

Annex 1.5

DETAIL ON OUR CVPs

We have built an ambitious plan for 2023-28 and in certain areas we have identified opportunities to deliver additional value to unlock significant and meaningful benefits for our customers and communities

We are proposing four consumer value propositions (CVPs) where we have identified robust benefits for our customers across four of the five categories allowed by Ofgem. These propositions go beyond the minimum requirements and functions typically undertaken by an energy network company as business as usual.

Our CVPs form part of our overall plan to ensure we lead the drive to decarbonisation in our regions while making the transition as efficient and affordable as possible.

The benefits of our CVPs have been independently modelled to estimate the consumer value in each case. We have used the industry-wide social return on investment (SROI) tool. The customer engagement group (CEG) have reviewed our CVPs and we have considered their feedback as part of their development.

Plan Area	CVP Proposal	Costs	Consumer Value
Vulnerable Customers	CVP1: One-stop App solution for vulnerable customers Give our vulnerable customers more choice in how they engage with us by creating a fully digitised 'one-stop solution' to enable a more accessible, faster and convenient route to contact us and access our services. This will also free up capacity for a more responsive telephone based service for those that prefer it.	£1.8m	£4.4m
Distribution System Operator/Major Connections	CVP2: Self-service analytics toolkit Build enhanced functionality on top of our open data platform to unlock additional customer benefits. This will include a set of free analytical tools to help processing data and enhanced self-service.	£6.0m	£7.6m
Whole Systems	CVP3: Dynamic voltage optimisation for domestic energy efficiency Dynamically manage voltage on our system to achieve behind the meter benefits at 27 per cent of domestic properties in 2023-28, increasing to 80 per cent over the project lifetime. Our solution (currently in late stages of innovation trials) will improve energy efficiency delivering an annual reduction of up to £20 in customer energy bills and 27kg of carbon emissions per household each year.	£8.1m	£31.6m
	CVP4: Phase 1 rollout of next generation energy system Undertake first stage deployment of a blueprint for the next generation energy system, rolling out 30 innovative micro-grid solutions in some of the most remote parts of the network to enhance system resilience.	£6.4m	£7.6m ¹

Table 1: Consumer value propositions in summary

¹ The NPV of the project is shown over a ten year period as the CVP relates to the first stage deployment of a future energy system and so the benefits are reflected over a longer time period.

Vulnerability:² One-stop App solution for vulnerable customers		
Give our vulnerable customers more choice in how they engage with us by creating a fully digitised ‘one-stop-solution’ to enable a more accessible, faster and convenient route to contact us and access our services. This will also free up capacity for a more responsive telephone based service for those that prefer it.		
CVP overview	We will offer a convenient two-way contact channel for vulnerable priority service membership (PSM) customers to communicate with us and access our services where they choose to. This will in turn release resources in our contact centre to support the digitally excluded.	
Description	<ul style="list-style-type: none"> - Our application will give customers access to real time information on the network which will be particularly helpful during a power cut. During a power cut the application will allow PSM customers to report a power cut and receive updates for the duration via the application. - Customers will also receive proactive communications and will be able to access and manage their own customer records. - Regular notifications will be provided (where a customer opts to receive these) to ensure PSM customers continue to be engaged with the application. This could include information on new and current services and we will look to personalise the application. - Services we provide which will be accessible through the application include access to energy savings advice and services as well as how to benefit from the transition to decarbonisation. - The application will also consider accessibility requirements including “read aloud” and language settings. - We will promote awareness of our application to encourage download and use. 	
What does this mean for our customers?		
Type of Customer	Customer Experience	Customer benefit
Vulnerable customers	<ul style="list-style-type: none"> - Exclusive use by vulnerable customers. - Access to a consolidated platform with functionality to: <ul style="list-style-type: none"> ▪ update their data records; ▪ access network information; ▪ two-way communication; and ▪ access relevant products and services. 	<ul style="list-style-type: none"> - Flexible and easy access to the information they require in real time. - Access to information to support affordability and social inclusivity programmes. - Reduction in customer time spent contacting us directly via traditional methods.
Costs/ Monetised value	<ul style="list-style-type: none"> - The application will cost £1.8m during 2023–28. This includes initial development costs of £1m and ongoing maintenance costs of £0.2m per annum. - In 2023-28 we expect the overall net present value (NPV) customer benefit to be £4.4 million based on an SROI of £2.85 for every £1 spent. 	
Supporting justification and evidence		
Additional value beyond the minimum requirements	<ul style="list-style-type: none"> - Improve accessibility for those customers with special communication needs enabling us to respond to their requirements. - The application will provide a two-way communication tool, increasing our information on customer needs, improving our overall relationship management to support us in personalising the customer journey. 	
Additional value to consumers	<ul style="list-style-type: none"> - Customers will receive access to energy efficiency advice to support them in a reduction of their bills. 	
Engagement evidence: Consumer expectations/priorities/values	<ul style="list-style-type: none"> - Stakeholders want us to support our vulnerable customers during a power cut and believe we should be using digital technologies to make our business more accessible. - Participants were supportive of the application but emphasised that this would be required to be easy to use and have additional functionality beyond reporting a power cut. - It was noted that not all vulnerable customers will be able to benefit from the application. - We engaged our social issues expert group (SIEG) who were supportive of the application. 	
Benchmarks	<ul style="list-style-type: none"> - No other distribution network operators (DNOs) have an application to solely serve vulnerable customers. 	
Monetised	<ul style="list-style-type: none"> - We have estimated up-take in order to calculate the SROI based on 300k vulnerable customers 	

² Covered in more detail in our [vulnerability strategy](#)

<p>valuation and methodology</p>	<p>downloading the application, with a drop off of 30% to show 210k customers using the application by 2028.</p> <ul style="list-style-type: none"> - The 300k has been built from the following data inputs: <ul style="list-style-type: none"> ▪ we hold contact details for approximately 572k (out of 937k) vulnerable households; and ▪ we conducted a survey whereby 71 per cent of customers said they would sign up for the application.³ - By applying this percentage to those we hold contact details for this equates to 406k interested customers. In order to remain cautious in our approach we have assumed 300k customers will sign-up over the four year period from 2024 (75k per annum) with a 30 per cent drop off rate each year taking the total by the end of 2028 to 210k customers. - We identified the benefits that the application would deliver using the Sia Partners proxy bank and modelled the following: <ul style="list-style-type: none"> ▪ 8.5 per cent will benefit from reduced stress during an outage; ▪ 1 per cent will benefit from switching energy supplier; ▪ 1 per cent will achieve savings from adopting the energy efficiency advice that is available to them; and ▪ 10 per cent of customers will feel more in control. - Full details of the modelling completed by Frontier Economics can be found in appendix one and summarises the findings from Sia Partners⁴.
<p>Distributional impacts on consumers</p>	<p>The application has been developed in response to customers with additional communication needs but will be accessible to all vulnerable customers.</p>
<p>Arrangements for non-delivery</p>	<ul style="list-style-type: none"> - We propose that 30 per cent of the CVP reward would be contingent on delivery of the app, with the remaining 70 per cent contingent on uptake (number of vulnerable customer users) proportionate to the forecast used to derive the projected benefits. Non-delivery of the app would result in the full claw-back of the reward.

Table 2: Vulnerability - one-stop App solution for vulnerable customers

³ The survey conducted included responses from 6,010 with 6,004 responses from a link sent out through our Customer Relationship Management (CRM) system and six through social media.

⁴ Frontier Economics and Sia Partners are third party consulting companies.

Distribution System Operator/Major Connections: ⁵ Self-service analytics toolkit		
Build enhanced functionality on top of our open data platform to unlock additional customer benefits. This will include a set of free analytical tools to help processing data and enhanced self-service.		
CVP overview	Our free online platform will bring together the data and tools which customers require to self-serve their needs, removing costs and bottlenecks from network planning to accelerate mass low carbon technology (LCT) deployment.	
Description	<ul style="list-style-type: none"> - We are proposing a free online portal for the provision of network data and tools to help a wide variety of customers and stakeholders make the best investment decisions. - We want to go beyond making data available and user-friendly through publication on our website and offer online tools to support a wide range of stakeholders to get the best value out of data. - We see this as analogous to a personal finance comparison site, where customers can quickly compare many options, whilst adjusting their requirements to see what effect it has on their price. - We will build from low voltage (LV) up to high voltage (HV) and extra high voltage (EHV) (up to 132 kilovolts (kV)) to develop functionality across customer groups. 	
What does this mean for our customers?		
Type of Customer	Customer experience	Customer benefit
Domestic customers	<ul style="list-style-type: none"> - Customers will be able to input their address into our user-friendly portal to access the information they require when adopting LCTs. Customers will be able to determine if they can use an existing connection or if a new connection is required and the associated costs. 	<ul style="list-style-type: none"> - Customers will be able to make informed decisions around their up-take of LCTs with transparency of the total associated costs. - Where viable connections exist they will be able to secure the connection price by self-serving on our portal.
Vulnerable customers	<ul style="list-style-type: none"> - Vulnerable customers will have the option to get support from local authorities and agencies to support them on their path to decarbonisation and energy efficiency. 	<ul style="list-style-type: none"> - Vulnerable customers are better supported to adopt LCTs.
Small and medium-sized enterprises (SMEs)/ large commercial customers	<ul style="list-style-type: none"> - The portal will allow visibility of agreed supply capacity and how this is being used. - This could support customers requiring an increase in load growth which could be driven through adoption of LCTs or increases in production to either: <ul style="list-style-type: none"> ▪ take advantage of flexibility opportunities; and ▪ obtain an accurate cost to increase capacity. 	<ul style="list-style-type: none"> - Improved business planning as the costs associated with increases in usage can be obtained. - Reduction in costs through changes in patterns of energy consumption.
Electric vehicle (EV) car dealerships	<ul style="list-style-type: none"> - Checking if the service is suitable for a customer EV. - Identification of sales opportunities. 	<ul style="list-style-type: none"> - Quick and easy inclusion of costs before point of sale is agreed with potential time and money savings.
Local authorities	<ul style="list-style-type: none"> - Gives visibility of the network to support local plans to decarbonise as suitable locations can be identified and attributed to different initiatives. - Allows for long term (>5 years) strategic planning of green-field and brown-field projects. 	<ul style="list-style-type: none"> - More accurate and credible plans to decarbonise. - Transparency of the network removing our input as a barrier. - The most cost efficient and viable pathway is adopted.
Independent distribution	<ul style="list-style-type: none"> - Autonomy in network and business planning through visibility over network 	<ul style="list-style-type: none"> - Facilitates and promotes competition. - Allows for targeted business planning and

⁵ Covered in more detail in our [DSO strategy](#)

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network operators /independent connection providers (IDNOs/ICPs)	<p>capacity to:</p> <ul style="list-style-type: none"> ▪ remove our input as a barrier; and ▪ enable access to real time data. <p>– Greater access to self-serve options.</p>	<p>forward investment.</p> <p>– Provides better business planning through transparency of information and costs.</p>
LCT installers	<p>– Supports identification of business opportunities where the network can either currently support or has potential to be developed.</p>	<p>– Quicker and easier identification of costs and time-scales, supporting business planning.</p>
Community energy groups	<p>– Provides a view of the network to show what can be connected, where and at what costs.</p>	<p>– Promotes development of community energy projects.</p> <p>– Supports adoption of generation to facilitate a greener energy system.</p>
Flexibility aggregators	<p>– Visibility of the network to identify highly utilised parts of the network where opportunities can be identified to offer flexibility services.</p> <p>– Aggregators will be able to act quickly.</p>	<p>– Supporting the low carbon transition.</p> <p>– Allows for better identification of business opportunities.</p>
Entrepreneurs/ academic/ tech companies/ Government bodies/ consultants	<p>– Data is available to be viewed and extracted to be analysed for individual requirements, beyond those of the energy network.</p>	<p>– Opportunities to develop additional functionality and use of the data.</p> <p>– Research opportunities as well as wider societal and business uses.</p>
Costs/ monetised value	<p>– The total costs over the 2023–28 period are £6.0m which will deliver a NPV benefit of £7.6m based on an SROI of £1.47.</p> <p>– When modelling the SROI we have included the total cost of the proposition despite only being able to measure the benefits that will be delivered from major connections. We have been unable to measure the benefits data will bring due to difficulties in quantifying:</p> <ul style="list-style-type: none"> ▪ what data will be used; ▪ who will use the data; ▪ the purpose the data will be used for; and ▪ the downstream benefits the data will deliver. <p>– Our approach reflects a prudent view of the true value of the CVP as the benefits brought from the open data portal will not be zero and could be considerable.</p>	
Supporting justification and evidence		
Additional value beyond the minimum requirements	<p>– While network visibility and data availability are Ofgem minimum requirements we are going above these by bringing this together in one place and equipping consumers with the tools they require to self-serve their network requirements and unlock the value of this data, extending use beyond expert customers. A single platform or portal arrangement is not specified in the minimum requirements.</p> <p>– Customers will be enabled to extract maximum value from our data and we will be providing a scalable solution to connect more low carbon technologies to our network by removing ourselves as a barrier.</p> <p>– A new and varied range of stakeholders and customers will require information from us and the network. We will be able to align our customer experience to familiar and existing service levels for products and services where customers expect to be able to self-serve their requirements. For example customers use personal finance comparison sites to quickly compare many options, whilst adjusting their requirements to see what effect it has on their price. Customers will be able to plan power requirements for example the suitability of their property to connect an EV charger.</p>	
Additional value to consumers	<p>– No external companies are acting in this space to provide this information to consumers. We are offering this service to customers to ensure they have access to the information they require, noting we are not acting as a barrier to such companies providing this service in the future.</p> <p>– We are acting as a ‘path-finder’ by enhancing an industry leading tool that isn’t currently</p>	

	available at this level of detail and functionality.
Engagement evidence: Consumer expectations/priorities/values	<ul style="list-style-type: none"> - Stakeholders were supportive of the platform as it could support them on the path to decarbonisation. - Major connections customers have been involved at every stage in AutoDesign’s development; from taking part in user acceptance testing prior to the launch and providing valuable feedback to support continual improvement of the functionality of the tool. Engagement on our AutoDesign platform was a commitment we made in our 2021-22 incentive on connection engagement (ICE) plan and so engagement has been extensive. The most notable engagement activity was that we held an Autodesign co-creation workshop in December 2021, which invited stakeholders to help shape the next stages of functionality and future use cases for the tool. - Stakeholders want to promote the platform to ensure consumers were made aware of the platform and that it should remain independent of external companies. - Throughout 2023–28 we will continue to engage stakeholders to ensure the data that we make available is both useful and valuable to our stakeholders.
Benchmarks	<ul style="list-style-type: none"> - National Grid provides ‘ConnectNow’, a suite of tools which help customers to research and manage connections to the electricity transmission system in England and Wales. Our analytics toolkit goes above this because it: <ul style="list-style-type: none"> ▪ shows real time load/dynamic capacity; ▪ can highlight flexibility opportunities; and ▪ includes the option for customers to accept quotations up to 210 kilovolt-amperes (kVA), which equates to the electricity required for a small/medium housing estate. - National Grid’s tool only uses static data to create budget estimates for connections onto transmission systems assets from 33kV tertiary windings to 400kV. We use probabilistic assessments which provide more accurate, and therefore more useful results. - No other DNOs have LV heat maps showing the same level of granularity as our proposal.
Monetised valuation and methodology	<ul style="list-style-type: none"> - To determine the SROI we have been unable to measure the benefits the open data portal will bring as previously discussed. - Based on the major connections inputs we have modelled the designers’ time and connections offer expenses saved to determine the SROI. - As customers are able to self-serve then this will lead to a reduction in designers’ time which will lead to cost savings as resource is released and able to deliver value elsewhere. Furthermore the costs that customers pay on applying for a connection will be avoided. - These values are shown in appendix one and vary depending on the size of connection, with the valuation worksheet showing all calculations.
Distributional impacts on consumers	<ul style="list-style-type: none"> - Predominately LCT installers, ICPs, IDNOs, consultants and local authorities will use and benefit from the tool as this serves and will support growth of their current business needs. - Domestic and vulnerable customers are likely to be later adopters of the tool when LCTs become wide-spread with support for up-take. Retailers and service providers will play a role in using the tool on their consumers’ behalf.
Arrangements for non-delivery	<ul style="list-style-type: none"> - We have calculated the claw-back based on delivery of the functional packages; these are bundled packages that will be developed over the course of 2023–28, with each delivering a distinct customer benefit and user-functionality as we build up to the finished product. - We considered basing this on customer up-take however as the benefits are many and varied this would create difficulties in measurement. - We will bundle the work packages to deliver the overall project and weight the delivery based on the weighting of functionality each work product enables across customer groups: <ul style="list-style-type: none"> ▪ Self-serve connection quotations (up to LV/210kVA); 20 per cent ▪ Self-serve budget estimates (all connection voltages, HV and EHV); 20 per cent ▪ Small LCT retro-fitting; 20 per cent ▪ Dynamic heat maps; 20 per cent ▪ One-stop shop portal; 20 per cent

Table 3: DSO/Major Connections - self-service analytics toolkit

Whole Systems: ⁶ Dynamic voltage optimisation for domestic energy efficiency		
Dynamically manage voltage on our system to achieve behind the meter benefits at 27 per cent of domestic properties in 2023–28, increasing to 80 per cent over the project lifetime. Our solution (currently in late stages of innovation trials) will improve energy efficiency delivering an annual reduction of up to £20 in customer energy bills and 27kg of carbon emissions per household each year.		
CVP overview	Combining existing network assets and smart meter data we will deploy data analytics to optimise the voltage delivered to customers to bring behind-the-meter energy efficiency improvements (subject to successful innovation trials in 2015-23). ⁷	
Description	<p>Our Boston Spa energy efficiency trial innovation project is piloting using smart meter data in near real-time to dynamically optimise the HV and LV network to improve customer energy efficiency. The project consists of three phases, of which we are currently in phase two:</p> <ul style="list-style-type: none"> – Phase one, which is now complete, proved that existing methods of voltage control available to us are not suitable for voltage optimisation and therefore a new approach is required. – Phase two is allowing us to integrate smart grid and smart meter systems to develop capability to undertake and implement a new voltage optimisation technique within a trial area in Boston Spa. – Phase three will see us explore whether this new technique can be used to provide other services, such as frequency response. – Subject to successful trials in the remainder of 2015-23, we will rapidly ramp up deployment to target roll-out of the technology and capability to 147 (27 per cent) primary substations serving 1.0m customers over the 2023–28 period. During 2028-33 we will complete roll-out to a further 245 (44 per cent) of primary substations, with 1.7m customers benefitting in 2028–33 with 0.4m customers to address beyond 2033. The remaining 20 per cent of our network is either not technically compatible with this solution or voltage optimisation is not required. – With our solution deployed we estimate that customers will receive a reduction in their energy bills of about £20 per annum as well as 27kg of lower carbon emissions annually per household per year as we deliver optimised voltage levels. Customers (including those who are vulnerable) will benefit from these savings without having to take any action. Additional benefits will be felt by the wider system including additional capacity to connect and improved network operability due to the identification and mitigation of voltage and thermal issues on the network. 	
What does this mean for our customers?		
Type of Customer	Customer experience	Customer benefit
Domestic customers / vulnerable customers	<ul style="list-style-type: none"> – Customers will not be required to take any action – energy efficiency will be managed behind the meter (where the equipment is available on the network). 	<ul style="list-style-type: none"> – Annual energy bill saving of about £20 per annum. – Carbon emissions lowered by 27kg per household annually (reducing in future years as carbon intensity continues to decline). – While all customers will see the same benefit, those who are fuel poor and do not proactively manage their energy consumption are likely to feel the benefits more.
LV commercial customer/ wider sector	<ul style="list-style-type: none"> – The same benefit is relevant for commercial customers’ behind-the-meter efficiency. – Network thermal issues are mitigated and additional capacity is made available by managing the network more effectively (for example, more capacity for generation may be available). 	<ul style="list-style-type: none"> – Annual energy bill saving of about £20 per annum (assuming a similar consumption to a typical customer, where this is likely to underestimate the benefit). – Carbon emissions lowered by 27kg per customer annually. – May reduce the requirement for reinforcement and capacity upgrades for new connections.
Costs/monetise	<ul style="list-style-type: none"> – During 2023-28 our voltage optimisation project will cost £8.1m 	

⁶ Covered in more detail in our [whole systems strategy](#)

⁷ We are currently undertaking the Boston Spa Energy Efficiency Trial; and NIA-funded project anticipated to conclude in 2023.

d value	<ul style="list-style-type: none"> - In 2023-28 we estimate our initiative will deliver an NPV of £31.6m based on an SROI of £4.52 SROI for every £1 spent NPV (this assumes delivery to 27 per cent of primary substation customers (over the five year period). - Over a ten year period the NPV increases to £200.2m based on an SROI of £28.58 (this assumes a roll-out to 71 per cent of customers served by primary substations (over the ten year period). Beyond the ten year period there will be a further nine per cent of customers to benefit from voltage optimisation as the technology and capabilities are rolled-out for the remaining population.
Supporting justification and evidence	
Additional value beyond the minimum requirements	<ul style="list-style-type: none"> - Providing voltage optimisation for the purpose of behind-the-meter efficiency improvements is over and above our minimum requirements. We are using new sources of data in an innovative way to optimise voltage to provide our customers benefit as well as wider benefits as other sectors increasingly depend on electricity.
Additional value to consumers	<ul style="list-style-type: none"> - We are bringing additional value to consumers by realising energy cost savings for consumers.
Engagement evidence: consumer expectations/ priorities/ values	<ul style="list-style-type: none"> - Overall our citizen’s panel found this to be a great idea, especially as it was possible to do so using existing assets and technology. - Some stakeholders were however cautious of accessibility of the benefits; especially those who did not yet have a smart meter.
Benchmarks	<ul style="list-style-type: none"> - Electricity North West (ENW) have a ‘Smart Street’ project which delivers similar voltage based energy savings to our voltage optimisation but does so in a very different manner as it is dependent on significant asset investment. We, however, are using existing assets coupled with new sources of data to bring about benefits with much lower levels of investment. - During 2015-23 ENW will roll-out the project to 64k customers costing £18m. During 2023-28 they will extend this to a further 150k customers with a £51m investment programme (i.e. about £300 per customer, to provide benefits of about £30 per annum). The costs and payback period limit the value and the scale of their project. - Our data and digitalisation approach will cost around £3 per customer and save around £20 per customer per annum. This is based on expected savings of £20 per annum for 1.0m customers at a cost of £8.1m during 2023 – 28 with a further 1.7m customers expected in 2028-33 and 0.4m beyond 2033, as we link the records of more metering points into the system. Our proposal provides a payback rate of about 10 times that of Smart Street.
Monetised valuation and methodology	<ul style="list-style-type: none"> - Our valuation methodology was based on trials which have shown that if we deliver an optimised voltage level of 230V, a 4 per cent voltage reduction, this would result in a 4 per cent reduction in consumption, saving our customers annually about £20 year and a reduction in carbon emissions of 27 kg. - We then modelled this to 27 per cent of these customers receiving a benefit during the 2023-28 period to calculate both the SROI and NPV for 2023-28. - Full details of the modelling completed by Sia Partners can be found in appendix one .
Distributional impacts on consumers	<ul style="list-style-type: none"> - Benefits will accrue primarily to LV customers with 1.0m targeted for 2023-28, 1.7m for 2028-33, and 0.4m in 2033-38 to benefit 80 per cent of homes and businesses in total over the project lifetime, including our vulnerable population. - Whilst we will aim to roll-out to our entire population of primary substations, we expect the project not to be rolled-out to 20 per cent of primary substations (i.e. 20 per cent of our customer base) as network constraints make it unviable to do so and we anticipate areas of the network where dynamic voltage optimisation is not required.
Arrangements for non-delivery	<ul style="list-style-type: none"> - In the event of non-delivery we propose the rewards is clawed back pro-rata on the proportion of customers for whom the solution is not delivered compared to the projection used to calculate the reward.

Table 4: Whole Systems - dynamic voltage optimisation for domestic energy efficiency

Whole Systems:⁸ Phase 1 rollout of next generation energy system		
Undertake the first stage deployment of the blueprint for the next generation energy system to enhance system resilience, particularly for remote customers by rolling out innovative microgrid technology in some of the most remote parts of our network		
CVP overview	Through deployment of 30 microgrids we will trial a blueprint for the next generation local energy network. The lessons learnt will allow for future mass deployment of the next generation of network solutions that links up energy sources and vectors, balanced in real time, to ensure a reliable and dependable energy service.	
Description	<ul style="list-style-type: none"> - Microgrids would provide a step change in resilience for remote communities and in critical areas. - We will test the viability of enhancing resilience through use of storage and smart technology at remote substations in order to sustain the power on the LV network with a micro-grid in the event of an upstream fault. This is more cost effective than the traditional solution of HV investment in targeted areas. - Microgrids can also potentially facilitate peer-to-peer energy trading, and enable customers to maximise the value of their energy assets (e.g. solar panels) by providing energy to both the local microgrid and wider system. 	
What does this mean for our customers?		
Type of Customer	Customer experience	Customer benefit
Domestic customers	<ul style="list-style-type: none"> - During 2023-28 predominately (LV) rural customers will be the beneficiaries of this programme by experiencing fewer interruptions. 	<ul style="list-style-type: none"> - Improved customer satisfaction. - Improved reliability – customers will be protected from upstream faults avoiding the dissatisfaction experienced from a momentary lapse in supply which causes disproportionate inconvenience due to the wider dependence on electricity, e.g. the temporary loss of a WiFi connection.
Vulnerable customers	<ul style="list-style-type: none"> - Vulnerable customer numbers will be a consideration in our choice of target installations. 	<ul style="list-style-type: none"> - As with domestic customers.
Community energy	<ul style="list-style-type: none"> - Community energy groups will be able to identify locations suitable for initiatives. - We will provide a stable platform for operations with microgrids becoming more effective when supported by community energy operations. 	<ul style="list-style-type: none"> - Generates greater demand for community energy supplies and gives a more stable return on their investment, supporting the development of the market. - Supports local opportunities and mutual support.
Small industrial and commercial	<ul style="list-style-type: none"> - As with domestic customers – fewer interruptions. 	<ul style="list-style-type: none"> - Ensures a reliable operation as businesses increasingly depend on electric powered technology.
Costs/Monetised value	<ul style="list-style-type: none"> - During 2023–28 this proposal will be the first stage deployment of the next generation energy system where we prove the concept. We have therefore looked at the NPV over a ten year period in order to ensure that the consumer benefit can be realised, as this also enables future investments to be deferred. - At a cost over the 2023-28 period of £6.4m, micro-grids will deliver a NPV (over ten years) of £7.6m based on an SROI of £1.40. - This is a conservative estimate; at this stage we have not claimed any wider social benefits because they are currently uncertain and hard to quantify but these could prove to be significant. 	
Supporting justification and evidence		
Additional value beyond the minimum requirements	<ul style="list-style-type: none"> - This offers a step change away from customer interruptions (CI) and customer minutes lost (CML) to deliver improvements in underlying customer focused reliability. 	
Additional value	<ul style="list-style-type: none"> - The micro-grid project has the potential to demonstrate that micro-grids provide a more 	

⁸ Covered in more detail in our [whole systems strategy](#)

to consumers	dependable whole system as we are able to support sustainable development of wider sectors who depend on electricity.
Engagement evidence: Consumer expectations/ priorities/ values	<ul style="list-style-type: none"> - Rural stakeholders were particularly supportive of this proposition and wanted to see an increase in scope beyond 30 micro-grids. - A small number of stakeholders were concerned that this would be a short term solution to a bigger problem.
Benchmarks	<ul style="list-style-type: none"> - Scottish and Southern Electricity (SSE) have a project called reliability as a service (RaaS) which aims to maintain and improve reliability for remote and isolated networks. The key difference between Micro-grids and RaaS is the size of the solution; Micro-grids are multiple small scale installations focused on a localised solutions which are easy to implement. RaaS is still in its planning phase and focuses on larger installations with the aim of addressing larger scale issues on the network. Our approach therefore has the advantage of targeting specific areas and has the incremental scalability of many small solutions. This will make the roll out a more practical proposition and is one that allows rural communities to have greater confidence in their up-take of low carbon technologies to support the path to decarbonisation. - This also dovetails well with community engagement in energy systems whereas the SSE model may simply be replacing one energy industry solution with another. Micro-grids will support localised dependable energy as the number of energy vectors reduce.
Monetised valuation and methodology	<ul style="list-style-type: none"> - We have modelled micro-grids based on two benefits which arise from implementation; avoided costs in the form of deferred investment, and the value to customers in the form of value of lost load (VoLL). As micro-grids will be installed in rural locations we took the value of lost load for domestic and SME customers to estimate the benefits that a micro-grid would offer. - Additionally we considered how a micro-grid could support deferral of reinforcement and the cost saving this would achieve. In order to comply with the ER P2 (security of supply) standard as the demand on existing radial networks increases with the mass uptake of low carbon technologies, micro-grids are able to defer the interconnection investment that would otherwise be required between 2028 and 2050. We have therefore modelled these benefits over a ten year period to ensure the enduring value of microgrids is captured. - Full details can be found in appendix one.
Distributional impacts on consumers	<ul style="list-style-type: none"> - 30 sub-stations represents 0.1 per cent of our ground-mounted sub-station population and current benefits are limited to customers served by those sub-stations (~50 customers per substation using a conservative estimate). - Successful testing to enable the roll-out of the blueprint for the next generation energy system, as the standard for rural and an option for urban networks, will bring future customer benefits, including benefits to vulnerable customers.
Arrangements for non-delivery	<ul style="list-style-type: none"> - We propose a linear clawback of reward based on the number of micro-grids delivered during the period.

Table 5: Whole systems - phase 1 rollout of next generation energy system