NETWORKS

Piloting Roadmap

NATIONAL NETWORK, LOCAL CONNECTIONS PROGRAMME

DOC-230921-GYP

OPENING STATEMENT

The decarbonisation of Irish society relies on fundamental changes to how energy is generated and consumed. To enable these changes at the right pace and the right price, we will rely on the electricity network, and we need to make the connection between how renewable energy is generated, and how we use or store it. Every Irish home, farm, community, and business is being called on to play a part. The National Network, Local Connections Programme has been established to work with, and for, customers to make this possible.

We are entering a period of rapid change and uncertainty. Over the coming years, technologies will change and Irish homes', farms' and communities' energy needs will change too. We will need to be able to adapt to meet changing needs and emerging challenges. In this document we have sought to develop a proposed roadmap that accounts for uncertainty and delivers that adaptability.

For example:

1. **A key dimension to the programme is the changing nature of the relationship between ESB Networks and our customers through the development of a market for flexibility services. The pilot roadmap is intended to allow for the market framework and related processes to evolve as we learn what supports customers in engaging with this market and what needs to be done differently as we move towards a national rollout.**
2. **Recognising the role that distribution customers play in the provision of system services to the transmission system operator and the expected significant increase in system service capability that will be connected to the distribution system, ensuring processes and systems are developed to maximise the opportunity for distribution customers to participate in system service arrangements.**
3. **Extensive commitment of resources to communications, consultation and collaboration, working with partners and customers to understand their needs and how they change, so we can adapt.**

Over the life of this programme we will face uncertainties and risks. If we proceed too quickly, we increase the risk that customers will not be ready, or technologies will not be fully mature. For potential pilot participants also, there are risks that the approach to evolve the flexibility market framework, and related process over time, will require them to adapt their own business processes and systems and incur related business development cost.

OPENING STATEMENT

But if we do not proceed quickly enough, there is a risk that the solutions will not be in place when they need to be. Without taking the initial steps now, there is a risk that we and our partners could not replicate solutions that we pilot or commence a national rollout until later in the decade. We will need to commit people and capital to deliver this programme, and we are reaching a critical decision point regarding the level of resources to commit. ESB Networks serves, and is funded by, all electricity customers. All our customers will share in the benefit, but they will also share in the costs and the risk if we act too slowly or too soon.

As such, we are asking all customers to consider the balance of risk from their perspective and share their view with us to help inform how the programme is shaped in the years ahead.

1. **Do you think we should take a more measured pace and begin to scale closer to 2030, or commit resources needed to begin build towards a national rollout commencing in 2024 / 2025?**
2. **There are trade offs between different developments in this plan that we could prioritise. What do you think we should prioritise, and how will this affect your business.**

We need your input to determine the path forward. So please have your say!

CONTENTS

1 NATIONAL NETWORK, LOCAL CONNECTIONS – HAVE YOUR SAY!

This proposal is the National Network, Local Connections Programme Piloting Roadmap. In this document we set out:

1. **The proposed series of pilots over the life of the programme.**
2. **The key parameters of each pilot, including criteria, participation, and objectives.**

It is critical that we implement solutions that optimally meet the wishes and needs of the customers and industry participants in Ireland. In developing these proposals, we have taken time to seek and utilise stakeholder input from round tables and focus groups, as well as to research and utilise exemplar international experiences. This has enabled us to develop the proposed approaches within this document. While we have confidence that these can meet the overall programme objectives, we are open to change and, as a result, we have prioritised this transparent and consultative approach. There were several key dimensions on which we based this document and it is important to us that we develop an understanding of your perspectives, objectives and concerns across each of those.

It may be useful to consider the below questions while reading this document. Please note when responding to this document, it is not necessary to respond to each of the below questions; responding to a specific question or a general response is welcomed and appreciated.

SELECTION CRITERIA
Do you support the proposed pilot selection criteria, and are there other criteria that you think we should be using?

TARGET LOCATIONS
Do you think more, less or other locations should be selected? Why?

NUMBER OF CUSTOMERS PARTICIPATING
Do you think more (or fewer) customers will be ready and willing to particpate?

TYPES OF CUSTOMERS PARTICIPATING
Are we targeting the right range of customers at the right times over the life of the programme?

PILOT TECHNOLOGY
Do you think there are alternative technologies which we should be adopting or alternative technological approaches?

PILOT GO-LIVE AND DURATION
Do you think that the proposed go-live dates and pilot durations are a good fit for the piloting objectives at each step?

1 NATIONAL NETWORK, LOCAL CONNECTIONS – HAVE YOUR SAY!

It is also important to us that we maximise the overall value of the programme across our stakeholders. As such, we would invite perspectives on additional considerations that we could fold into our approach:

LEARNING OBJECTIVES
Are there additional customer, DSO or market learning objectives we should pursue?

CUSTOMER & POLICY OBJECTIVES
Are there other upcoming policy developments or customer needs we should reflect in this roadmap?

CUSTOMER EDUCATION AND AWARENESS
Are there opportunities in this roadmap to drive customer education and awareness?

SUPPLY CHAIN
Are there opportunities for other parts of the supply chain to learn and develop through the piloting roadmap?

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Glossary

2 GLOSSARY

TERM	DEFINITION
ADMS	Advanced Distribution Management System
BSP	Bulk Supply Point
CRU	Commission for Regulation of Utilities
DAM	Day Ahead Market
DER	Distributed Energy Resource
DSO	Distribution System Operator
HV	High Voltage
IDS	Individual Demand Site
LV	Low Voltage
MMS	Market Management System
MV	Medium Voltage
NPV	Net Present Value
OMS	Operational Management System
RESS-1	Renewable Energy Support Scheme
SCADA	Supervisory Control and Data Acquisition
SEM	Single Electricity Market
TSO	Transmission System Operator

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Piloting Roadmap Overview

3 PILOTING ROADMAP OVERVIEW

The objectives of the proposed National Network, Local Connections Piloting Roadmap are to adopt a discovery-led approach to introducing new capabilities in live network environments over the life of the programme, and to create opportunities for customers to participate and engage with the programme over its full lifecycle.

We are seeking customers and industry perspectives on the proposals for each, over the life of the proposed piloting roadmap.

At a high level, each pilot will require the delivery of the following key milestones:

Identify the Customer / Network Technical Needs > Analyse the underlining network conditions, customer demand and generation, assess connection requests, and establish the nature of the flexibility services that would maintain network security or allow a customer to connect sooner.

Identify the Customer / Participant Engagement Needs > Develop customer / pilot participant journey, communications, awareness and education objectives.

Service Procurement > Apply the evolving flexibility market framework to procure the identified requirement for flexibility services from Distributed Energy Resources (DERs).

Forecast, Schedule & Dispatch DER > Forecast the expected output of the individual DERs that have been contracted through the procurement process as well as underlying network conditions, and schedule the DER to deliver a specific profile. Issue instruction to the DERs to deliver their contracted flexibility services when required by the underlying network conditions.

Monitoring & Compliance > Based on measured performance against a baseline, remunerate performance and/or undertake compliance actions.

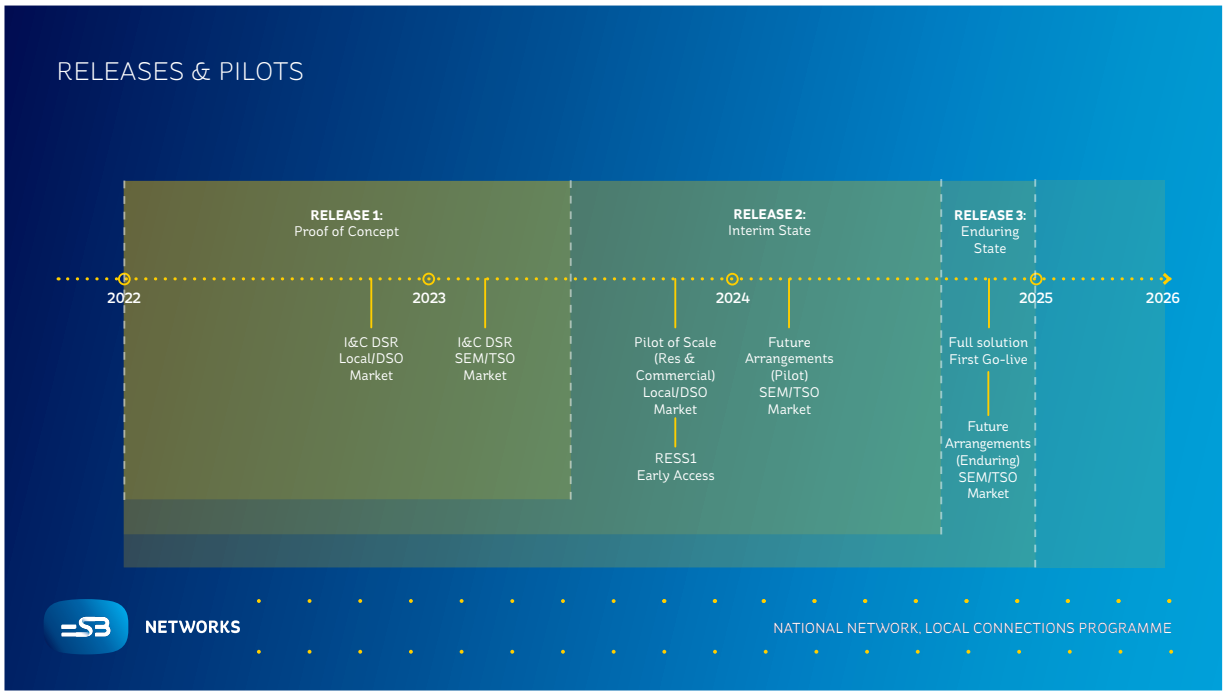
Each of these high-level milestones require the development of a range of new and/or the modification of existing business processes and systems, both for us and for our customers. Over the course of the National Network, Local Connections Programme, the pilots will iteratively contribute to building out the full target capability on our side and also on that of our customers. It is proposed that the pilots will increase in geographic footprint, the number and types of customers participating, the customer or network needs being met, and in how we are interacting with the wholesale market and the Transmission System Operator (TSO). This will be supported by dedicated programme resources, subject matter experts, and also by the people in our organisation delivering customer-facing and operational roles today.

3 PILOTING ROADMAP OVERVIEW

The proposed National Network, Local Connections Programme Pilot Roadmap is not solely being developed to support the implementation of the programme. It is being shaped by network and customer needs, the underlying technology and operational capability available over the period in question, and the CRU's objectives regarding the use of flexibility services, as set out in Price Review 5 (PR5). In developing the proposed piloting roadmap, the National Network, Local Connections Programme is conscious of the need to demonstrate the value that active management of the distribution system will bring to both the existing ESB Networks business processes and to different categories of distribution customers.

As such, the nature and timing of the pilots is intended to address, the needs of existing and new customers in a phased manner. As part of a proposed wider consultation process, the National Network, Local Connections Programme is seeking customer feedback on the proposed piloting roadmap. While mindful of the need to maintain the safe and reliable operation of the network, the programme will incorporate feedback from customers into the piloting roadmap. Following this consultation process, the piloting roadmap will be a living stream of activity within the National Network, Local Connections Programme, responding to policy developments and emerging customer needs over the life of the programme.

In the following sections detailed descriptions of the individual pilots are set out. The graph below gives a summary view of how each of these pilots sits within the proposed programme.



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I&C DSR Local/DSO Market

4.1 PILOT DESCRIPTION

The first pilot will be targeted at the procurement of flexibility services from a small number of distribution customers in locations where we face challenges supporting growth in demand and new customer connections. The forecasting that has been developed in the programme shows the potential for congestion to become an issue as a result of growing social and economic activity in an area, or by new customers connecting. Were this issue to arise, we may not be able to connect customers as quickly as we would like, and the level of service can deteriorate for existing customers.

To mitigate against this, local markets for flexibility can be introduced, in some cases as a quicker and more cost-effective alternative to reinforcing the network, and in other cases while reinforcement of the network is implemented, it may be possible to reduce the cost and time to connect new customers or improve reliability for existing customers. In our first pilot, we are proposing to introduce local markets for flexibility to provide us with greater resilience to local network contingencies. This would improve reliability for existing customers and allow us to connect new customers more quickly and cost effectively.

4 I&C DSR LOCAL/DSO MARKET

4.2 SELECTION CRITERIA

To identify locations in the network for our first pilot, criteria were established based on stakeholder feedback gathered through surveys, roundtable meetings, and webinar feedback over Q1 – Q2 2021. These criteria, as detailed below, were applied to develop a shortlist of locations to be analysed in greater detail, to define the network need and to progress the service definition to be brought through to procurement.

Real world customer needs - Current and forecast network loading under normal feeding arrangements.

Customer mix in the location and their metering arrangements.

Customers' level of participation in the wholesale market or ancillary services, as generators or as part of a demand side unit.

The potential to collaborate with the TSO to support development of whole of system approaches.

Applying these criteria, a short list of eight network locations, where flexibility services could be beneficially applied, has been developed. These locations and the demand driving the requirement for flexible services are as detailed below:

LOCATION	RANGE OF MW REDUCTION WHICH MAY BE PROCURED
Watling St. Dublin City Centre	Up to 8MVA
Corduff, Co. Dublin	Circa 20MVA
Wexford – specifically areas around Carriglawn, Clonard, Mulgannon	Circa 2MVA
Trim, Co. Meath	Circa 5MVA
Wexford - Clonroche area	Circa 3MVA
Blake/Edenderry areas, Co Offaly	Circa 3MVA
Wexford/Carlow area specifically Tullow; Baltinglass, Shillelagh	Circa 4MVA
McDermott St. Dublin City	Circa 12MVA

4 I&C DSR LOCAL/DSO MARKET

4.3 PILOT IMPLEMENTATION

For each of these locations, the network needs have been analysed, and solutions defined in terms of the Secure and Dynamic services as defined in the National Network, Local Connections Programme Phased Flexibility Market Plan. In advance of commencing a procurement process for these services, a prior information notice will be issued, and expressions of interests will be sought. This will raise awareness among potential flexibility service providers in addition to the upcoming consultation processes.

Through the PR5 regulatory framework, the CRU allows ESB Networks allocate funding to flexible solutions, provided they provide a lower cost alternative to conventional reinforcement (on an NPV basis). Subject to our receiving responses to the procurement process which meet this threshold, contracts will be put in place with the successful tenderers for a period of two years.

The operational phases of the pilot will commence at the beginning of Oct'22. Contracted service providers will be dispatched to deliver in response to network conditions. Contracted services will be monitored and reviewed for validation and settlement purposes. Given the novel nature of the provision of flexibility services on the distribution system, contingency arrangements for the unavailability or under-delivery of contracted services will be put in place.

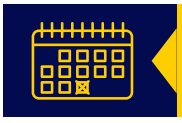
SELECTION CRITERIA
As above. Top criterion is existing customer needs relating to new connections or improved reliability.

TARGET LOCATIONS
Up to eight, subject to the outcome of procurement process.

NUMBER OF CUSTOMERS PARTICIPATING
1-20 (expected figure, pending procurement outcome).

TYPES OF CUSTOMERS PARTICIPATING
Industrial and commercial demand customers (expected figure, pending procurement outcome).

PILOT TECHNOLOGY
Interim upgrade to existing control room technology.



PILOT GO-LIVE AND DURATION
October 2022
2+ years duration

LEARNING OBJECTIVES
As set out below.

4 I&C DSR LOCAL/DSO MARKET

4.4 LEARNING OBJECTIVES

CUSTOMER	DSO	LOCAL MARKETS
Define preliminary customer journey in order to participate in a procurement process, enter a contractual arrangement, operationalise the service provision and deliver the service when called by ESB Networks.	Develop and implement first release processes and systems to analysis and define the network needs in each of the selected locations in terms of the flexibility services required to resolve the underlying issue.	Develop and implement the pilot procurement processes and systems to tender for the required flexibility services, assess the responses received and enter contracts with cost effective providers.
Develop understanding of effective communications and recruitment approaches to promote and increase the awareness among customers of the potential to provide services to ESB Networks.	Develop and implement first release procurement processes and systems to tender for the required flexibility services, assess the responses received and enter contracts with cost effective providers.	Develop an understanding of price expectation and/or the costs faced by customers to participate in service provision.
Increase the understanding of the appetite of customers, and between customer categories, to become services providers and their preferred route to becoming service providers (direct contracting or through a third party).	Develop and implement first release processes for the dispatch of contracted service providers, the validation of their services delivery, and contract settlement.	

4.5 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.

5

I&C DSR Pilot TSO Market

5.1 DESCRIPTION

"Instruction Sets" are limits that the DSO places on distribution connected customers' participation in transmission markets (the SEM and DS3) because of the risk of unsafe or insecure conditions on the distribution system, because of their market activities. Today, instruction sets are issued annually based on technical studies of the expected worst-case conditions over the course of the coming year. This results in many sites being prohibited from participating in the market for 6 months of the year.

The second pilot proposes to improve this process. Under the proposal for Dynamic Instruction sets, the process that is undertaken annually today would move far closer to real time. On a week ahead or day ahead basis (based on site specific needs), forecasting and local network analysis would be used to assess whether a demand site's proposed schedule in the SEM or DS3 market would result in unsafe or insecure local conditions. As a result, it is expected that there would be a lower level of impact on many Individual Demand Sites' ability to provide services to the TSO.

5 I&C DSR PILOT TSO MARKET

5.2 SELECTION CRITERIA

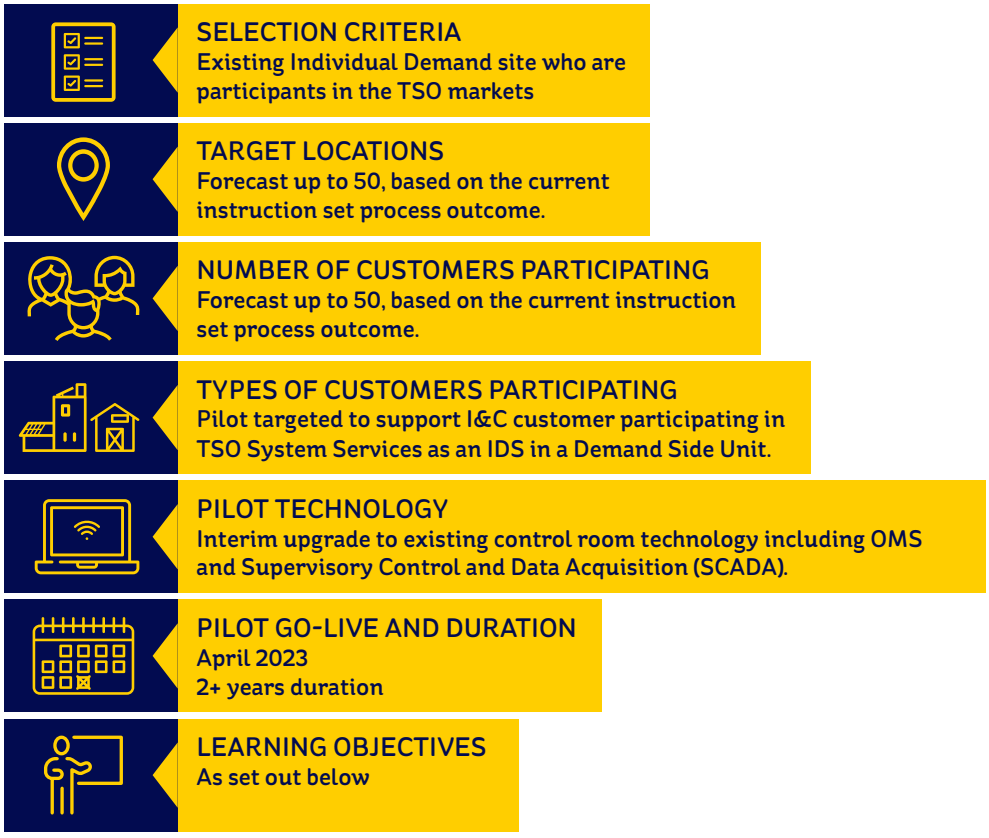
The Individual Demand Sites to be included in the pilot will be identified through the existing instruction set process as those whose TSO service provision potentially results in a in voltage or thermal violation on the distribution system.

5.3 PILOT IMPLEMENTATION

The operation of the pilot will be enabled through capability delivered as part of the upgrade to the Operational Management System (OMS). This upgrade will support the closer to real time reassessment of the potential impact of the provision of a TSO service. As part of the pilot implementation, there will be a need to establish enhanced communication channels between the DSO and relevant Demand Side Unit and the DSO, and the TSO to provide updated information on the status of the impacted Individual Demand Sites (IDS).

It is planned that the pilot will be operational from the end of Q1 2023 following the upgrade to the Operational Management System and implementation of the required system configuration to enable the required closer to real time reassessments to be implemented.

Prior to this, ESB Networks is proposing to seek the participation of a small number of IDSs to participate in the pilot development process, in Q4 2022 and Q1 2023, in preparation for the full pilot rollout. Candidate sites will be identified based on technical criteria. We plan to use this opportunity to develop effective processes and customer journeys from the perspective of the customer and the system operator.



5 I&C DSR PILOT TSO MARKET

5.4 LEARNING OBJECTIVES

CUSTOMER	DSO	LOCAL MARKETS
Identify customers' requirements in relation to the timing of information flow to allow them to manage their participation in TSO System Service arrangements.	Develop pilot processes and develop systems to support the reassessment of the potential impact of the provision of a TSO service by Individual Demand Sites.	Establish communication channels and related processes to allow the outcome of the reassessment process to be relayed to both impacted Demand Side Units and the TSO.
Test different dispatch and communications options from the customer perspective.	Test alternative communications and dispatch approaches.	Increase appetite for distribution customers to participate in the provision of flexibility services to ESB Networks.
Increase engagement with the development of TSO System Service provision.	Define the operational resource requirements and limitations in operating on a low-automation technology platform.	

5.5 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.

6

Pilot of Scale (Res & Commercial) Local/DSO Market

6.1 DESCRIPTION

Subject to the responses to the consultation process on the appropriate pace and scale for the programme, in 2023 we want to go live with a pilot of scale, contracting a range of flexibility services from all kinds of customers, across an area of the network under a bulk supply point (BSP). A BSP is point of connection between the Transmission System and the Distribution System. A BSP can feed between 10,000 and 150,000 customers, depending on where it is located. On average there are 30,000 customers fed from a BSP, with an average ratio of 9: 1: 0.001 of domestic to small commercial and large commercial or industrial customers.

What differentiates a BSP from other medium to large geographic footprints is that all associated customers are fed from the same network, so their activities and network usage interact. That is why we are seeking to pilot a range of services, work with a range of different customer types, and seek to collaborate with EirGrid, the TSO, to pilot new ways of coordinating transmission and distribution operations.

6 PILOT OF SCALE (RES & COMMERCIAL) LOCAL/DSO MARKET

6.1 DESCRIPTION continued

Under the proposed plan for the programme, we will not yet have gone live on a new technology platform which would allow us to automate more of our services management activities. However, we believe that this is the right time to:

1. **Develop a deep and rich understanding of customers' needs, barriers, and motivations to participate, and develop effective strategies and processes for addressing them into the future.**
2. **Develop effective processes for managing a range of different services solutions operating together, to enable "stacking" of services.**
3. **Develop and test new processes for coordinating transmission and distribution operations, including operational protocols and data exchange.**
4. **Develop and test a preliminary market management system (MMS).**

The format of the pilot will be to first define the BSP where the pilot will be located based on a range of customer and network criteria and then to commence engagement and awareness activities in the location as we develop the use cases for the pilot in detail. The scaled pilot will extend the range of use cases to include thermal and voltage issues, and the related range of flexibility services to be procured.

6.2 SELECTION CRITERIA

We are seeking stakeholder perspectives on the criteria which should be used for selecting the location for this pilot. As with previous pilots, we will consider forecast demand and generation needs across voltages levels through the application of power system studies and data analytics to the National Network, Local Connections Programme power system requirement load database.

The criteria to be included in this selection process are set out below:

- FORECAST MV/LV SUBSTATION LOADING
- FORECAST MV FEEDER CONGESTION
- FORECAST 38KV STATION CONGESTION
- FORECAST 110KV STATION CONGESTION
- FORECAST LARGE SCALE DISTRIBUTION CONNECTED GENERATION
- FORECAST URBAN/RURAL CUSTOMER PROPORTION
- FORECAST DSU MARKET PARTICIPATION

6 PILOT OF SCALE (RES & COMMERCIAL) LOCAL/DSO MARKET

In balancing between these criteria it is proposed to:

1. **Identify an area where the flexibility service will solve real world problems (such as high network loading). However as this is a pilot, it is important to have scope to test different services and approaches. Therefore, the area selected should not be too heavily loaded.**
2. **Balance the proportion of urban and rural customers within the selected area and so exclude areas which are predominately rural or urban.**
3. **Exclude areas where there is minimal micro-generation/commercial scale generation expected to be connected before 2025.**
4. **Exclude areas where there has been no participation in wholesale energy and TSO system services markets to date.**

Additional criteria being considered for inclusion in this process are:

TRANSMISSION CONSTRAINTS	By controlling demand, DSO may be able to reduce existing transmission constraints. Also, there is the potential of enabling a connection which may not be feasible given transmission constraints with non-firm connection.
COMMUNITY INITIATIVES	Engagement in an area with a strong focus in energy conservation could make community buy-in easier.
SIMILAR PILOTS	Working in an area where there are other parties conducting a pilot may enable shared learnings to be achieved.
HYBRID CONNECTIONS	The capacity factor of an independent power producer (IPP) for hybrid generation could increase if two technology types (e.g. wind and solar) were installed.
LV MONITORING & SMART METERING	Having both LV monitoring and smart metering in place will give a full picture of the distribution system down to the LV customer. Subject to access to smart metering data being established.

We welcome stakeholder views on:

1. **Which of the criteria above you believe should be applied?**
2. **Priorities – which criteria are the most important?**
3. **Are there criteria not listed which you would add?**
4. **Could you propose candidate locations and explain why you are proposing them?**

The National Network, Local Connections Programme plans to consult further with customers and other stakeholders in advance of finalising the criteria to be applied in the selection process.

6 PILOT OF SCALE (RES & COMMERCIAL) LOCAL/DSO MARKET

6.3 PILOT IMPLEMENTATION

The core of this pilot is to develop a full appreciation of customer needs, including as related to customer experience, awareness and education, and participant processes. This pilot is quite different from earlier ones, in that it will look to involve domestic customers for the first time in the life of the programme. From a system operator perspective, it will seek to put in place flexible solutions for thermal and voltage constraints. Once the pilot location has been selected, pilot processes and systems to routinely address the full range of technical and customer needs will be developed. This may require additional baselining and research in the location.

Where the use of flexibility is deemed viable, an assessment of the network need will be carried out to define the flexible services required to maintain system security factoring in any previously contracted flexibility service in the pilot area. A procurement process will be conducted with the assessment of potential service providers within the pilot area to include an effectiveness factor to recognise their connection voltage and/or location, and their ability to address the identified network issue.

Subject to the responses received to the procurement process, and with the aim of delivering a cost effective outcome, contracts will be put in place with the successful tenderers for a period of two years.

The operational phases of the pilot will commence at the beginning of Oct 23, with contracted service providers being dispatched to deliver in response to network conditions. The delivery of the contracted services will be monitored and reviewed for validation and settlement purposes.

SELECTION CRITERIA
As above. We are seeking your views on this.

TARGET LOCATIONS
One location of scale.

NUMBER OF CUSTOMERS PARTICIPATING
This will vary by customer category. We will seek at a minimum 20 customers per category and issue a call for proposals to involve a large number of domestic customers (i.e. 100 - 1,000).

TYPES OF CUSTOMERS PARTICIPATING
Domestic, commercial and industrial demand customers, and aggregators.

PILOT TECHNOLOGY
Interim upgrade to existing control room technology (OMS) and existing SCADA system.

PILOT GO-LIVE AND DURATION
October 2023
2+ years duration.

LEARNING OBJECTIVES
As set out below.

6 PILOT OF SCALE (RES & COMMERCIAL) LOCAL/DSO MARKET

6.4 LEARNING OBJECTIVES

CUSTOMER	DSO	LOCAL MARKETS
Develop and test effective recruitment, education and awareness strategies.	Develop and implement selection processes for a BSP to be utilised in the Pilot of Scale.	Develop and implement the procurement processes and systems flexibility services.
Develop end to end customer journeys for domestic, industrial and commercial customers, including through aggregation.	Pilot processes and systems to analyse and define the network needs.	Test concepts like "effectiveness factors" to reflect different customers' ability to address different network issues.
Understand the technical capability of different types of customer and technology developments that could improve customers' ability to participate.	Pilot processes for dispatch of contracted service providers, validation and contract settlement.	Price discovery across different flexibility services and customer categories.

6.5 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.

7

RESS-1 Early Access Pilot

7.1 DESCRIPTION

The RESS-1 pilot relates to a cohort of new renewable generation customers that are currently under development and whose connection to the network is currently being progressed. The development of these generators is being supported through the Renewable Energy Support Scheme (RESS-1) by the Government. As part of their contractual obligations under the RESS-1 Implementation Agreement, these generators are required to be in commercial operation by the end of Dec 23. Failure to meet this obligation could result in their participation in the RESS-1 being revoked and their performance bond being called by the Minister for the Environment, Climate and Communications.

In several cases, there are deep re-enforcement works on the distribution system required to connect the new generator. These works are often complex and may involve long-lead items. As a result, they are inherently riskier than projects where only shallow works or less complex deep works are required.

7 RESS-1 EARLY ACCESS PILOT

7.1 DESCRIPTION continued

The objective of the RESS-1 early access pilot is to offer early access to the network to RESS-1 generators who potentially may face higher risk due to the nature of the required deep reinforcement works. This is to reduce the potential risk to the customer associated with the Dec 23 RESS longstop date. This arrangement would involve ESB Networks creating a local market to contract for flexibility services that would allow the new generator to connect prior to the completion of deep works. The service would be defined to reflect periods of high levels of generation and/or contingency operating conditions.

The connecting RESS-1 generator would be qualified to participate in the flexibility market procurement, alongside existing generation or demand customers in the relevant location. Subject to the generator accepting the early access offer, and meeting the defined qualification criteria, they would be eligible to bid into this auction. At the conclusion of the procurement process, contracts will be awarded to the least cost tenderer/s that resolve the risk of congestion (due to generation).

The funding arrangements for this pilot are yet to be determined (and this will be subject to a regulatory decision). We welcome views on the most appropriate approach to the funding model for this pilot.

The connecting generator would be offered this early access arrangement on condition that they are willing to act as a backstop provider of the required flexibility services, should the procurement process fail to award contracts to any other party or where a contracted service provider becomes unavailable during the operational period of the pilot.

7 RESS-1 EARLY ACCESS PILOT

7.2 LEARNING OBJECTIVES

CUSTOMER	DSO	LOCAL MARKETS
Based on RESS-1 generators potentially impacted by deep reinforcement to test market appetite for early access on a commercial basis.	Piloting dispatch processes.	Define contracts and funding arrangements.
Test appetite for similar approaches for future RESS processes.	Monitoring and review of pilot services for validation and settlement purposes.	Develop backstop provider arrangements.
Test appetite for enduring flexible access arrangements.	Pilot forecasting and scheduling capabilities.	Develop procurement process for access rights trading.

7.3 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.

8

Future Arrangements Pilot TSO Markets

8.1 DESCRIPTION

In a recently published high level design consultation (SEM-21-069), the SEM Committee has proposed that the Future Arrangements for TSO System Services post-DAM daily auction for system services will be implemented. This market would be coupled with the procurement of system services over longer timeframes where there are identified competition and/or locational constraint issues.

The consultation recognises that it will be the responsibility of the relevant DSO to develop the modalities enabling distribution system customer participation and any restrictions on their ability to offer system services to the TSOs. The consultation sets out three proposals in relation to how this will be implemented in practice:

OPTION 1 PROVIDER-LED	OPTION 2 DSO-LED	OPTION 3 TSO-LED
The provider would engage directly with the relevant TSO to qualify as a system services provider and would also engage directly with the relevant DSO to obtain their consent to provide system services to the TSO.	The provider would have its primary relationship with the relevant DSO who would then engage with the relevant TSO.	The provider would have its primary relationship with the relevant TSO who would then engage with the relevant DSO.

8 FUTURE ARRANGEMENTS PILOT TSO MARKETS

8.1 DESCRIPTION continued

There will be significant work required in the coming months, across all industry stakeholders to develop the future arrangements from high level through to detailed design. ESB Networks will then design the processes and systems that will be required to support the role that the DSO will be required to fulfil to successfully allow distribution customers to participate in the market for provision of services to the TSO.

The current arrangements were developed from the perspective of the transmission system (as was appropriate at that time) and thus met the needs of larger, transmission connected service providers. If the current model for distribution system users' participation was retained, the volume of services which could be delivered from the distribution system will necessarily remain lower than it could otherwise be. The modalities that ESB Networks delivers, in collaboration with the TSO and the SEMC, to support future system services arrangements, will need to be developed to reflect the needs and capabilities of distribution system users.

Notwithstanding the degree of change involved, this is a positive development for distribution system customers' access to the market. In developing its approach to supporting the Future Arrangements, ESB Networks will be guided by two core principles, namely:

1. **To maximise the participation of new and existing technologies on the distribution system, including citizens, communities, farms and industry, in future system services' arrangements, so as to deliver the best value for customers, in cooperation with the TSO.**
2. **To protect all distribution system users, by ensuring the continued safe and reliable operation of the system in accordance with DSO licence duties.**

Enabling a system services market design that serves all stakeholders is paramount. Both local and whole system operations, over the coming decade, will become increasingly complex, and system services will play a central role in a secure and economic system operation. This will be delivered increasingly by providers who are not providers today – distributed demand, generation communities and new technologies. ESB Networks' role as DSO, of coordination and cooperation with the TSO and market participants, will be pivotal to achieving a market design that supports active participation of new technologies, investor certainty and delivering best value for the customer.

ESB Networks' role as DSO in the design and operation of system services arrangements with regard to distribution connected participants will be essential to reducing barriers to entry for smaller and newer technologies, and for distribution customers. It is essential that their participation is built into the design and operation of system services from the earliest possible point. The right level of local management is critical to enabling smaller providers, and new technologies on the distribution system, to participate on a level footing in a market which is not currently designed to account for the local network conditions in which these smaller participants operate.

The processes enabling distribution system users' participation in Future Arrangements will be developed to maximise their participation in system services arrangements based on the above principles. These processes will include:

- **Technical registration**
- **Pre-qualification**
- **Bidding processes**
- **Processes for services where not auctioned**
- **Scheduling, dispatch, redispatch**
- **Monitoring & remedial actions**
- **Information flows and timings**

7 FUTURE ARRANGEMENTS PILOT TSO MARKETS

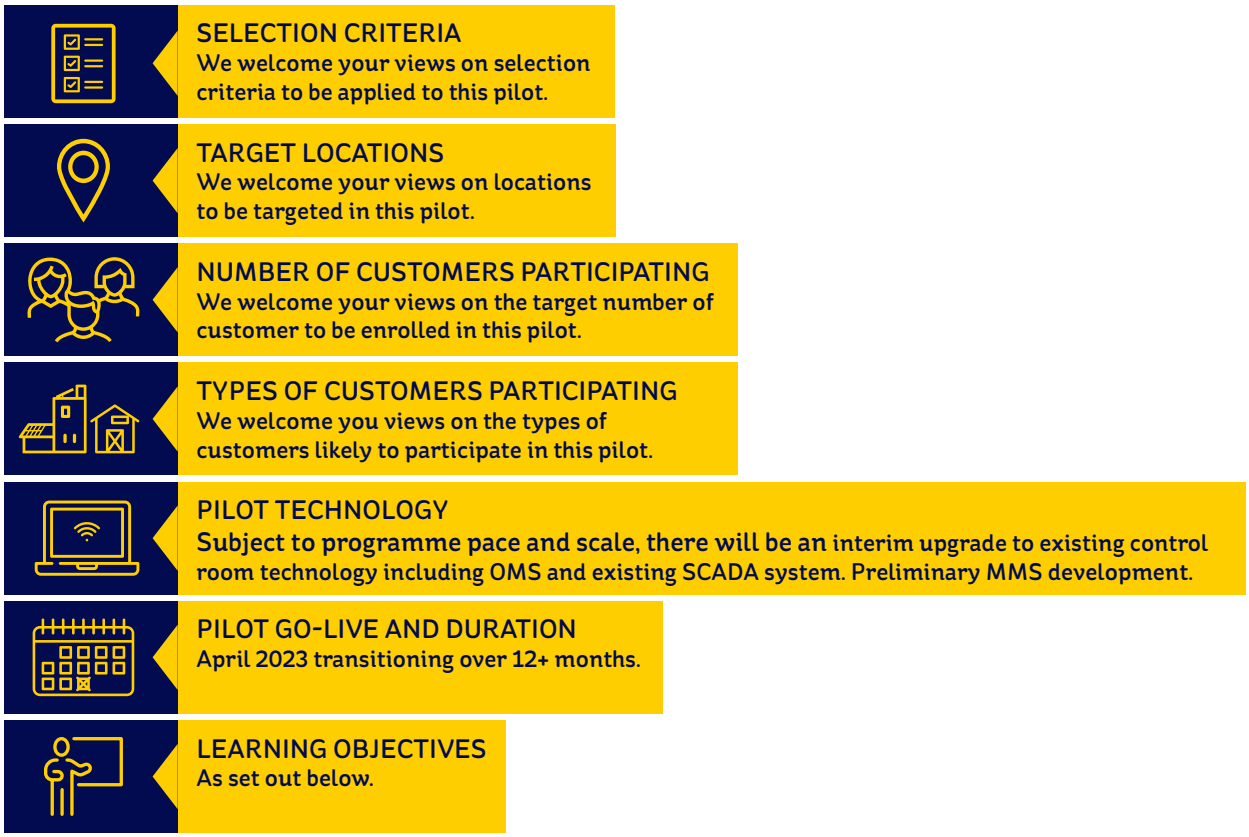
8.1 DESCRIPTION continued

This pilot is proposed as a mechanism to develop and validate the requirements for ESB Networks to facilitate the planned go-live of the Future Arrangement in Apr 24. Subject to the responses received to this consultation on the appropriate pace and scale of the programme rollout, and the outcome of the SEMC consultation process, this pilot is planned to focus on those distribution customers that are currently participating in the TSO system service arrangements and is expected to see ESB Networks coordinating with the TSO in the scheduling and dispatching of both flexibility (DSO) and system services (TSO).

It is expected that this would happen in two phases. The first would commence as of the go-live of the Future Arrangement in Apr 24, and would involve:

1. **Updating the processes introduced in the April 2023 pilot (dynamic instruction sets) to reflect new market operational timeframes and processes.**
2. **Defining processes to be introduced on a phased basis, and thus increasing the ability of distribution system customers to participate.**

The second phase would commence as of the end 2024, when it is proposed that the ESB Networks' operational systems platform would go live and support greater automation of system management and data exchange processes.



7 FUTURE ARRANGEMENTS PILOT TSO MARKETS

7.2 LEARNING OBJECTIVES

7.3 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.

9

Full Solution First Go-live Pilot

9.1 DESCRIPTION

In order to meet the future challenges that the Governmental target for the electrification of heat and transport by 2030 will bring to operating the distribution system in a safe and reliable manner, ESB Networks will need to invest in enhanced network operational and flexibility market management systems.

Within the operational system implementation, there are two planned workstreams. The first is focused on the development and deployment of the capability required to support the earlier pilots as set out above. The second workstream is focussed on building an end state capability with the full Advanced Distribution Management System (ADMS) as set out in the Operational Systems Roadmap.

9 FULL SOLUTION FIRST GO-LIVE PILOT

DESCRIPTION continued

Subject to the responses received to this consultation on the appropriate pace and scale of the programme rollout, at the end of 2024, we propose to roll out the end state operational technology (ADMS) leveraging the learnings of the previous years' piloting.

This would involve:

Moving onto a flexible and scalable technology platform, and having new organisational capabilities and resources in place, to roll out flexibility in any customer location on networks covering up to 50% of the country.

The ability to accommodate thousands of participants, heading for hundreds of thousands in early Price Review 6 (PR6) timeframe.

The ability to enable any type of customer – residential, commercial, storage, generation or community – to participate.

A high degree of automation within our organisation, in the field and in customers' premises.

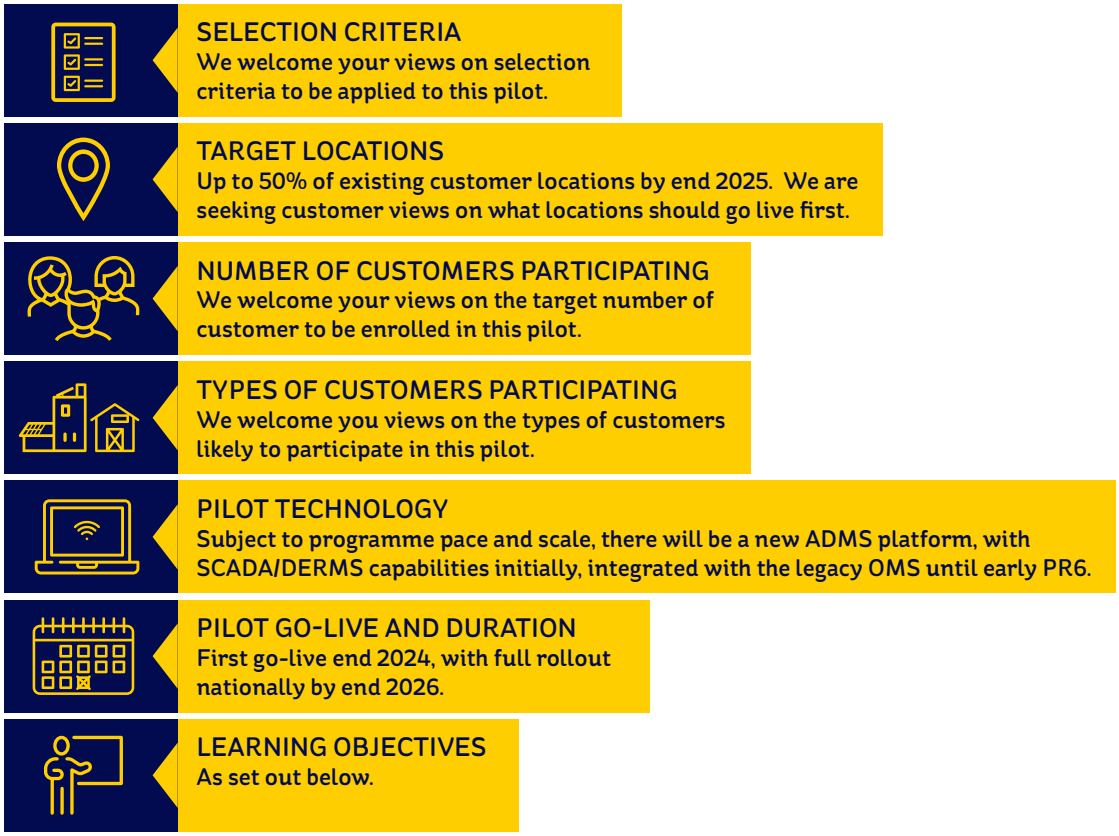
Migrating successful pilots from the programme to BAU within 24 - 30 months.

9 FULL SOLUTION FIRST GO-LIVE PILOT

9.1 DESCRIPTION continued

Subject to the programme pace and scale, initially we would go live on a pilot footprint. Over a period of weeks, the country would be migrated onto a new operational platform, and over a period of months, the new functionality would be "turned on" so that capability to manage the delivery of flexibility services would be enabled. By the end of 2025, we propose to have that capability "turned on" for 50% of customer locations.

The Full Solution First Go-live pilot would focus on utilising the capability enabled by the deployment of the ADMS. The pilot area would be linked to the areas of the system where there are existing flexible service providers contracted from earlier pilots. This would allow the amended business processes, supported by these systems, to be validated and refined in advance of extending the area of the network under active management. The areas of the network that would be targeted by the pilot would also be linked to the rollout of both the smart metering programme and the LV network visibility workstream subject to access to smart metering data being established. Within the areas of the network under active management, all eligible HV and MV reinforcements schemes would be tested for the application of flexibility services through the application of rolling tenders.



9 FULL SOLUTION FIRST GO-LIVE PILOT

9.2 LEARNING OBJECTIVES

CUSTOMER	DSO	LOCAL MARKETS
Refine the end to end customer journey reflecting the deployed systems.	Refine the scheduling processes to reflect deployed operational technology.	Apply the deployed market management system to the qualification processes.
Develop processes to promote customer engagement in service provision as the rollout extends across the network.	Refine the dispatch, re-dispatch and emergency needs processes to reflect deployed operational technology.	Apply the deployed market management system to bid management processes.
Develop understanding of customer preferences for engagement with flexibility service provision; directly or through intermediaries.	Refine the operational protocols to reflect deployed operational technology.	Refine the flexibility service delivery validation and settlement processes.

9.3 RELATED MATERIAL

To learn more about the customer communications and consultation approach that will be put in place to support this pilot, and to provide feedback, please see the National Network, Local Connections Programme Consultation Framework.

To learn more about the products which we are seeking to contract in this pilot, and weigh in, please see the National Network, Local Connections Programme Phased Flexibility Market Plan.

To learn more about when and where products like the ones introduced in this pilot are going to be needed over the coming decade, including to support the electrification of heating and transport, please see the National Network, Local Connections Programme 2030 Power System Requirements document.