PV	NPV	SROI
£33,753,868	£40,867,350	£7,113,482	£0.21

Table 21 – Net Consumer Benefits 2023-2033

- **Total costs, PV** are discounted to 2023 prices (as per Ofgem's guidance). Non-discounted figures are also provided for each activity below
- **Gross Benefit, PV** is the value in 2023 prices of all future benefits forecast.
- **NPV** is the value in 2023 prices of all future benefits, net of costs.
- **SROI** is the value in 2023 prices of all future benefits, net of costs, divided by the cost



Whilst the overall costs and benefits of each part of this CVP have been bundled together, we detail the full set of proxies and assumptions separately for each part in the following two sections.

Energy Efficiency Accelerator for Smarter Networks

Costs

This section summarises the cost inputs to the SROI model. There are two types of cost categories applicable to this CVP:

- 1) Administrative costs - 4.5 additional FTE resources and overheads over the course of ED2
- 2) Energy efficiency investment costs – the amount of funding SSEN will make available for investment into energy efficiency measures over the course of ED2

Table 2. Cost profiles used for SROI modelling

	2023	2024	2025	2026	2027	ED2 total
Administrative costs	£554,793	£554,793	£554,793	£554,793	£554,793	£2,773,964
Energy efficiency measures costs – (50% funding)	£1,004,359	£2,410,461	£4,017,435	£5,624,409	£7,030,511	£20,087,174
Total costs	£1,559,151	£2,965,254	£4,572,228	£6,179,202	£7,585,304	£22,861,138

The SROI assessment has been modelled based on the rollout of 4 different measures over ED2. The estimated investment costs per household and volumes forecast over ED2 are provided below:

Table 3. Energy efficiency measures and costs per household

Measure installed	Investment cost per household installation	Description	Source
LED light bulbs	£120	Average cost to install 10 LED bulbs per household	Solent Achieving Value from Efficiency (SAVE) project ⁶⁰
Smart Storage Heating	£11,990	Total costs to install smart storage heating per household including direct costs, shared infrastructure costs and operational support	Northern Isles New Energy Solutions (NINES) project ⁶¹
Loft insulation	£368	Average cost per loft insulation installation based on Clarion Housing Energy Efficiency Measure data for 2019/20	Clarion Housing Energy Efficiency Measures 2019/20 ⁶²
Smart controls	£470	Average costs of 4 smart Thermostatic Radiator Valves plus programming costs per household.	Heating Hub ⁶³ Nest ⁶⁵

⁶⁰ <https://save-project.co.uk/>

⁶¹ <http://www.ninessmartgrid.co.uk/our-project/>

⁶² <https://www.myclarionhousing.com/repairs-and-maintenance/planned-improvement-schemes>

⁶³ <https://www.theheatinghub.co.uk/smart-radiator-valves-product-and-compatibility-guide>

⁶⁴ <https://www.theheatinghub.co.uk/focus-boiler-plus>

⁶⁵ <https://www.nestprofessional.co.uk/>

Table 4. Forecast number of each measure and estimated funding costs

Measure installed	# households receiving measures over ED2	ED2 cost
LED light bulbs	100,000	£12,000,000
Smart Storage Heating	2,000	£23,980,500
Loft insulation	5,000	£1,842,419
Smart controls	5,000	£2,351,429
Total	112,000	£40,174,348

Network avoided costs

Avoided network reinforcement due to uptake of energy efficiency measures

Like flexibility services, energy efficiency interventions can provide benefits to network users by deferring, displacing or avoiding the need for network reinforcement. In the context of this CVP these benefits relate to the need to reinforce local substations.

To calculate avoided network reinforcement costs per measure installed, we applied the benefits analysis from Project SAVE and scaled this to the number of measures installed over ED2:

Table 5. Network reinforcement cost assumptions

Measure installed	Estimated annual avoided network reinforcement per household installation	Avoided network reinforcement cost over ED2 (based on forecast number of households receiving measures)
LED light bulbs	£7.95	£1,781,612
Smart Storage Heating	£11.37	£50,953

Customer financial benefits

Annual customer bill saving from energy efficiency measures – £23.37 per household per year

- Description of proxy: Energy efficiency interventions are proven to reduce customers' energy consumption, which translates into lower final electricity bills. We have used estimates from Project SAVE, Project NINES and Energy Savings Trust to calculate the weighted average of annual bill saving from installed energy efficiency measures as follows:

Table 6. Estimated annual bill saving per household from installed measures

Measure installed	Estimated annual customer saving per installation	ED2 total measures	% per measure	Annual bill saving Weighted average	Source
LED light bulbs	£17.68	100,000	89%	£15.78	Solent Achieving Value from Efficiency (SAVE) project
Smart Storage Heating	£213.43	2,000	2%	£3.81	Northern Isles New Energy Solutions (NINES) project
Loft insulation	£9.68	5,000	4%	£0.43	Energy Savings Trust ⁶⁶
Smart controls	£75.00	5,000	4%	£3.35	Energy Savings Trust ⁶⁷
				£23.37	

- Scale of impact values:
 - Success %: 100%
 - Success rate is 100% as the average benefit is applied to all households receiving measures installed over ED2.
 - Deadweight %: 0%
 - It is assumed that all customers will benefit from energy efficiency measures received.
 - Drop off %: 0%
 - No drop off is applied as it is assumed that all energy efficiency measures will have a lifetime of at least 10 years.
 - Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

Behavioural change from energy efficiency advice (annual bill savings) - £44.80 per household per year

- Description of proxy: In addition to saving on energy bills from installing energy efficiency measures, customers can also reduce their overall consumption and spend by implementing energy efficiency behaviours at home. As part of the CVP, SSEN will provide energy efficiency

⁶⁶ <https://energysavingtrust.org.uk/energy-at-home/reducing-home-heat-loss/>

⁶⁷ <https://energysavingtrust.org.uk/advice/thermostats-and-heating-controls/>

advice to all household receiving measures and we assume that a portion of these will benefit from further bill reductions through behavioural change.

- We have calculated the average bill saving to customers from implementing energy efficiency behaviours at home based on guidance from Citizens Advice⁶⁸:

Table 7. Estimated annual bill savings per household implementing energy efficiency advice

Action	Average annual bill saving per household
Use of a bowl to wash-up instead of running the tap, reduce washing machine use by one cycle per week and only fill the kettle with a necessary level of water (per household)	£86
Spend one minute less in the shower each day	£75
Turn off lights when they are not in use	£14
Turn appliances off standby mode	£30
Do one less wash a week (per household)	£19
Assume the saving to each household implementing behavioural change is an average of the above activities	£44.80

- Scale of impact values:
 - Success %: 64%
 - All customers receiving measures will also receive energy efficiency advice. Energy Saving Trust evaluations show that 64% of households take action after receiving energy saving advice.⁶⁹
 - Deadweight %: 64%
 - Energy Saving Trust estimates that 36% of British households have not made changes to their energy usage at home in recent years.⁷⁰ Deadweight constitutes the % of the expected benefits that would have occurred without the initiative proceeding. Therefore, 64% of British households would have made changes to their energy usage irrespective of this intervention.
 - Drop off %: 0%
 - No drop off is applied as it is assumed that all energy efficiency measures will have a lifetime of at least 10 years.
 - Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

⁶⁸ <https://www.citizensadvice.org.uk/Global/CitizensAdvice/campaigns/BESW%202020/20%20ways%20to%20save.pdf>

⁶⁹ <https://www.policyconnect.org.uk/research/warmer-greener-guide-future-domestic-energy-efficiency-policy>

⁷⁰ <https://energysavingtrust.org.uk/over-third-british-households-miss-out-bill-savings-not-changing-home-energy-use/>

Societal benefits

Carbon benefits from energy efficiency measures (Ofgem RIIO-ED2 CBA – Traded Price of Carbon)

- Description of proxy: Since energy efficiency interventions are proven to reduce customers' energy consumption, this provides an additional benefit of less CO2 being emitted into the atmosphere.

Table 8. Estimated annual carbon emission reductions per measure

Measure installed	Estimated annual carbon savings per installation (kg CO2)	ED2 total measures	% per measure	Carbon reduction, Weighted average (kg CO2)	Source
LED light bulbs	24.76	100,000	89%	22.11	Solent Achieving Value from Efficiency (SAVE) project
Smart Storage Heating	202.86	2,000	2%	3.62	Northern Isles New Energy Solutions (NINES) project
Loft insulation	48.39	5,000	4%	2.16	Energy Savings Trust
Smart controls	320.00	5,000	4%	14.29	Energy Savings Trust
				42.18	

- The average carbon savings per household has been multiplied by the traded price of carbon per annum (Ofgem RIIO-ED2 CBA)⁷¹ to calculate the £ benefit per year in the SROI model.
- Scale of impact values:
 - Success %: 100%
 - Success rate is 100% as the average benefit is applied to all households receiving measures installed over ED2.
 - Deadweight %: 0%
 - It is assumed that all customers will benefit from energy efficiency measures received.
 - Drop off %: 0%
 - No drop off is applied as it is assumed that all energy efficiency measures will have a lifetime of at least 10 years.
 - Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

⁷¹ https://www.ofgem.gov.uk/sites/default/files/docs/2021/03/riio-ed2_cba_template_v5.0.xlsx

Quality of life improvements due to energy efficiency measures - £13,200 per customer

- Description of proxy: In a report for the UK Committee on Climate Change, the Institute of Health Equity found that improved home energy efficiency alone could lead to 2,200 quality adjusted life years (QALYs) gained per 10,000 people aged over 50 per year⁷².
- As per HMT Greenbook guidance on valuing QALY:
 - 1 QALY Value (Greenbook) - £60,000⁷³
 - QALYs per person per year (over 50 year olds) from improved energy efficiency - 0.22
 - Proxy (£ value of QALY due to energy efficiency measures per person over 50) - £13,200
- Scale of impact values:
 - Success %: 6.43%
 - The QALY benefit is assumed to only apply to customers receiving smart heating, insulation or smart controls (LED not included). This equates to an average of 10.7% of households per year.
 - As per the Office for National Statistics, the average household size in the UK is 2.4 people and 25% of the UK population is over 50 (2019 data).⁷⁴
 - Therefore, the estimated % of customers over 50 benefiting from energy efficiency measures per year is $25\% * 2.4 * 10.7\% = 6.43\%$.
 - Deadweight %: 64%
 - Energy Saving Trust estimates that 36% of British households have not made changes to their energy usage at home in recent years.⁷⁵ Deadweight constitutes the % of the expected benefits that would have occurred without the initiative proceeding. Therefore, 64% of British households would have made changes to their energy usage irrespective of this intervention.
 - Drop off %: 100%
 - 100% drop off as this is a lifetime benefit realised in year 1.
 - Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
 - Optimism bias %: 40%
 - as per Social Valuation Framework guidelines.

Reduction in negative impact of cold weather on customers' health (QALY) - £2,760 per customer⁷⁶

- Description of proxy: Actively reducing exposure to cold homes through improving their thermal and energy efficiency has also been found to contribute to wider societal and health benefits. We assume a portion of customers will receive health benefits as a result of improved energy efficiency measures and behavioural change.
- Scale of impact values:
 - Success %: 0.67%
 - This benefit is only applied to customers receiving smart heating, insulation or smart controls (LED not included) as we assume these customers will benefit most from the reduction in bills and warmer homes due to energy efficiency measures.

⁷² <https://www.instituteoftheequity.org/resources-reports/sustainable-health-equity-achieving-a-net-zero-uk/main-report.pdf>

⁷³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf

⁷⁴ <https://www.statista.com/statistics/281174/uk-population-by-age/>

⁷⁵ <https://energysavingtrust.org.uk/over-third-british-households-miss-out-bill-savings-not-changing-home-energy-use/>

⁷⁶ [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595339/IPOL_STU\(2016\)595339_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595339/IPOL_STU(2016)595339_EN.pdf)

- Based on SSEN PSR data, it is estimated that 13.2% of customers reached as part of this initiative will be PSR customers. We have conservatively assumed the portion of customers on the PSR is representative proxy for the number of customers that will most likely have improved wellbeing as part of this CVP.
- As this specific QALY proxy relates to health improvements, we have applied a further weighting of 2.6%. It is estimated that residing in damp or mouldy dwellings as a result of poor insulation contributes to an average of 2.6% of a population developing problems related to asthma. We therefore assume that this portion of customers will no longer be in damp or cold homes as a result of the intervention and have a quality of life improvement relate to better health.
- As per the Office for National Statistics, the average household size in the UK is 2.4 people.
- Success rate = $13.2\% * 2.6\% * 2.4 * 10.7\%$ (based on measure type) = 0.67%
- Deadweight %: 64%
 - Energy Saving Trust estimates that 36% of British households have not made changes to their energy usage at home in recent years.⁷⁷ Deadweight constitutes the % of the expected benefits that would have occurred without the initiative proceeding. Therefore, 64% of British households would have made changes to their energy usage irrespective of this intervention.
- Drop off %: 100%
 - 100% drop off as this is a lifetime benefit realised in year 1.
- Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
- Optimism bias %: 15%
 - as per Social Valuation Framework guidelines.
 -

Customers feel in better control of their lives – £82.1 per customer per year⁷⁸

- Description of proxy: Customers feel in better control of their lives due to bill reductions and warmer homes.
-
- Scale of impact values:
 - Success %: 3.39%
 - This benefit is only applied to customers receiving smart heating, insulation or smart controls (LED not included) as we assume these customers will benefit most from the reduction in bills and warmer homes due to energy efficiency measures.
 - Based on SSEN PSR data, it is estimated that 13.2% of customers reached as part of this initiative will be PSR customers. We have conservatively assumed the portion of customers on the PSR is representative proxy for the number of customers that will most likely have improved wellbeing as part of this CVP.
 - As per the Office for National Statistics, the average household size in the UK is 2.4 people.

⁷⁷ <https://energysavingtrust.org.uk/over-third-british-households-miss-out-bill-savings-not-changing-home-energy-use/>

⁷⁸ <https://www.pssru.ac.uk/pub/uc/uc2018/sources-of-information.pdf>

- Success rate = $13.2\% * 2.4 * 10.7\%$ (based on measure type) = 3.39%
- Deadweight %: 64%
 - Energy Saving Trust estimates that 36% of British households have not made changes to their energy usage at home in recent years.⁷⁹ Deadweight constitutes the % of the expected benefits that would have occurred without the initiative proceeding. Therefore, 64% of British households would have made changes to their energy usage irrespective of this intervention.
- Drop off %: 0%
 - No drop off is applied as it is assumed that all energy efficiency measures will have a lifetime of at least 10 years.
- Attribution %: 50%
 - 50% of benefits are attributed to SSEN (which is aligned to the funding portion), with 50% attributed to partners / other organisations.
- Optimism bias %: 10%
 - as per Social Valuation Framework guidelines.

⁷⁹ <https://energysavingtrust.org.uk/over-third-british-households-miss-out-bill-savings-not-changing-home-energy-use/>

Local and Community Flexibility Market Stimulation

Costs

This section summarises the cost inputs to the SROI model. There are four key costs applicable to this CVP:

- 1) Administrative costs - 7.5 additional FTE resources and overheads over the course of ED2
- 2) Support costs - Customer Feasibility & Funding assistance, Surveying, Canvassing and Publications
- 3) LCT installation costs – the amount of funding SSEN will make available for investment into LCT installations over the course of ED2
- 4) IT/OT System development and support

Table 9. Cost profiles used for SROI modelling

	2023	2024	2025	2026	2027	ED2 total
<i>Administrative costs</i>	£670,488	£670,488	£670,488	£670,488	£670,488	£3,352,440
<i>Support elements</i>	£75,000	£85,000	£95,000	£105,000	£115,000	£475,000
<i>LCT installation investment costs (25% funding)</i>	£1,000,000	£1,500,000	£2,000,000	£2,500,000	£2,500,000	£9,500,000
<i>IT/OT System development/support</i>	£80,000	£100,000	£120,000	£140,000	£160,000	£600,000
Total costs	£1,825,488	£2,355,488	£2,885,488	£3,415,488	£3,445,488	£13,927,440

The SROI assessment has been modelled based on the rollout of 3 different LCT measures over ED2. The estimated investment costs per household and volumes forecast over ED2 are provided below:

Table 10. LCT installation and costs per household

Measure installed	Investment cost per household installation	Description	Source
Battery and Solar PV	£5,157	Average cost to install battery storage and solar PV	Project ERIC (Energy Resources for Integrated Communities) ⁸⁰
Smart Storage Heating	£11,990	Total costs to install smart storage heating per household including direct costs, shared infrastructure costs and operational support	Northern Isles New Energy Solutions (NINES) project ⁸¹
Smart controls	£470	Average costs of 4 smart Thermostatic Radiator Valves plus programming costs per household.	Heating Hub ⁸²⁸³ Nest ⁸⁴

It has been assumed that the incentive provided by SSEN as part of this CVP will be up to 25% of the upfront cost per measure installed. The table below provides the indicative volumes forecast over ED2 for the funding pot:

Table 11. Forecast number of each measure and estimated funding costs

LCT installation	# households receiving measures over ED2	ED2 cost estimate
Battery storage and solar PV	2,500	£3,223,125
Smart Storage Heating	2,000	£5,995,000
Smart controls	2,500	£293,931
Total	7,000	£9,512,056

⁸⁰ http://lowcarbonoxford.org/case_studies/project-eric-energy-resources-integrated-communities/

⁸¹ <http://www.ninessmartgrid.co.uk/our-project/>

⁸² <https://www.theheatinghub.co.uk/smart-radiator-valves-product-and-compatibility-guide>

⁸³ <https://www.theheatinghub.co.uk/focus-boiler-plus>

⁸⁴ <https://www.nestprofessional.co.uk/>

Customer financial benefits

Annual customer bill saving from LCT installations – £271.9 per household per year

- Description of proxy: LCT installations are proven to reduce customers’ energy consumption, which translates into lower final electricity bills. We have used estimates from Project ERIC, Project NINES and Energy Savings Trust to calculate the weighted average of annual bill saving from installed energy efficiency measures as follows:

Table 12. Estimated annual bill saving per household from installed measures

Measure installed	Estimated annual customer saving per installation	ED2 total measures	% per measure	Annual bill saving Weighted average	Source
Battery storage and solar PV	£516	2,500	36%	£184.3	Project ERIC (Energy Resources for Integrated Communities)
Smart Storage Heating	£213.43	2,000	28%	£60.9	Northern Isles New Energy Solutions (NINES) project
Smart controls	£75.00	2,500	36%	£26.8	Energy Savings Trust ⁸⁵
				£271.9	

- Scale of impact values:
 - Success %: 100%
 - Success rate is 100% as the average benefit is applied to all households receiving LCT installations over ED2.
 - Deadweight %: 0%
 - It is assumed that all customers receiving LCT installations will benefit from the intervention.
 - Drop off %: 0%
 - No drop off is applied as it is assumed that all LCT installations will have a lifetime of at least 10 years. This is consistent with the analysis from each project from which proxies have been sourced.
 - Attribution %: 25%
 - 25% of benefits are attributed to SSEN (which is aligned to the funding portion), with 75% attributed to partners / other organisations.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

⁸⁵ <https://energysavingtrust.org.uk/advice/thermostats-and-heating-controls/>

Value of Constraint Managed Zones (CMZ) Flexibility Services stimulated - £150/MW/year

- Description of proxy: Estimated value delivered to local markets and communities from stimulated market services per MW and MWh.
- Flexibility Services help to defer and if possible, avoid investment on our networks, reduce or remove the need for mobile diesel generation and reduce Customer Interruptions and Customer minutes lost through commercially tendered procurement processes.
- SSEN's CMZ services have already released over £1m of payments to flexibility providers in ED1 and the business forecasts in excess of £6m of Flexibility Payments in RIIO-ED2, this CVP is designed to ensure as much of those payments as possible goes to communities.
- As part of this CVP, SSEN proposes to support 50 CMZ's over RIIO-ED2 at an average size of 5 MW per zone. It is assumed that 4 flexibility service types will be stimulated per zone (assumption based on delivery of CMZ's in ED1)⁸⁶.
- As per SSEN's RIIO-ED2 DSO strategy, the estimated payment for flexibility services is £150/MW/year and £150/MWh/year for availability and utilisation, respectively.
- The table below provides a breakdown of the number of CMZs, estimated number of customers supported, target MW/MWhs per year.

# CMZs supported	6	8	10	12	14	50
Average customers per zone	2,500	2,500	2,500	2,500	2,500	12,500
Total end consumers affected by CMZ	15,000	20,000	25,000	30,000	35,000	125,000
Target MW per zone	5	5	5	5	5	
MWs stimulated (5 MW per zone)	30	40	50	60	70	250
£ MW value per service	150	150	150	150	150	
Target MWh per Zone	10	10	10	10	10	
MWhs stimulated (10 MWh per zone)	60	80	100	120	140	500
£ MWh value per service	150	150	150	150	150	

⁸⁶ <https://project-leo.co.uk/the-energy-challenge/flexibility-services/>

- Scale of impact values:
 - Success %: 100%
 - Success rate is 100% as the average benefit is applied per MW and MWh stimulated.
 - Deadweight %: 0%
 - It is assumed that the value would not be delivered without SSEN's intervention.
 - Drop off %: 0%
 - It has been assumed that all CMZs will run for a minimum of 5 years. Therefore, drop off within ED2 is zero.
 - Attribution %: 100%
 - The benefit is directly attributable SSEN as a result of the flexibility market stimulation payments.
 - Optimism bias %: 0% as per Social Valuation Framework guidelines.

Annual customer bill savings from flexible (Time of Use) tariffs - £37.50 per customer per year

- Description of proxy: In addition to saving on energy bills from installing LCTs, we have assumed that a portion of end customers will also benefit from bill reductions as a result of switching to flexible time of use tariffs (ToUT)⁸⁷.
- A Citizens Advice trial found that households could save £5 a year with time of use tariffs with no behavioural change with an average reduction in peak demand between 5-10%.
- Further, by using automation, such as controlling heating or charging electric vehicles, savings for time of use tariffs could increase to £70 a year per household on a time of use tariff.
- We have used the average of these saving a proxy for the potential benefit delivered to each customer within each CMZ, therefore £37.50 per customer per year.
- Scale of impact values:
 - Success %: 25%
 - It is assumed that 1 of the 4 services offered per zone will be ToU tariff (direct benefit to end customers detailed above). Therefore, 25% of end customers benefit will receive this benefit.
 - Deadweight %: 0%
 - 0% as we assume that customers targeted will not currently be on a flex tariff.
 - Drop off %: 0%
 - No drop off is applied for a period of 5 years.
 - Attribution %: 100%
 - The benefit is directly attributable SSEN as a result of the flexibility market stimulation payments.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.
 -

Societal benefits

Carbon benefits from LCT measures installed (Ofgem RIIO-ED2 CBA – Traded Price of Carbon)

- Description of proxy: Since LCT installations are proven to reduce customers' energy consumption, this provides an additional benefit of less CO2 being emitted into the atmosphere.

⁸⁷ <https://project-leo.co.uk/the-energy-challenge/flexibility-services/>

Table 13. Estimated annual carbon emission reductions per measure

LCT installation	Estimated annual carbon savings per installation (kg CO2)	ED2 total measures	% per measure	Carbon reduction, Weighted average (kg CO2)	Source
Battery storage and solar PV	940.0	2,500	36%	336	Project ERIC (Energy Resources for Integrated Communities)
Smart Storage Heating	202.86	2,000	28%	58	Northern Isles New Energy Solutions (NINES) project
Smart controls	320.00	2,500	36%	114	Energy Savings Trust
				508	

- The average carbon savings per household has been multiplied by the traded price of carbon per annum (Ofgem RIIO-ED2 CBA)⁸⁸ to calculate the £ benefit per year in the SROI model.
- Scale of impact values:
 - Success %: 100%
 - Success rate is 100% as the average benefit is applied to all households receiving LCT installations over ED2.
 - Deadweight %: 0%
 - It is assumed that all customers receiving LCT installations will benefit from the intervention.
 - Drop off %: 0%
 - No drop off is applied as it is assumed that all LCT installations will have a lifetime of at least 10 years. This is consistent with the analysis from each project from which proxies have been sourced.
 - Attribution %: 25%
 - 25% of benefits are attributed to SSEN (which is aligned to the funding portion), with 75% attributed to partners / other organisations.
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

⁸⁸ https://www.ofgem.gov.uk/sites/default/files/docs/2021/03/riio-ed2_cba_template_v5.0.xlsx

PERSONAL RESILIENCE PLANS

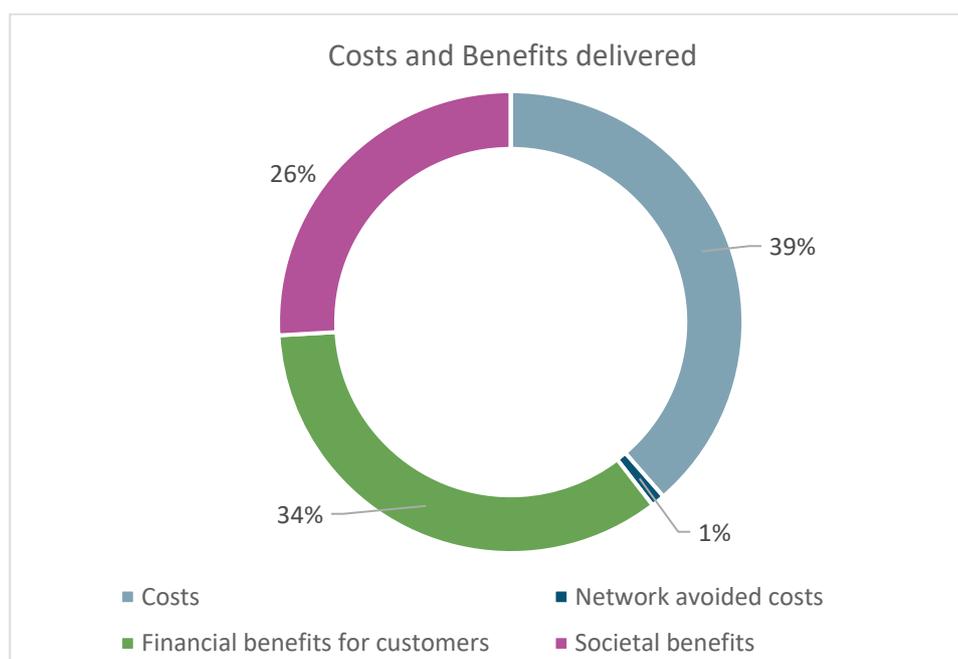
SROI Calculations

The table below provides the summary of results (these are also found in the ‘programme reporting’ tab of the associated SROI model).

Total cost, PV	Gross Benefit, PV	NPV	SROI
£6,795,675	£10,696,431	£3,900,756	£0.57

Table 29 – Net consumer benefits

- **Total costs, PV** are discounted to 2023 prices (as per Ofgem’s guidance). Non-discounted figures are also provided for each activity below
- **Gross Benefit, PV** is the value in 2023 prices of all future benefits forecast.
- **NPV** is the value in 2023 prices of all future benefits, net of costs.
- **SROI** is the value in 2023 prices of all future benefits, net of costs, divided by the cost



Costs

Investment of £7,261,561 over RIIO-ED2.

The total cost over RIIO-ED2 is made up of the costs to provide PRPs to existing PSR1+ customers and all new PSR sign ups and the provision of battery packs to 30% of PSR1+ customers over RIIO-ED2. This has been calculated as follows:

	2023	2024	2025	2026	2027	RIIO-ED2 total
<i>Number of PSR1+ customers at the start of RIIO-ED2</i>	44,774					
<i>Total new PSR sign ups per year in RIIO-ED2</i>	74,938	74,938	74,938	74,938	74,938	
Total customers receiving PRPs in RIIO-ED2	119,712	74,938	74,938	74,938	74,938	419,465

Table 30 - Number of PSR customers reached over RIIO-ED2

	Cost
<i>Printing cost per PRP</i>	£ 0.15
<i>Postage cost per PRP</i>	£ 0.66
Total PRP unit costs	£ 0.81

Table 31 - Personal Resilience Plans unit costs

	2023	2024	2025	2026	2027	RIIO-ED2 total
<i>Developing and upgrading the web portal and integrated system (one off cost - energy saving trust)</i>	£100,000					£100,000
<i>Printing and sending Personal Resilience Plans to existing PSR1+ customers (year 1 cost)</i>	£36,199					£36,199
<i>Proactive communications strategy – customer support staff calling PSR1+ customers (3 FTE @ £22,178 per annum)</i>	£66,534	£66,534	£66,534	£66,534	£66,534	£332,670
<i>Printing and sending Personal Resilience Plans to new sign ups (all PSR)</i>	£60,588	£60,588	£60,588	£60,588	£60,588	£302,938
Total cost of PRPs and proactive communications over RIIO-ED2	£263,321	£127,122	£127,122	£127,122	£127,122	£771,807

Table 32 - Personal Resilience Plans costs over RIIO-ED2

	2023	2024	2025	2026	2027	RIIO-ED2 total
<i>Number of PSR1+ customers forecast</i>	49,251	54,176	59,594	65,553	72,108	
<i>Assumed that 30% of PSR1+ will receive battery packs and this is evenly split per year over RIIO-ED2 (estimate based on SSEN consumer engagement research)</i>	4,327	4,327	4,327	4,327	4,327	21,633
Cost of battery packs per year (@£300 unit cost per pack)	£1,297,951	£1,297,951	£1,297,951	£1,297,951	£1,297,951	£6,489,754
	2023	2024	2025	2026	2027	RIIO-ED2 total
Total costs (PRPs + battery packs)	£1,561,272	£1,425,072	£1,425,072	£1,425,072	£1,425,072	£7,261,561

Table 33 - Costs of battery pack provision to PSR1+ customers

Network benefits

We assume that the rollout of battery pack generators will reduce the number of requests for SSEN suitcase generators and site visits, resulting in a cost efficiency benefit to the company.

SSEN currently connects an estimated 34 generators per month (across North and South regions) to support PSR1+ customers.

Cost for generation based on 34 per month	
34 generators x £211 (cost of 30kva generator per day)	£7,174
Two hours @£35 to connect 34 generators 34 x £70	£2,380
Two hours @£35 to disconnect 34 generators 34 x £70	£2,380
Total cost for one month	£11,934
Average cost over 12 months £11,934 x 12	£143,208

Table 34 - Cost of back up generation provision to PSR1+ customers

It has been assumed that the rollout of battery pack generators will result in up to 40% fewer PSR1+ customer generator callouts per month by the end of RIIO-ED2. We have used the following rollout profile per year, resulting in an avoided cost to SSEN (network benefit).

	2023	2024	2025	2026	2027	RIIO-ED2 total
<i>Reduction in generator call outs per year for PSR1 + customers</i>	10%	20%	25%	30%	40%	
<i># generator call outs per month</i>	31	27	26	24	20	
Avoided costs due to reduction in use of SSEN backup generators	£14,321	£28,642	£35,802	£42,962	£57,283	£179,010

Table 35 - Network avoided costs from fewer generator call outs

Customer financial benefits

Financial value of free backup generator - £300 per battery pack generator

- Description of proxy:
 - We assume the value of a battery pack is a direct financial benefit to customers receiving them, as they avoid the cost of having to purchase an equivalent back up themselves.
 - The average unit cost per battery pack used in calculations is £300 (based on the purchase price of the battery packs used during live trials with customers).
- Scale of impact values:
 - Success %: 30%
 - We estimate that 30% of PSR1+ customers will receive battery packs over ED2. This equates to over 21,663 customers.
 - Deadweight %: 0%
 - Deadweight constitutes the percentage of the expected benefits that would have occurred without SSEN's intervention. The deadweight has been set at 0%, as all customers receiving a new battery packs will have avoided the cost of having to pay for it themselves (irrespective of whether they owned a battery pack previously).
 - Drop off %: 100%
 - This benefit drops off after the first year.
 - Attribution %: 0%
 - SSEN claims the entire benefit from this intervention (0% is delivered by partners or other organisations).
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.

Societal benefits

Reduction in stress during outages – £35 per customer per year⁸⁹

- Description of proxy: Customers receiving PRP's will be more prepared and have reduced stress during power cuts.
- Scale of impact values:
 - Success %: 10%
 - In 2019/20, 374,454 PSR customers (across North and South regions) experienced power cuts lasting 75 minutes on average.
 - This is approximately 50% of customers on the PSR, hence, we assume that 50% of PSR customers receiving PRP's will benefit from this intervention.
 - It is estimated that 20% who receive the PRP benefit will contact SSEN to discuss their PRPs and these customers will have the most significant benefit in terms of being prepared and more resilient.
 - Success rate is therefore, 50% PSR customer experiencing power cuts * 20% contacting SSEN = minimum of 10% of customers receiving PRP will have reduced stress during outages.
 - Deadweight %: 0%
 - Customers who participated in the Priorities Survey in October 2020 were generally happy with response/contact during power cuts (46% satisfied during last power cut).
 - Therefore, we use a conservative estimate that 50% of PSR customers are stressed during power cuts.
 - Deadweight constitutes the percentage of the expected benefits that would have occurred without SSEN's intervention. Deadweight is therefore set at 50%.
 - Drop off %: 0%
 - We assume no drop off occurs.
 - Attribution %: 0%
 - SSEN claims the entire benefit from this intervention (0% is delivered by partners or organisations)
 - Optimism bias %: 0%
 - as per Social Valuation Framework guidelines.
 -

Customers feel in better control of their lives – 82.10 per customer per year⁹⁰

- Description of proxy: For customers that receive battery packs there will be less stress and worry for the customer with health conditions and those who are caring for them. We estimate a that 8,020 customers (and those caring for them) receiving battery packs will feel in better control of things at home as a result of having the backup battery packs.
- Scale of impact values:
 - Success %: 1.9%

⁸⁹ DNO Social Value Proxy Bank: <https://www.reed.co.uk/courses/stress-management>

⁹⁰ DNO Social Value Proxy Bank: <https://www.pssru.ac.uk/pub/uc/uc2018/sources-of-information.pdf>

- We assume the benefit of feeling in better control will apply to high priority PSR1 customers who have medical conditions.
- Firstly, the success rate is calculated based on the proportion of PSR1 customers with Apnoea monitor/nebulisers in April 2020 $\sim 11,979/32,312 = 37\%$.
- As this benefit only applies to 21,663 customers receiving battery packs over ED2, we apply a further weighting of 5.16% (21,663 customers receiving battery packs / 419,465 customers receiving PRPs over ED2).
- The success rate combines the two probabilities above = $37\% * 5.16\% = 1.91\%$
- Deadweight %: 0%
 - As it is assumed that customers signing up to the scheme would not have received new battery packs without SSEN's intervention.
- Drop off %: 0%
 - We assume no drop off occurs.
- Attribution %: 0%
 - SSEN claims the entire benefit from this intervention (0% is delivered by partners or organisations)
- Optimism bias %: 10%
 - as per Social Valuation Framework guidelines.

APPENDIX E – PROPOSED REPORTING FORMAT IN RIIO-ED2

We will work with Ofgem to agree the format for reporting during RIIO-ED2, but as a proposal we believe we should be measured on the following, on an annual basis:

- Delivery Status – relative to agreed baselines
- Explanation on variances observed – whether ahead, on or behind target
- Actions planned in next 12 months – scope to detail future work in each area.
- Feedback received from stakeholders, including surveys
- Modifications proposed to approach, if applicable

We are mindful that reporting should be aligned with other regulatory reports and we will work to agree sensible and suitable timescales with Ofgem.

Rewards proportionate to Benefits

Our SROI calculations have been prepared on what we believe is a conservative basis and in most instances we believe that the benefits we will eventually deliver could increase to the consumer. We recognise this will be hard to measure within RIIO-ED2 and SROI methodology. However, we recognise the challenges in particular surrounding our Broadband CVP, particularly as we ideally want to deliver the CVP in for a little as possible, far less than the £8m worst case proposal presented. If this was the case, we anticipate that any benefits attributable to SSEN would be far smaller, and therefore we recognise that any such reward should be proportionate to the level of investment we have undertaken. Ultimately we want to enable the widest whole system benefits and do not want to double count societal benefits, which might be claimed through the service provider. There could be upwards of £100m of consumer value in this proposal, but if we only invest less than £1m it doesn't seem right or fair that our reward is based on the entire value, but rather only the proportion that we have helped to unlock. We will work with Ofgem to determine a proportionate way forward, if the CVP is agreed.

Critical Panel

Our Stakeholders have noted that a critical panel could be valuable in reviewing progress across our CVPs. We think there is merit in this, as we want each CVP to remain targeted. We have set out a feedback element in the reporting format above, and will work on the format, style and frequency of these panels as part of our discussions with Ofgem.