December 2022

GB Connections Reform

Case for change

ESO

Foreword

Welcome

As part of our ongoing drive to improve grid connections, we've been pleased to engage with customers, stakeholders and industry to understand their concerns and frustrations with the connections process.

We face challenges in both the quantity and the changing nature of projects waiting to be connected to the grid. The volume of offers that will be sent out in the first quarter of 2023 alone will exceed the total volume in 2022, with close to 320GW of capacity already contracted. Some of this capacity is allocated to projects that may not progress, holding back those that can.

The Electricity System Operator (ESO) is putting into place a range of measures to improve the connections process, including accelerating our Business Plan 2 (BP2)[1] plans to undertake a strategic review of connections. We refer to this review as 'GB Connections Reform'. This document outlines our activities in Phase 1 of GB Connections Reform and sets out our case for change.

This programme, alongside other workstreams, should enable quicker connections and a more diverse range of connectees, thereby helping deliver Net Zero and security of supply at the best cost to consumers.

The timescales for this work are tight, but necessary, due to the urgent need for reform. We look forward to collectively developing solutions which work for industry, customers and the end consumer in Phase 2 of this review.

Julian Leslie
Head of Networks, Electricity System Operator

[1] https://www.nationalgrideso.com/our-strategy/riio/get-involved

Context

As the ESO for Great Britain, it's our job to move electricity safely, reliably and efficiently through the system. One of our key responsibilities is to lead the process by which customers connect to and make use of the electricity transmission system.

When a customer applies for a contract to connect, or to make use of the transmission system, the application comes to the ESO and we progress it with the relevant electricity transmission network owner, depending on where a connection is.

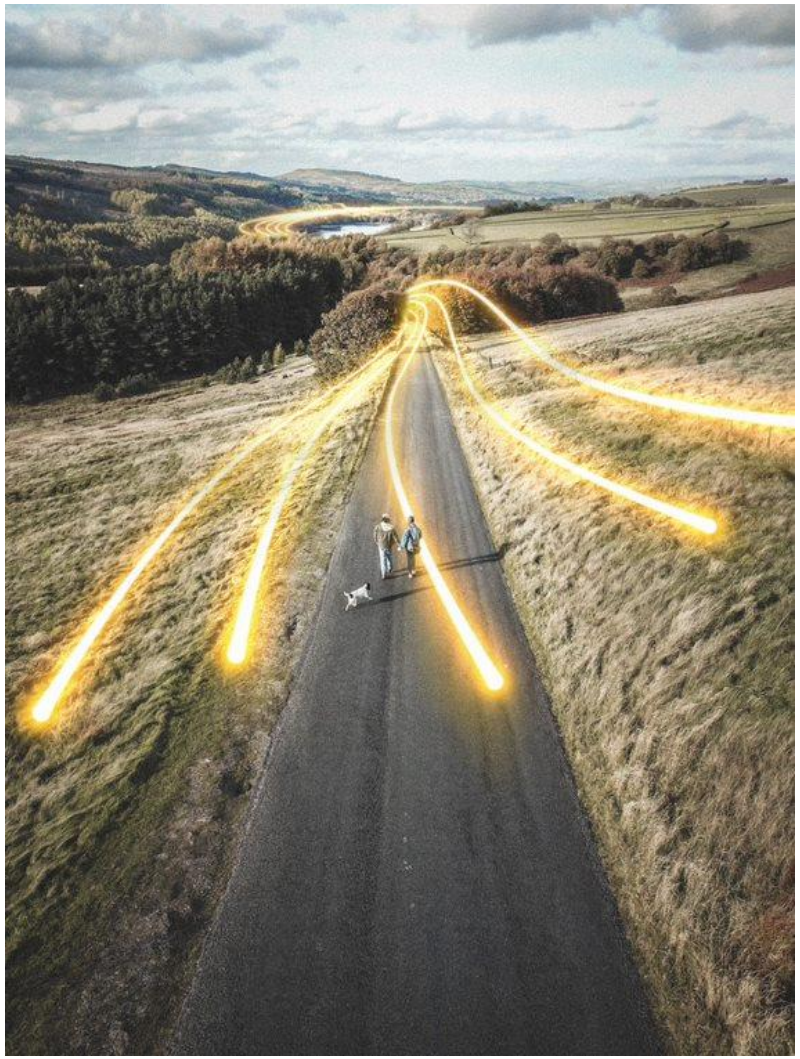
Efficiently connecting a wide range of customers to the transmission system is vital to the transition to Great Britain's zero carbon future. Our Future Energy Scenarios (FES)[2] show that we need to connect significant new sources of renewable generation as well as new and innovative technologies each year until 2050 in order to deliver Net Zero.

But the current connections process, which was originally focused on connecting a small number of large fossil fuel plants every year, has not kept pace with the rapid changes occurring in the energy sector. As a result, the current process is not likely to enable the connection of the necessary volume of renewable generation and other associated technologies quickly or efficiently enough.

Addressing this is one of our key priorities and, alongside other measures, we have therefore accelerated a major programme of reform to redesign the existing connection process.

This report, following phase 1 of GB Connections Reform, sets out a clear and compelling case for change, based on extensive stakeholder engagement. Phase 2 will be focused on developing solutions in collaboration with the industry. We will also require the industry's support as we move to implement these solutions as the reform may lead to changes that impact all connections.

We look forward to working with you to deliver improvements to the connections process that will not only improve the customer experience but also drive efficiencies, enable competition and deliver greater value to end consumers.



[2] https://www.nationalgrideso.com/future-energy/future-energy-scenarios

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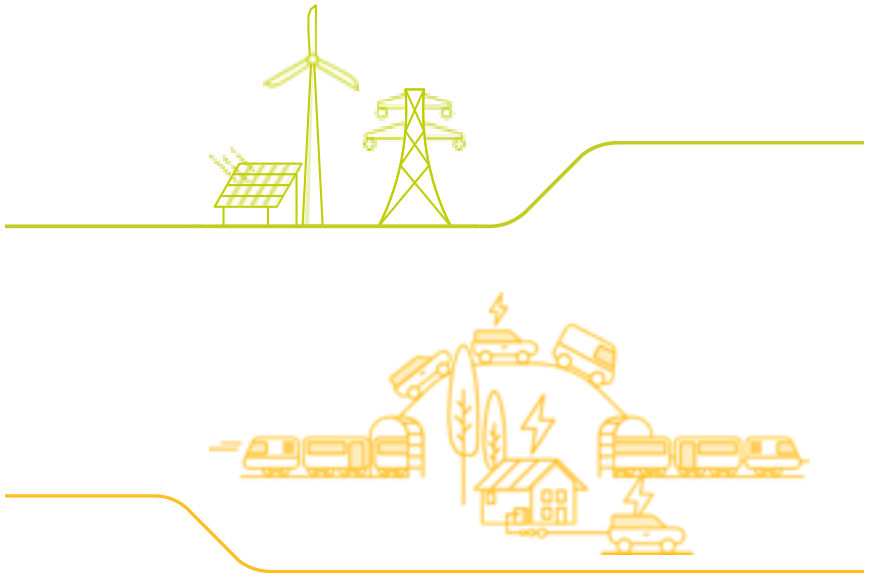


Executive Summary

ESO

Executive Summary

There is common consensus across the industry that the current connections process is no longer fit for purpose. The main challenges previously highlighted are:

- increasing application volumes and related increases to the timescales for connection
- many new types of connection customer
- significant changes to the mix of technologies
- greater interaction between Transmission and Distribution networks
- greater complexity and uncertainty over network investment planning
- an urgent need for a holistic, whole systems approach to planning network investment.

We have launched the GB Connections Reform project to fully understand and comprehensively address these challenges. Phase 1 (the subject of this report) sets out the Case for Change. We are now moving into the Design Phase (Phase 2), and then finally into Implementation from end of April 2023.

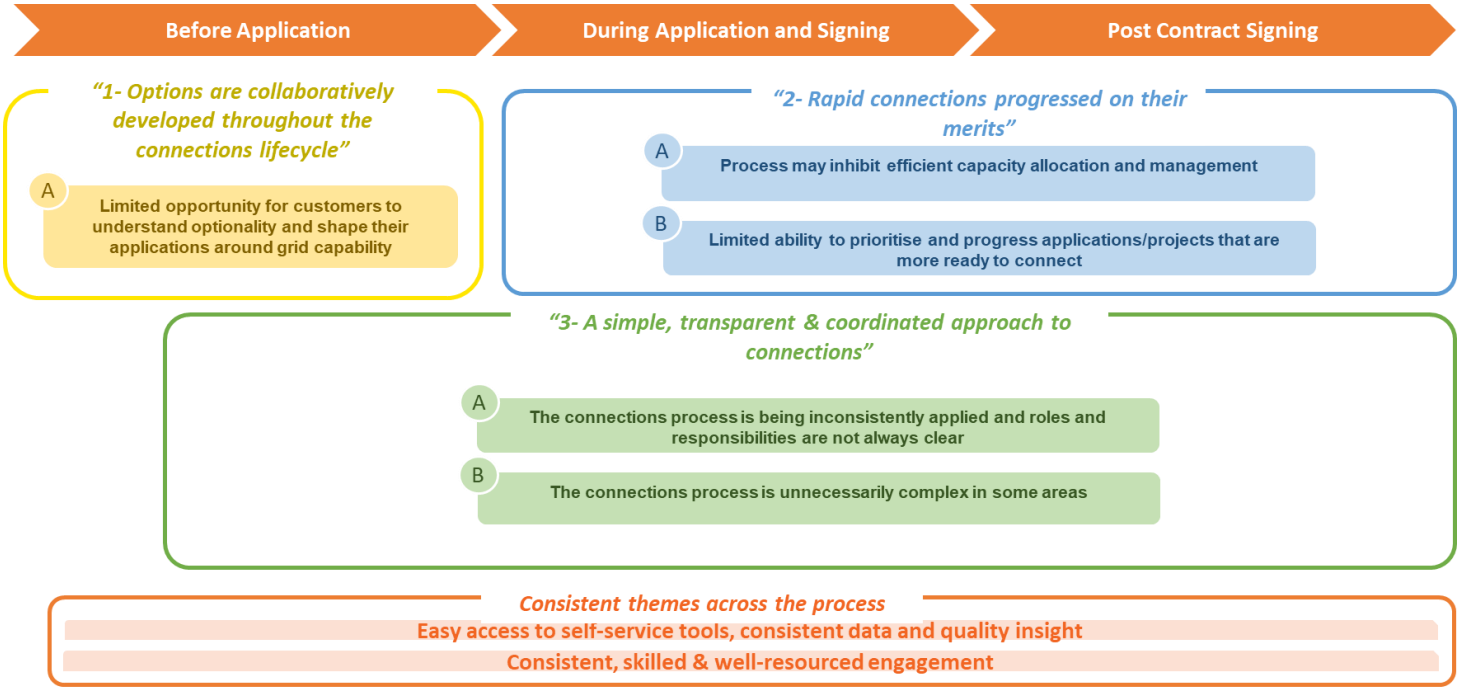
Executive Summary

Phase 1 - The Case for Change for Connection Reform

Phase 1 has focused on creating a clear understanding of the case for change and the areas of focus for GB Connections Reform. Phase 1 has provided us with an opportunity to speak to all those involved in the Connections process: Connectees, Transmission Owners (TOs), Distribution Network Owners (DNOs) and internal ESO stakeholders. We asked them about their experience of the connections journey, their needs across that journey and areas of importance to them. We spoke to over 100 people across 32 bilateral and multilateral workshops. During this engagement activity, a clear set of themes for the case for change emerged:

1. Options need to be collaboratively developed throughout the connections lifecycle;
2. Rapid connections need to be progressed on their merits; and
3. There needs to be a simple, transparent and coordinated approach to connections.

In addition, stakeholders indicated they want easy access to self-service tools, consistent data and quality insight, and consistent, skilled and well-resourced engagement.



Executive Summary

Phase 2 - High-Level Design of Solutions and Roadmap for Connection Reform

Moving into Phase 2, we will be establishing specific workstreams to meet design requirements covering:

- Customer Journey and Process Design
- Data and Technology
- Organisation and Skills
- Regulation and Codes

The Case for Change themes identified through Phase 1 will provide the focus and foundation for these workstreams, and the design for the future approach to connections. We will establish both a Delivery Executive Steering Group and a Stakeholder Challenge Group to help guide our Design work – and we will engage with all industry stakeholders over the course of Phase 2 to help identify, test and validate the options we develop and propose for implementation.

Introduction

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Delivering Net Zero

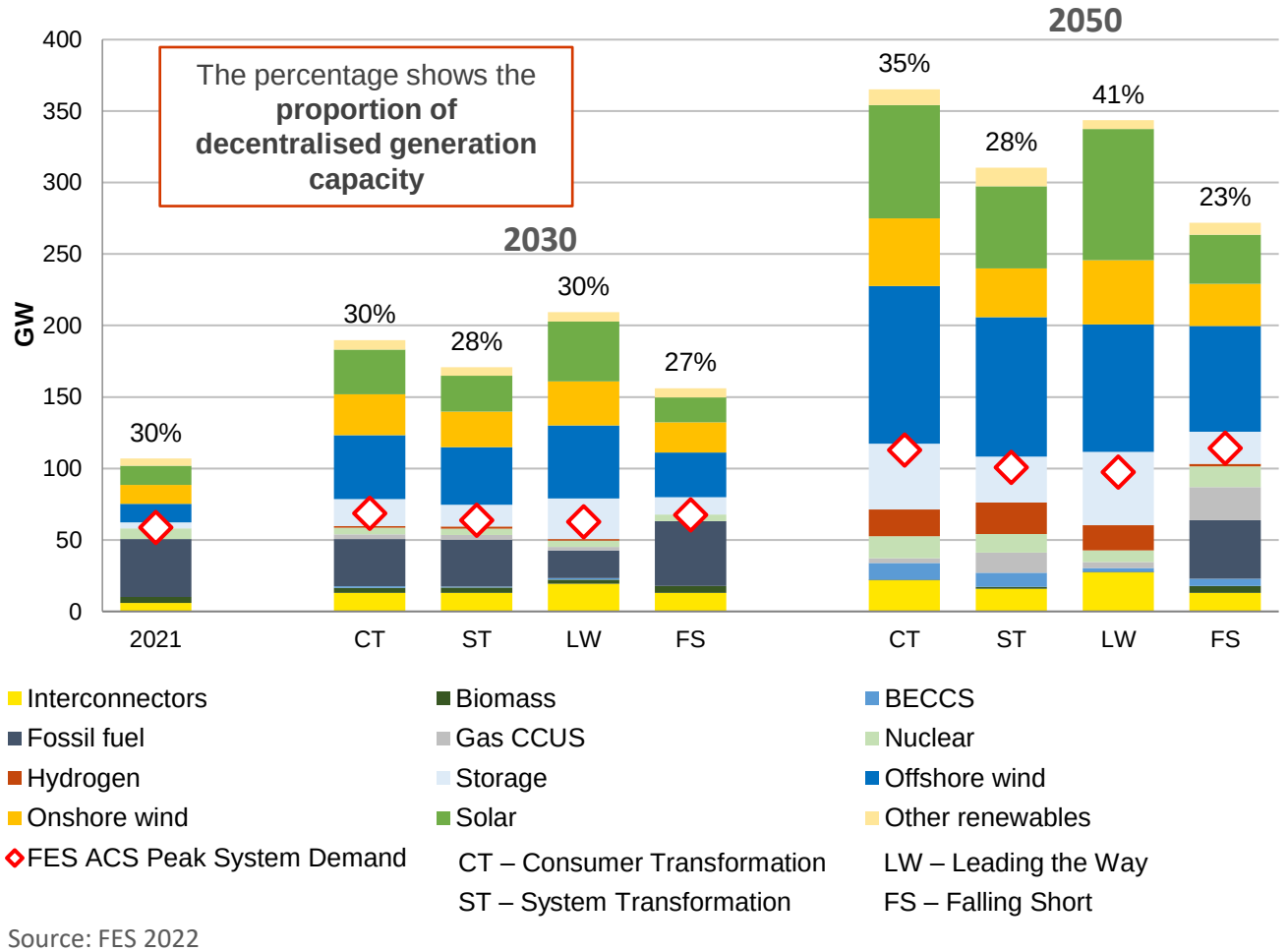
Our Future Energy Scenarios (FES) suggest that delivering Net Zero will require connecting new capacity and new types of customers more quickly than at any time since the current process was established.

The future energy system will look markedly different from today, having undergone changes such as:

- A near doubling of electricity demand by 2050
- Changing customer types (e.g. from steelworks to datacentres) with new and evolving energy needs
- Changing demand patterns (e.g. from the electrification of transport and heat)
- The decentralisation of generation
- Establishment of new technologies such as hydrogen and long duration battery storage, to supplement continued growth in relatively recent technologies such as wind and solar.

Incorporating this new generation and demand will give rise to an increasing volume of connections, as well as significant shifts in the nature of connecting customers and their needs. The current connections process was not designed to accommodate these changing market needs.

Installed generation capacity, peak demand, and percentage of decentralised generation (GW)



Source: FES 2022

The industry faces a connections challenge

We recognise our customers are increasingly receiving significantly later connection dates than they wish. At the same time, we also see a greater risk of an uncoordinated, inefficiently designed network.

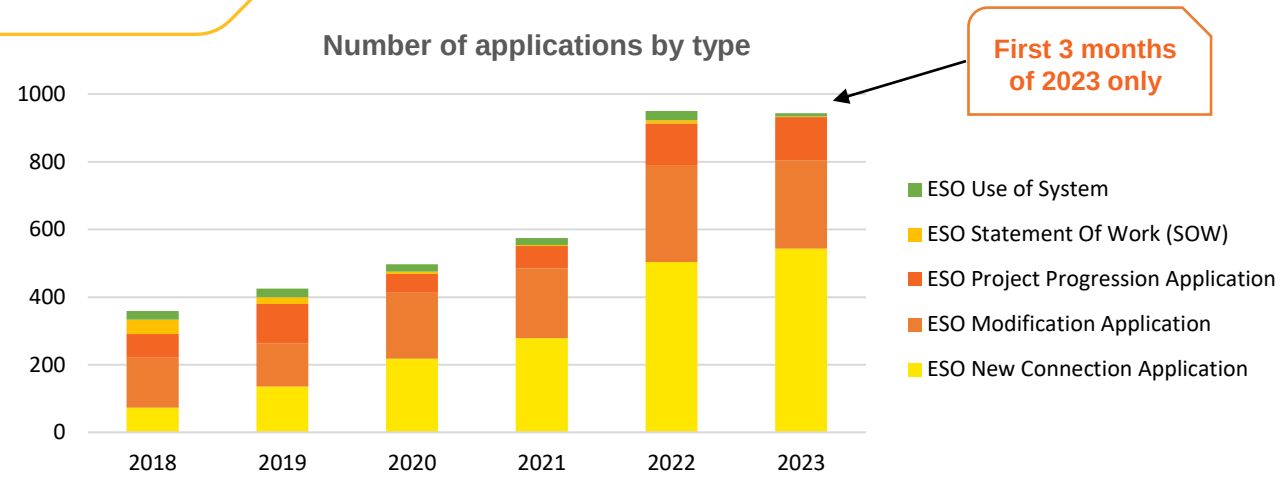
We have seen a major increase in new connections applications volumes in the past five years, but in 2022 and 2023 we are seeing a more accelerated growth trend that is exceeding the FES growth projections.

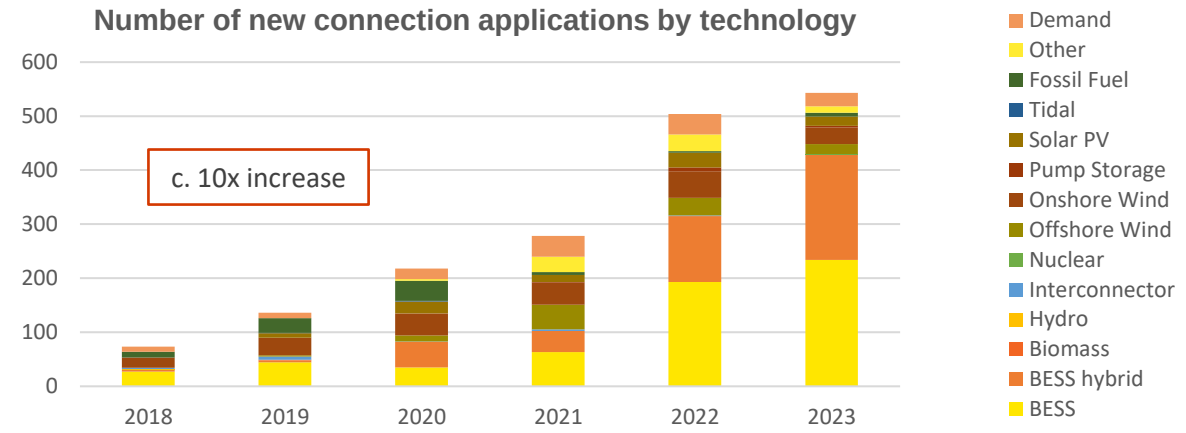
Between 2018 and 2022 the volume of new application offers provided per year grew tenfold, and the volume of offers that will be sent out in the first quarter of 2023 alone will exceed the total volume in 2022.

Whilst growth is apparent across most types of application and asset class, a large proportion of the increase is driven by Battery Energy System Storage (BESS). Project Progression application offers required for Q1 2023 have also exceeded the total volume in 2022, signalling a concurrent increase in application volumes at Distribution level.

30% of the workload in 2022 was driven by modifications to existing contracts, further adding to the volume.

One consequence of this is the increased challenge of planning, designing and building sufficient network to connect all contracted parties. Our Holistic Network Design, published in July 2022[3], showed the benefits to GB consumers (c£5.5bn) of taking the time to develop a coordinated onshore and offshore network design to support the ambition of connecting 50GW of offshore wind by 2030.





*CAGR = Compound Annual Growth Rate 2018-2022
Source: ESO internal connections data

[3] https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design

Do application volumes align with Net Zero scenarios?

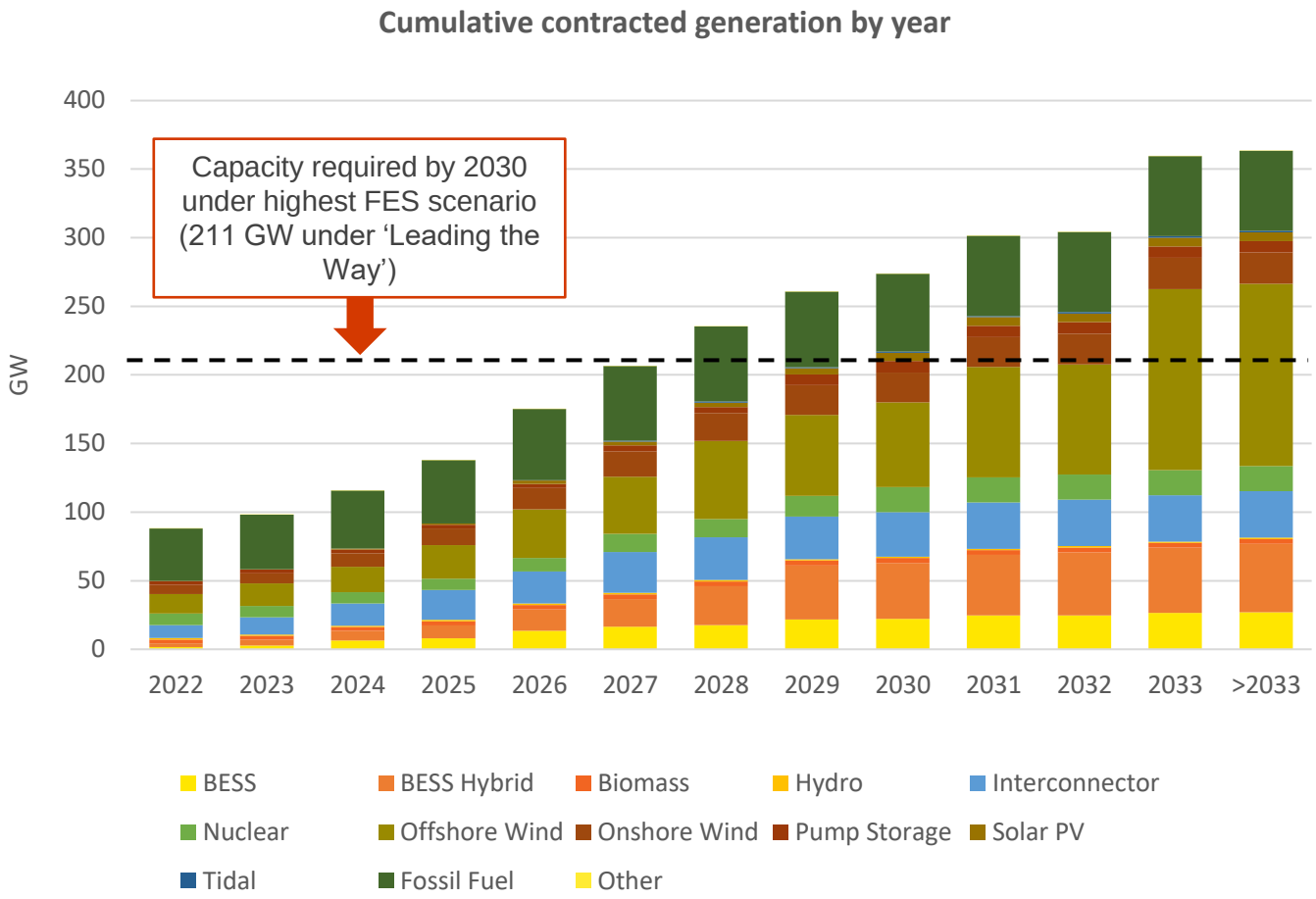
The amount of generation capacity contracted to connect between now and 2030 significantly exceeds even the highest FES scenario estimates.

The FES 2022 indicated that up to 211GW of capacity would be needed by 2030 under the 'Leading the Way' scenario. The Transmission Entry Capacity (TEC) register (which excludes most generation connected to the distribution system) indicates 316GW* of capacity is already contracted, of which 82GW has already connected.

However, based on previous experience, we do not expect all of this capacity to connect, for instance with customers submitting modification applications to push back contract dates, or simply terminating contracts. Uncertainty regarding if and when contracted capacity will come forward is therefore making it harder to plan the system.

Nevertheless, a one-size-fit-all and first come first served connections process obliges us to treat all applications the same, regardless of their likelihood of progressing to connect. This takes up space in the queue and ultimately leads to customers making more speculative applications to secure their place.

Whilst we need to increase our capacity to cope with the increasing volume, we also need to understand whether there are smarter ways to deliver the Net Zero ambitions as well as what customers need.



Source: TEC Register (as of 5th December 2022)

* This does not include any capacity that may be removed via the TEC Amnesty process or following the mid 2023 Celtic Sea leasing round outcome, but does include the removal of unsuccessful Scotwind projects

Many applications fall out of, or repeat the process

Overview of the connections process

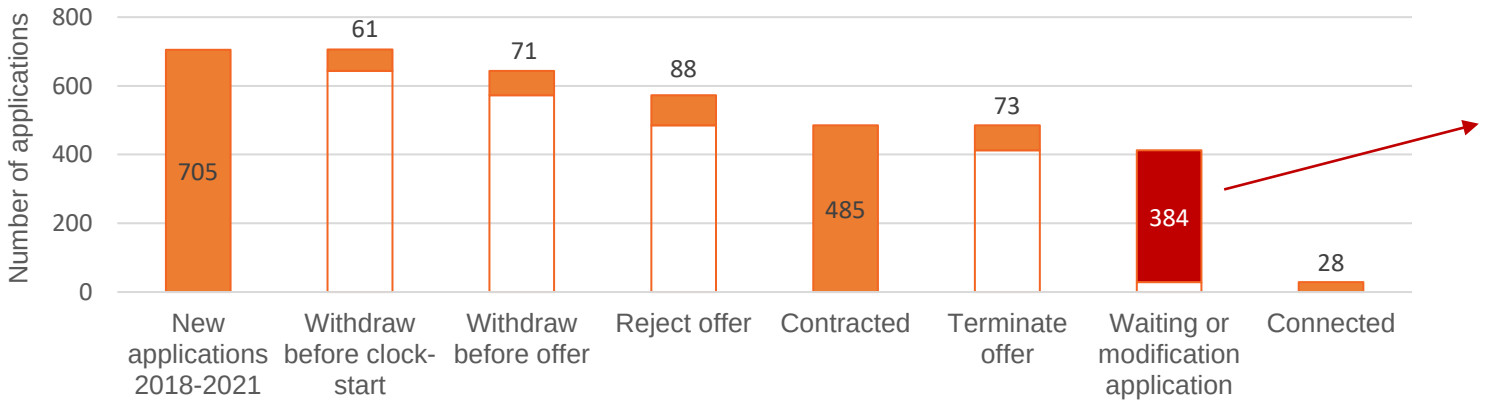
Material changes requested to signed contract, initiating the process again from the start – e.g. varying timelines, asset type, location, etc.

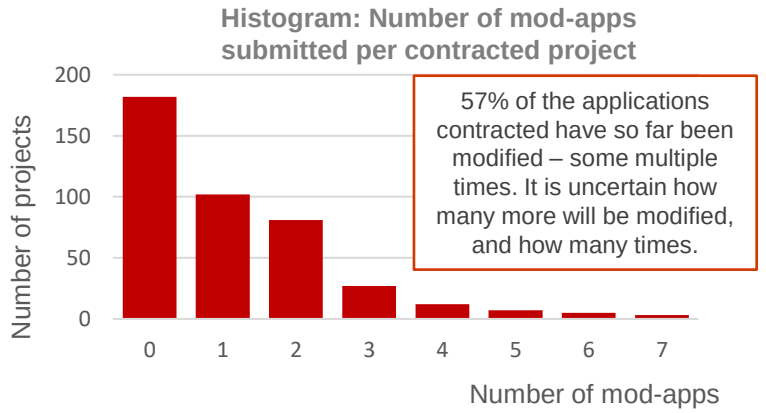
Modification application

Application submitted | **Clock start** | **Offer provided** | **Offer completed** | **Commercial operation**

1. **Preapplication** — Work undertaken ahead of applications to shape projects and identify when and where to apply to connect
2. **Application** — Formal application submitted to the ESO, with work undertaken by parties to capture the required data
3. **Offer creation** — ESO and TO assessment conducted and quote developed to provide offer to customer
4. **Post offer negotiations** — Discussions regarding the offer, culminating in the offer being agreed and contract signed, or the offer rejected
6. **Construction & commissioning** — Reinforcement and/or enabling works completed, and project constructed

For new applications between 2018-2022, 42% have fallen out of the process (withdrawn, rejected or terminated), and of those that remain many will be subject to modification applications and will go round the process again.





Producing connection offers is increasingly complex

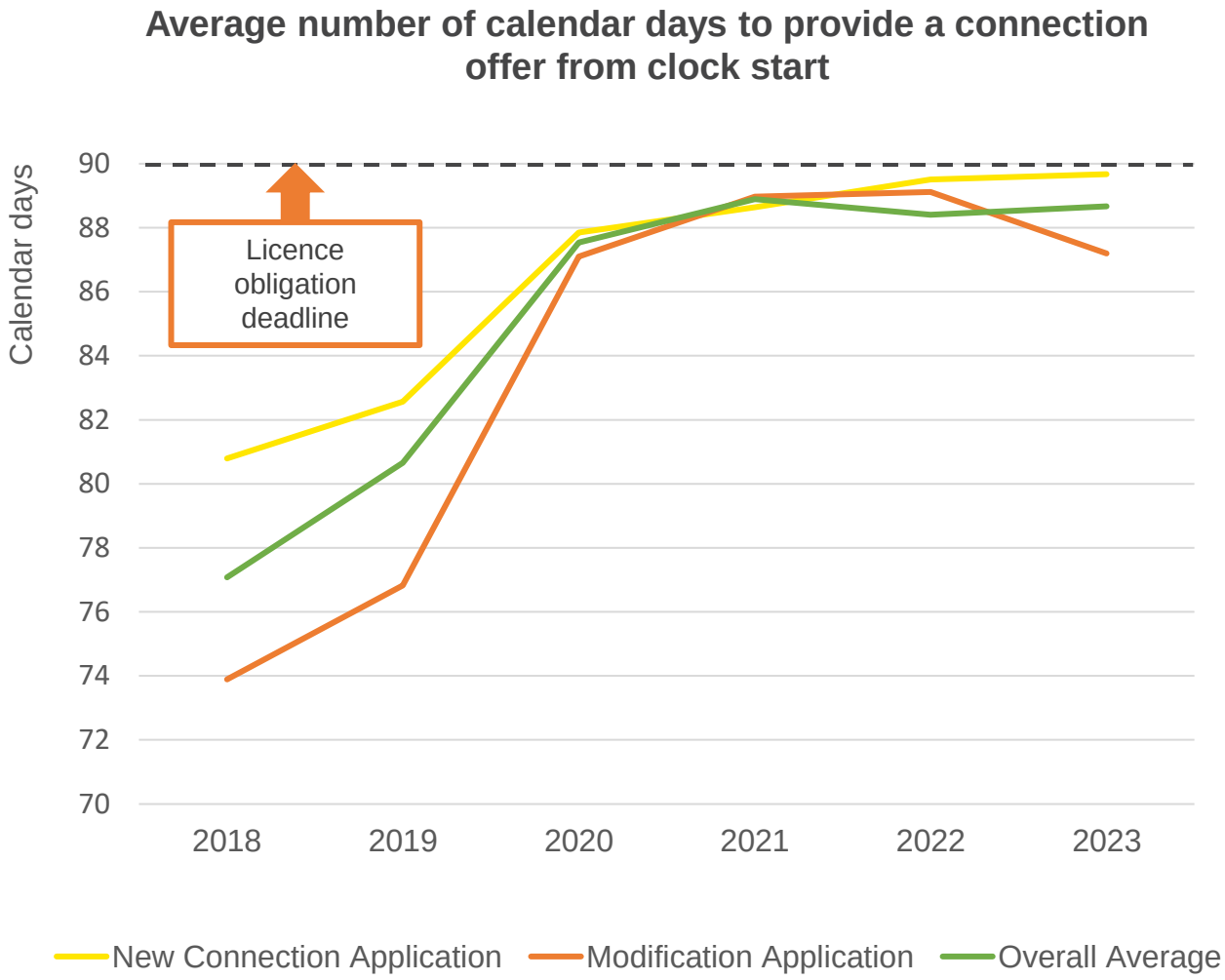
In the past five years the average number of calendar days taken to provide a connection offer has increased steadily, and is now just below the licence obligation deadline of 90 days.

With the growing volume of applications and their increasing complexity, it is getting tougher for all parties to complete the work necessary to provide connection offers within the timescales prescribed by licence without other adverse impacts.

Anecdotal evidence from stakeholders suggests that this workload may be impacting quality, for instance with less time available to engage connectees regarding their application, and with connection offers sometimes not containing all relevant data and insight at the time of issue, resulting in further queries.

The proportion of applications requiring at least 1 reoffer is increasing;

2019 = 3%
2020 = 26%
2021 = 39%

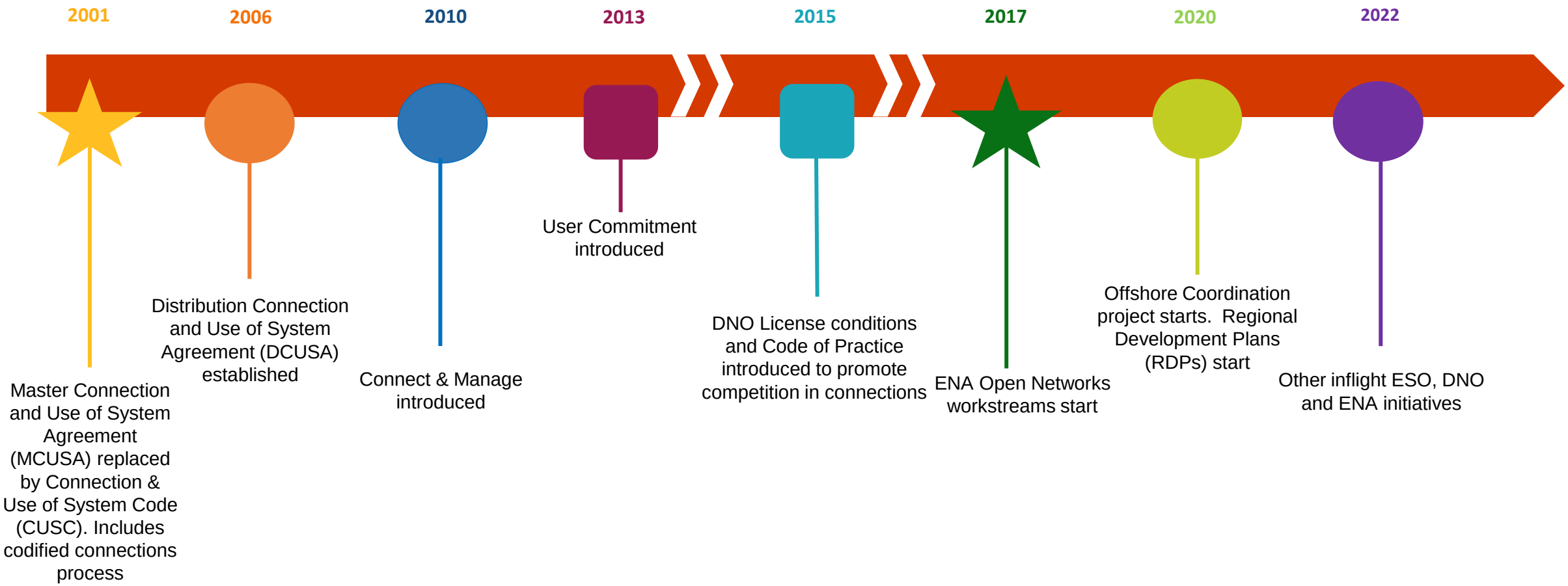


Connection Reform Landscape

ESO

The connections process needs reform

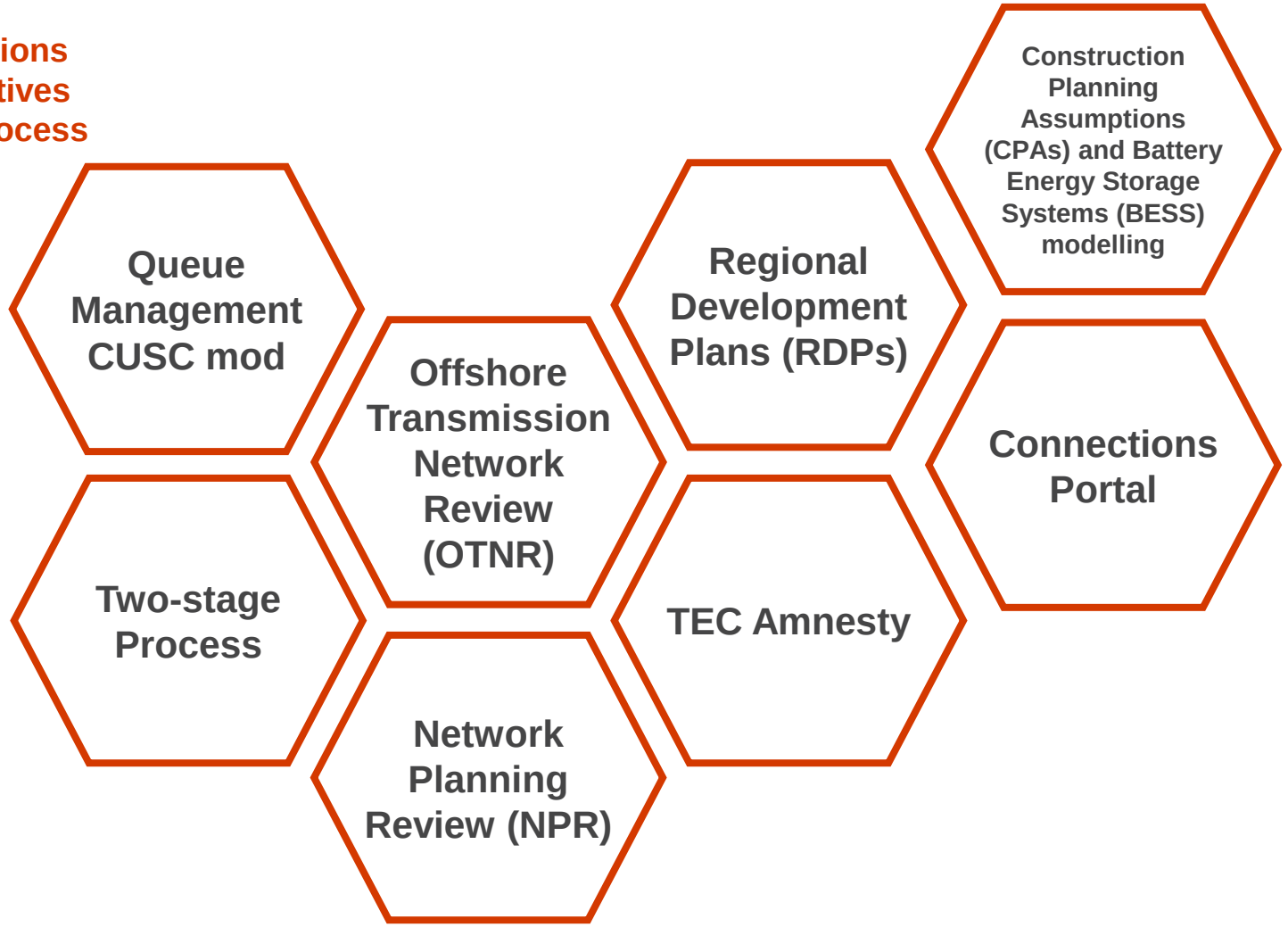
The current process has changed little since privatisation...



Current actions to improve connections

In parallel to the strategic programme of connections reform, we are progressing various tactical initiatives and improvements to the current connections process over the coming months.

Here we set out summary information on some of those initiatives – further information is available on our website.



However, a more fundamental review of the connections process is needed – to make recommendations for reform across the industry and set the ongoing tactical change within a broader coherent framework.

Actions we're taking now to improve connections

TEC Amnesty	This is a process run by the ESO, in partnership with TOs, whereby we invite all parties with Connections Agreements listed on the TEC register (e.g. generation developers) to confirm whether they would be willing to terminate their agreement at minimal or no cost, or reduce their TEC. The window for expressions of interest has recently been extended to April 2023.
Queue Management CUSC mod	CUSC modification (CMP376) is seeking to introduce milestones into connections agreements that reflect progress of projects towards construction and commissioning. Where these milestones are not met, subject to certain exemptions, then connection contracts would be terminated. CMP376 is currently progressing through industry governance and is expected to be submitted to Ofgem for decision in Q2 2023.
Construction Planning Assumptions (CPAs) and Battery Energy Storage Systems (BESS) modelling	We are seeking to review the methodology for determining Transmission Reinforcement Works (TRW) required as a result of connections, including for BESS connections. Applying revised assumptions could materially reduce the levels of TRW required, ultimately leading to earlier connection dates.
Connections Portal	We are developing a Connections Portal to redesign and transform the Connections Journey and account management for all customers. The Portal will provide a single point of contact for all ESO connections customers looking to either connect to, or, make use of the transmission system. This is expected to be trialled in early 2023 before full roll-out in Spring 2023.
Two Stage Process	To support the CPA and BESS modelling changes in regards to how we assess connections, there is a need to optimise the existing contracted background to ensure the successful implementation of these changes so that new applications may receive better dates for connection and have less reinforcement works associated with their connection offer. We propose to do this by adopting a two-stage offer approach for a limited amount of time. The first stage would enable customers to initially secure a place in the TEC queue. In the second stage (upon completion of the contracted background review) customers would obtain a full contract confirming the scope, timescales and costs for the connection.

Wider changes to network planning

Regional Development Plans (RDPs)	RDPs look across the whole electricity system landscape to resolve problems in key regional areas of the network in need of development. Working with the local distribution network operators, RDPs develop and deliver non-build alternatives to network investment. This allows distribution generation to connect more quickly and at lower cost to the consumer. The first RDPs have resulted in the development of a co-ordinated MW Dispatch transmission constraint management service, which spans the transmission and distribution interface. In the process of this work we have identified a number of new whole system functions which we are now looking to implement more broadly across GB. This includes wider development of flexibility services as an alternative to network reinforcement across the transmission – distribution interface.
Offshore Transmission Network Review (OTNR)	The objective of the OTNR is to ‘‘ensure that the transmission connections for offshore wind generation are delivered in the most appropriate way, considering the increased ambition for offshore wind to achieve net zero. This will be done with a view to finding the appropriate balance between environmental, social and economic costs’’. In July we published the first Holistic Network Design to facilitate the connection of 50GW of offshore wind by 2030. We are currently working on the HND follow-up exercise which will provide design recommendations in Q2 2023 for the remaining ScotWind projects not covered by the HND, as well as Celtic Sea leasing round projects.
Network Planning Review (NPR)	The NPR is a major project which will fundamentally change the way we undertake network planning, to ensure it is fit for the future, and able to facilitate the transition to a net zero system through strategic and anticipatory investments. The NPR will bring together the capability and operability challenges faced by the electricity transmission network into a coordinated process, developing an end-to-end network planning process that supports the delivery of net zero for the best value to the end consumer. It will support the delivery of strategic network planning capabilities envisaged by Ofgem’s ETNPR project and will also undertake a more general review of network development and planning processes. We published the first Transitional Centralised Strategic Network Plan in July (this was the combination of the Network Options Assessment refresh and the Holistic Network Design) and expect to publish the second by end 2023. From 2024 we expect to publish the first Centralised Strategic Network Plan, that will reflect a major step change from current network planning.

Alignment with wider market reform

Fundamental market reforms are underway that will influence where and when customers seek to connect and will impact project investment decision making. Connections reform must complement them.

In scope for connections reform

- Review the end-to-end connections journey across the industry, working with stakeholders, to identify issues and assess solution options
- Recommend a delivery roadmap for implementation, including regulatory reforms and changes to process, roles and responsibilities and technology enablement across the industry
- Identify interdependencies and desirable or necessary changes through other market reform and engage with the relevant processes
- Implementation of changes within the ESO.

Out of scope for connections reform

- Implementation of reformed connections activities within other delivery organisations – each entity will be responsible for change in their own organisation
- Consideration or implementation of change in the remit of wider industry reforms. Connections reform will engage with the relevant processes to align and inform.

Alignment with wider market reform

Future System Operator (FSO)	Connections Reform outcomes will be owned by the FSO and must be aligned with the wider FSO strategy.
Distribution System Operator (DSO)	Recommendations from connections reform must seek to align with emerging DSO models, which will be informed further by the DSO Governance Review in early 2023, through coordination with DNOs.
Access Significant Code Review (SCR)	Reforms through the Access SCR may influence the potential use of non-firm connections products. Connections reform must consider and seek to align with the outcomes of Access SCR.
Network charging reforms (TNUoS taskforce, DUoS SCR)	Network charging reforms may impact market signals that influence the siting decisions of connectees. Whilst connections reform may feed insight in to charging reform, direct influence will be focussed on promoting transparency of signals and enabling their use.
Market-wide Half-Hourly Settlement (MHHS)	MHHS is intended to incentivise further participation in flexibility, and may therefore impact the behaviour of assets and how they should be assessed through modelling. Connections reform will consider insight through engagement with MHHS.
Review of Electricity Market Arrangements (REMA)	REMA will impact many areas of the regulatory and commercial framework. For example, access reform will be considered amongst the REMA options for reform of locational signals. Connections reform will need to be aligned with REMA and seek to enable and reinforce its objectives.
Code Reform	Code reform will entail an overarching review of gas and electricity codes and their administration. Connections reform will seek to synchronise with this exercise and feed recommendations in.

Our vision for reform

These trends have driven a need for connections reform…

- **Increasing volumes of applications driven by the energy transition**
- **Emergence of new types of customer, technology, and business models**
- **Decentralisation of energy resources and rise in distribution-level connections and operability needs**
- **A need for whole energy system coordination to deliver Net Zero rapidly and at best value for consumers**
- **Inability of the legacy approach to effectively cope with the changing market needs**

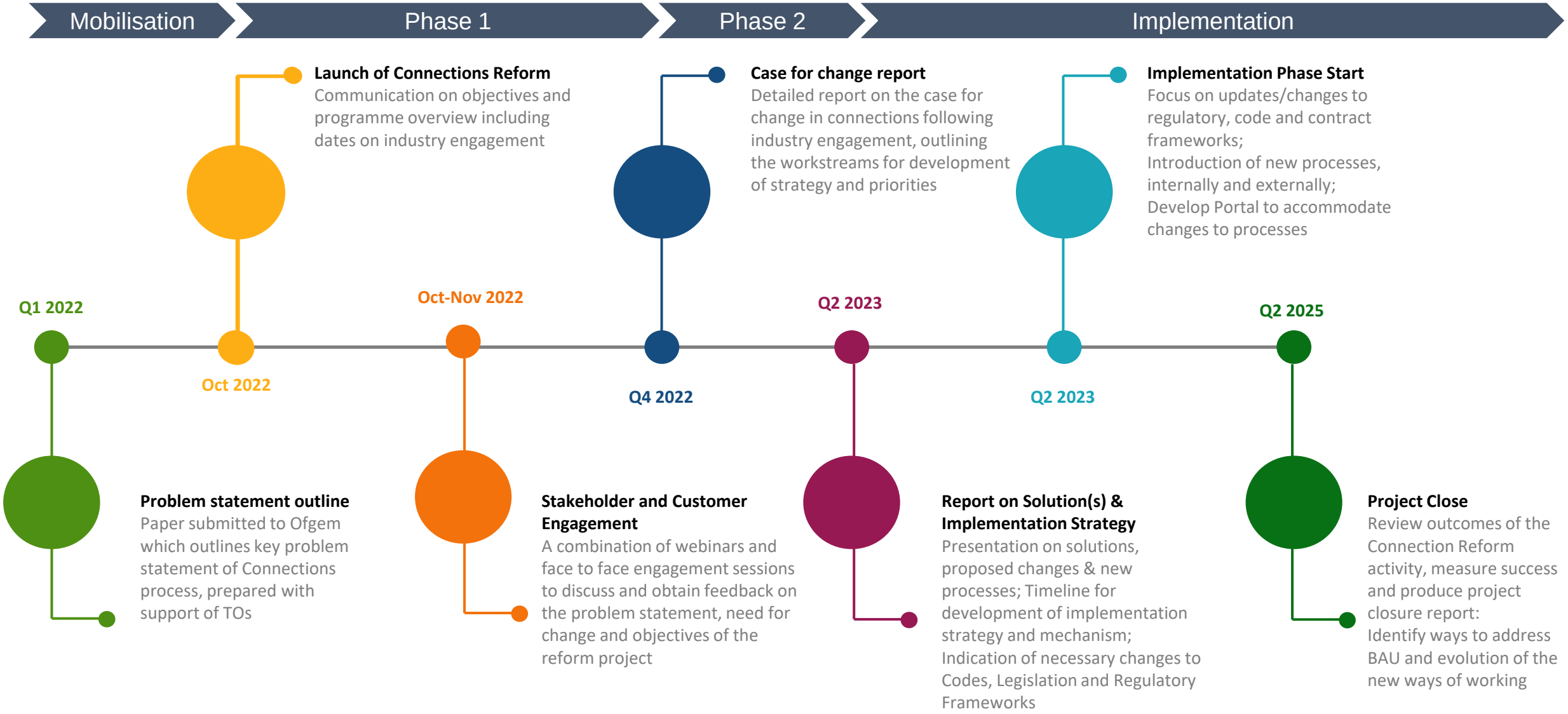
…and shaped our vision.

A reformed connections approach must:

GB Connections Reform

- Deliver value to consumers
- Support the delivery of Net Zero and align with the British Energy Security Strategy
- Deliver improvement to Customer Experience & Engagement
- Deliver a Whole System Approach to Transmission Connections (ie fully factoring in Distribution, and perhaps in time other vectors such as hydrogen)
- Enable a process that efficiently advances the projects that are ready to connect
- Embrace the diversity and complexity of Connections within an evolving Energy System
- Be future proof (be adaptable following periodic review)

Timeline for Connections Reform



Phase 1

ESO

Phase 1: Our Approach

During Phase 1 of Connections Reform, we spoke with connectees, and internal and external stakeholders, using the outputs from these sessions, as well as data and insights into the existing connection journey, to shape the case for change.

Phase 1 Activities

1

Data Discovery and Insight

What?

In the data discovery phase, we reviewed existing data and insight into stakeholder feedback from
- Connection Reform Team knowledge;
- Connections Leads knowledge;
- Customer Surveys; and
- Feedback from previous Customer / Stakeholder sessions

Why?

- To better understand the journey, and to get an initial view of customer feedback, and use this as a foundation to shape the internal and external customer sessions and workshops

2

ESO Stakeholder Sessions

What?

18 sessions were held with ESO Stakeholders including **Connections Leads** (Demand, Generation, Offshore), as well as across **Compliance**, **Policy & Change**, **Policy & Strategy**, **Customer and Stakeholder Engagement, OTNR, Markets** and **Network Planning** reviewing the Connections Journey

Why?

- To help us in shaping the content of workshops with external customers, and gather internal feedback on the journey
- To ensure that we pull on SME expertise and knowledge within the business, and embed this into the final outputs

3

External Workshops: Connectees

What?

9 Connectee Workshops were held with **64 attendees** across the six Connectee Segments, where we gathered **294 comments** on the existing Connections Journey from participants

Why?

- To get candid and detailed insights from connectees – on their experience of connecting, their interactions with ESO and what they think we should be prioritising for Connections Reform
- To help us to build a set of key themes to form the basis of the Case for Change for Connections Reform

4

External Workshops: DNOs and TOs

What?

2 kick-off sessions to introduce Connections Reform, then **3 workshops** with **19 attendees** across TOs and DNOs (following external workshops with connectees), where we gathered **84 comments** on the existing Connections Journey from participants

Why?

- To get the DNO and TO perspectives – as both players within, and customers to, the Connections Journey
- To help us iterate the key themes to form the basis of the Case for Change for Connections Reform

Outputs

- Detailed feedback from internal and external workshops
- As-Is Connections Customer Journey
- Connectee Customer Segmentation
- A set of Case for Change themes tied to feedback from external and internal workshops
- Case for Change Report for Connections Reform

Connectee Segments we are proposing

We used existing data and insights into connectees and the Connections Journey to identify an initial set of Connectee Segments and lenses, which we then tested with ESO colleagues and during external workshops.

Connectee Segmentation for Connections Reform

No	Lens	Segment	Description	Examples
1	Connectee Type	**Direct connected demand**	Very large (i.e., there will be less than 100 in UK) consumers of energy connected to the transmission network. Also includes licenced distribution networks	Steelworks, chemical works, rail infrastructure, refineries etc. Also includes data centres and, in future, hydrogen electrolysers
2	Connectee Type	**Distribution (Embedded) connected demand**	All other consumers of energy connected to the distribution network (i.e., those not under first segment)	Offices, houses, estate agents, chip shops, pubs, factories, warehouses, etc.
3	Connectee Type	**Distribution (Embedded) connected generation**	(Typically, smaller) producers of energy to the distribution network	Domestic, rooftop, solar etc. (limit dependent on how much capacity for generation the distribution has)
4	Connectee Type	**Onshore generators**	Producers of energy to the onshore transmission network	Larger generators – e.g., large windfarms, CCGT, nuclear
5	Connectee Type	**Offshore generation and interconnectors**	Producers of energy to: a. The offshore transmission network; or b. The GB transmission network from another international transmission network	Very large generators – e.g., Offshore windfarms
6	Connectee Type	**Pathfinders & mixed use**	Sites that don't fit neatly in the above pots	Commercially developed transmission systems, specialist pieces of transmission equipment / infrastructure (not TO owned)
7	Connectee Expertise	**Regular connectee**	A connectee that has been through the Connections Journey before	Could be any connectee
8	Connectee Expertise	**First time connectee**	A connectee that has not been through the Connections Journey	Could be any connectee

Customer lenses that we have explored, but which are not additive

Tech Type	Licence Status
Conventional/Thermal	Licenced
Nuclear	Not licenced
Renewable	
Storage	

Conclusion: 'Tech type' and 'Licence Status' are not additional lenses as they are covered by the 'Connectee Type' segments 1 to 8. We do not therefore recommend that they are used as customer segments on their own.

Size	Geography
Large	Scotland
Medium or Small	England & Wales

Conclusion: Segmenting according to the size of the connectee / connection is unnecessary as this lens is already covered by segments 3, 4, 5 and 6.

Conclusion: 'Geography' is not an additional lens. It may affect the experience of that journey – but it won't change the flow or steps of the journey itself.

Summary Case for Change

Before Application | **During Application and Signing** | **Post Contract Signing**

"1- Options are collaboratively developed throughout the connections lifecycle"

Limited opportunity for customers to understand optionality and shape their applications around grid capability

- Difficult to get pre-application meetings / variable quality of pre-application meetings
- Limited visibility of queue or planned reinforcements
- Mandated timeframes impact quality of engagement
- Asymmetric opportunity depending on level of understanding

"2- Rapid connections progressed on their merits"

Process can inhibit efficient capacity allocation and management

- ESO/TO modelling using worst-case assumptions
- Limited opportunity to consider interdependencies between applications (e.g., for diversity or non-firm offers)

Limited ability to prioritise and progress applications/projects that are more ready to connect

- Speculative applications, modifications, and re-offers lead to additional time / effort and hold up the queue
- Limited ability to prioritise – e.g., based on project readiness, asset type, size or role on system, etc.
- Milestone extensions allow projects that may not be built to remain in the queue
- Limited ability to prioritise enabling/reinforcement works for projects which are progressing

"3- A simple, transparent & coordinated approach to connections"

The connections process is being inconsistently applied and roles and responsibilities are not always clear

- Variability in approach between ESO, TOs, and DNOs
- Clock start process being inconsistently applied
- Inconsistency between connections and offshore leasing
- Lack of visibility of progress and next steps
- Clarity in ownership of issues to progress programme
- Unclear roles & responsibilities between ESO and DNOs during BEGA applications
- Network Planning reforms are driving uncertainties in contracts leading to rework, delays and additional costs

The connections process is unnecessarily complex in some areas

- No ability to access data to decide on options
- 'One-size-fits all' process – can't match effort to need
- Long waits for engagement on some queries cause delay
- Level of completeness of applications leads to rework
- Limited access to data and tools causing rework and delay
- Contract elements are overly complicated/redundant
- "Appendix G" process is complex and lacks transparency

Key:

- Data & technology
- Process
- People and skills
- Regulation & codes

Consistent themes across the process

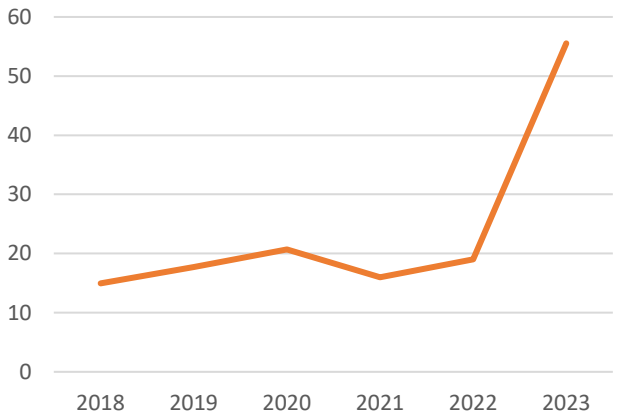
Easy access to self-service tools, consistent data and quality insight

Consistent, skilled & well-resourced engagement

Options are collaboratively developed throughout the connections lifecycle

Connections reform must address:

Limited opportunity for customers to understand optionality and shape their applications around grid capability



Number of applications per ESO full-time equivalent (FTE) in the connections team

"Mandated timeframes impact quality of engagement"

"Asymmetric opportunity depending on level of understanding"

"It's difficult to get pre-application meetings and they are of variable quality"

"I can't see where I am in the queue or planned reinforcements"

20 customers (2%) are responsible for 24% of new applications (~21 applications each since 2018)

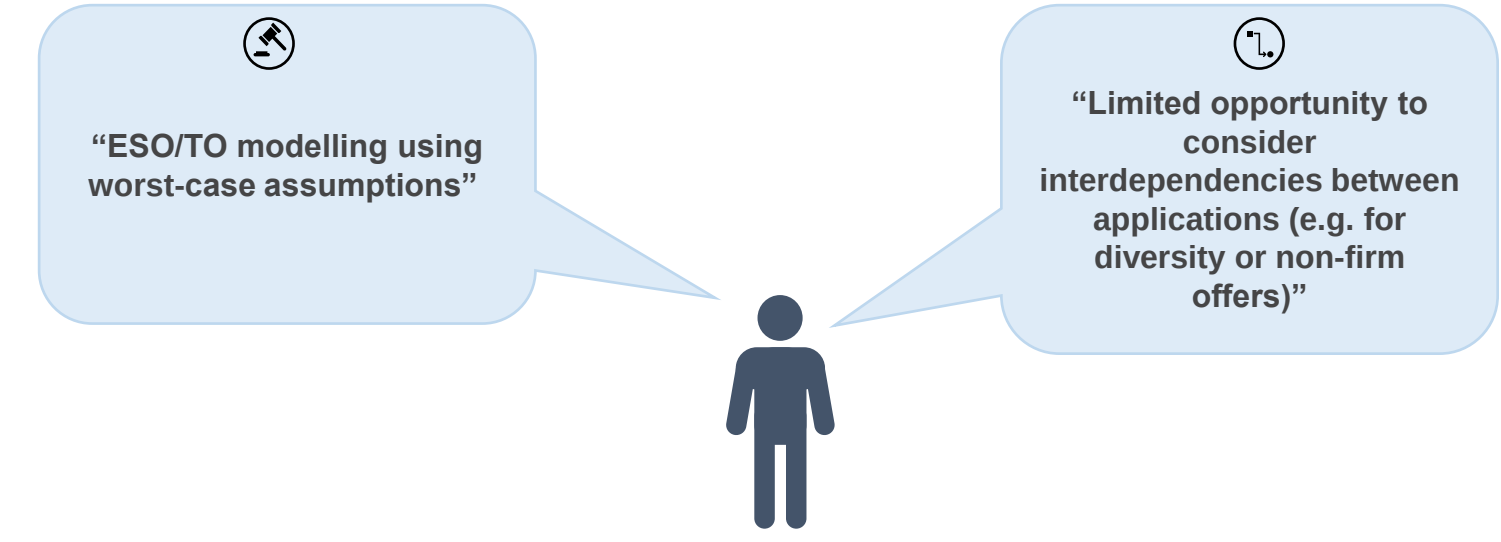
72% of customers have only submitted 1 new application

Approximately 20% of applications are withdrawn before an offer is provided

Rapid connections progressed on their merits (1)

Connections reform must address:

Process can inhibit efficient capacity allocation and management



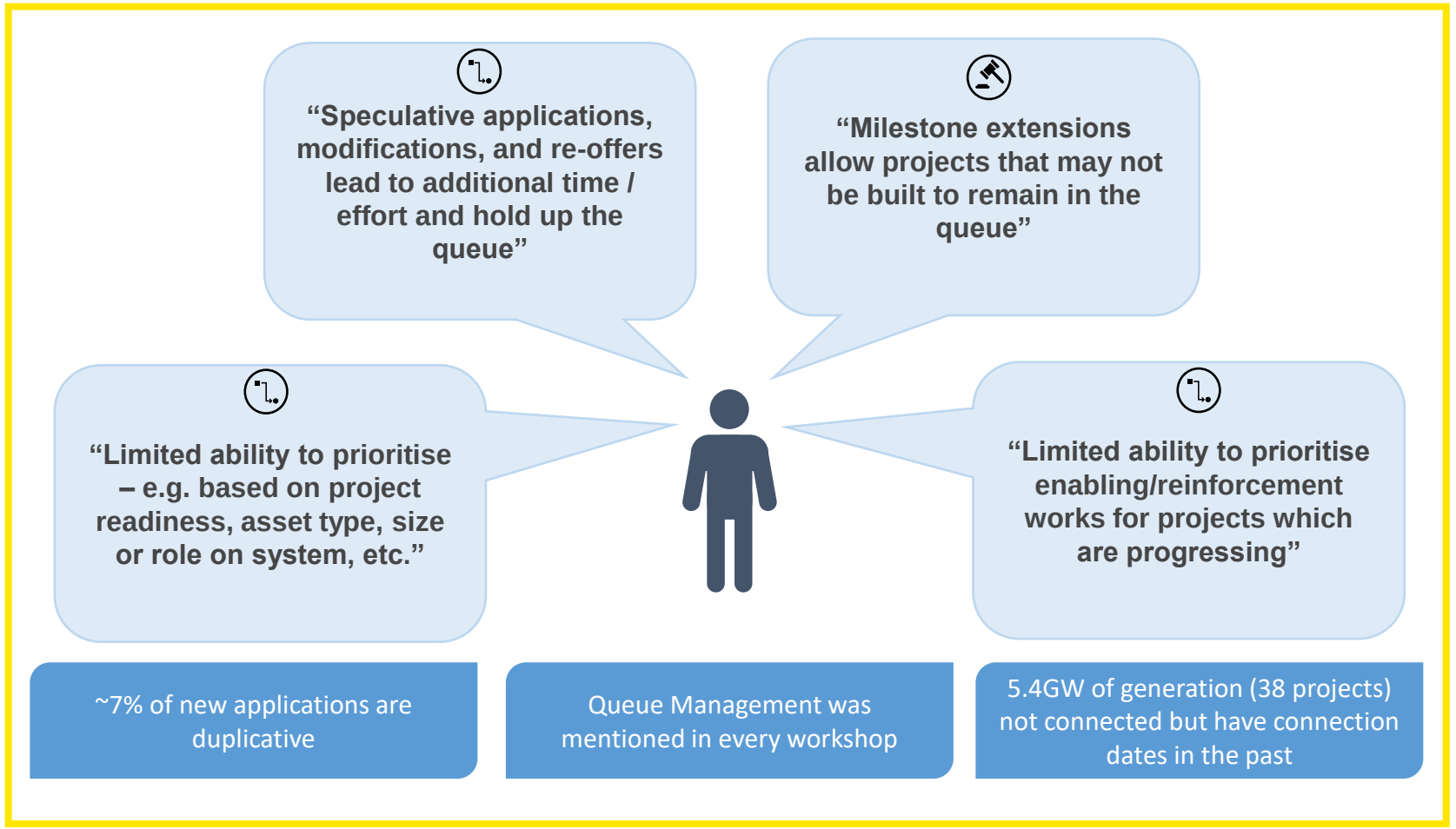
2% of connected generation is co-located, expected to be ~15% by 2030

Contracted capacity is more than 100GW greater than the most ambitious FES estimates around what might be needed

Rapid connections progressed on their merits (2)

Connections reform must address:

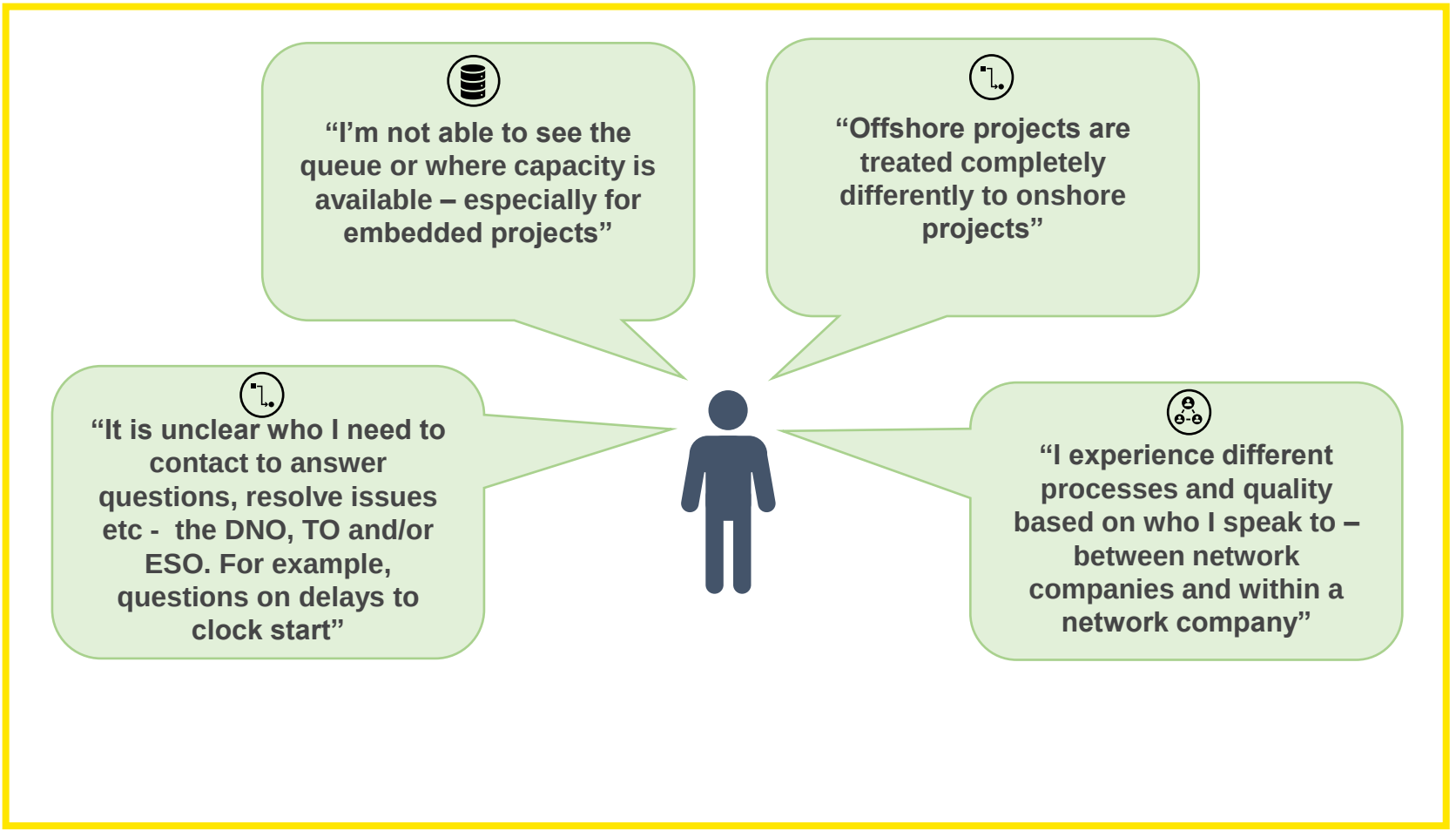
Limited ability to prioritise and progress applications / projects that are more ready to connect



A simple, transparent & coordinated approach to connections (1)

Connections reform must address:

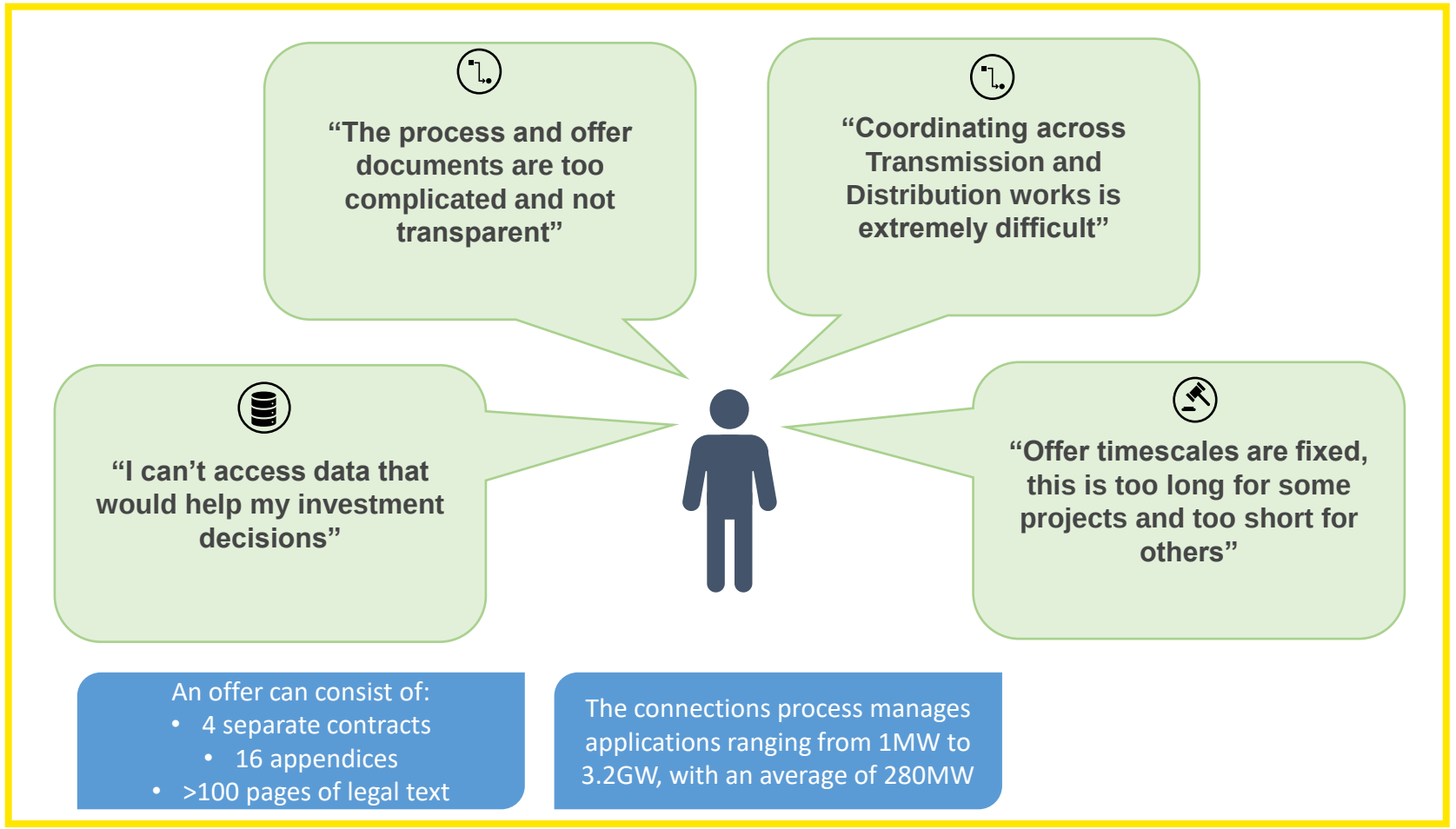
The connections process is being inconsistently applied and roles and responsibilities are not always clear



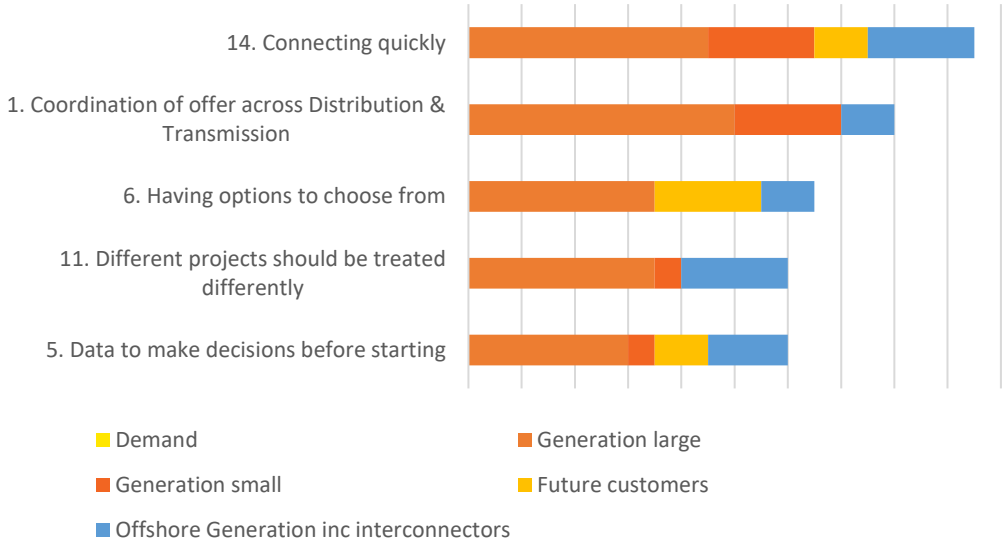
A simple, transparent & coordinated approach to connections (2)

Connections reform must address:

The connections process is unnecessarily complex in some areas



Connectee Priorities



In our sessions with connectees we carried out a prioritisation exercise with them to gauge what they care about most:

- **Connecting Quickly** was the **top priority** across all sessions held
- **Cost**, **Being able to change things** and the **Speed of providing the offer** were **lower priority**

Groups were consistent in giving this feedback across all segments

How we organise and engage

ESO

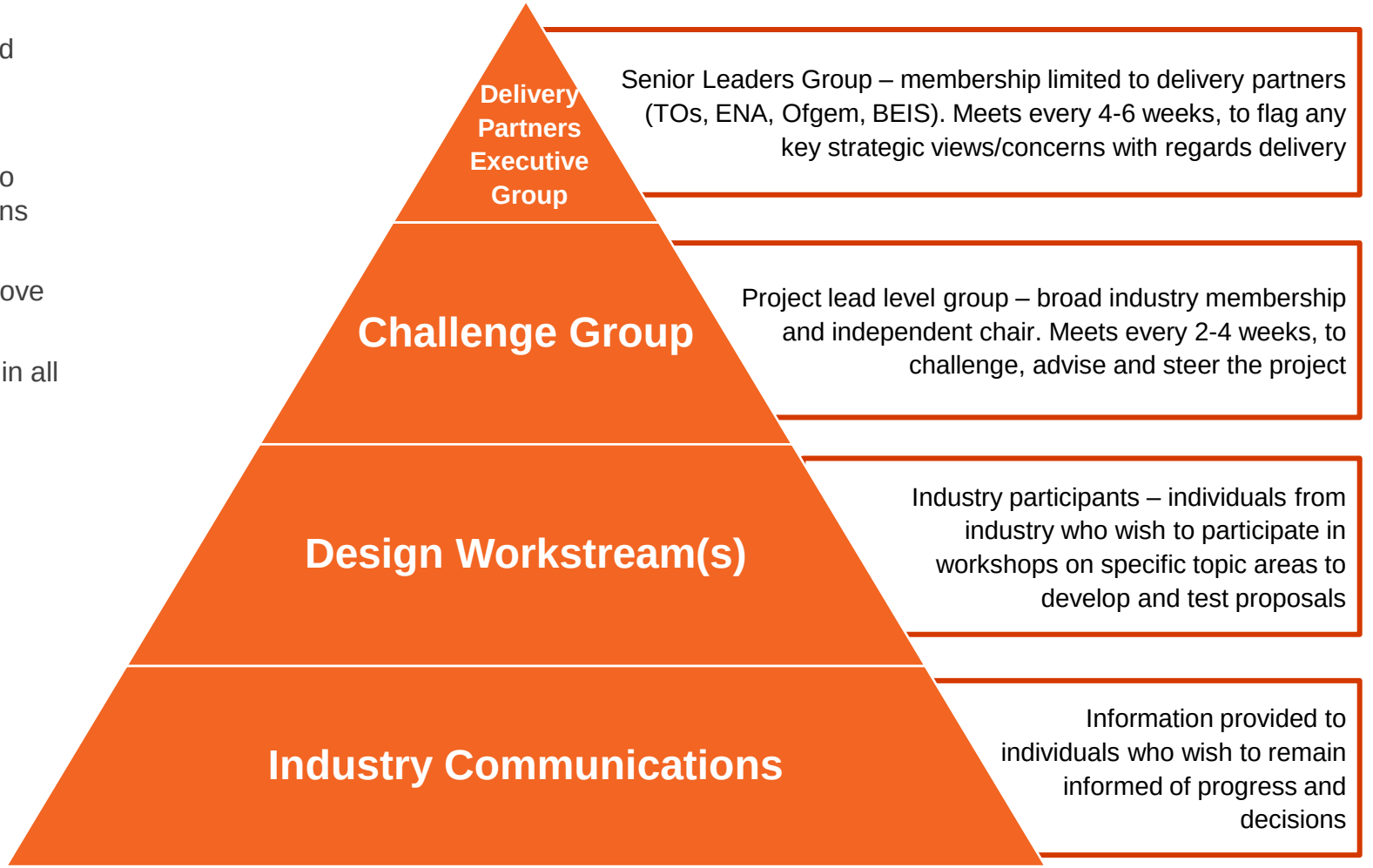
Stakeholder Approach beyond Phase 1

Objectives

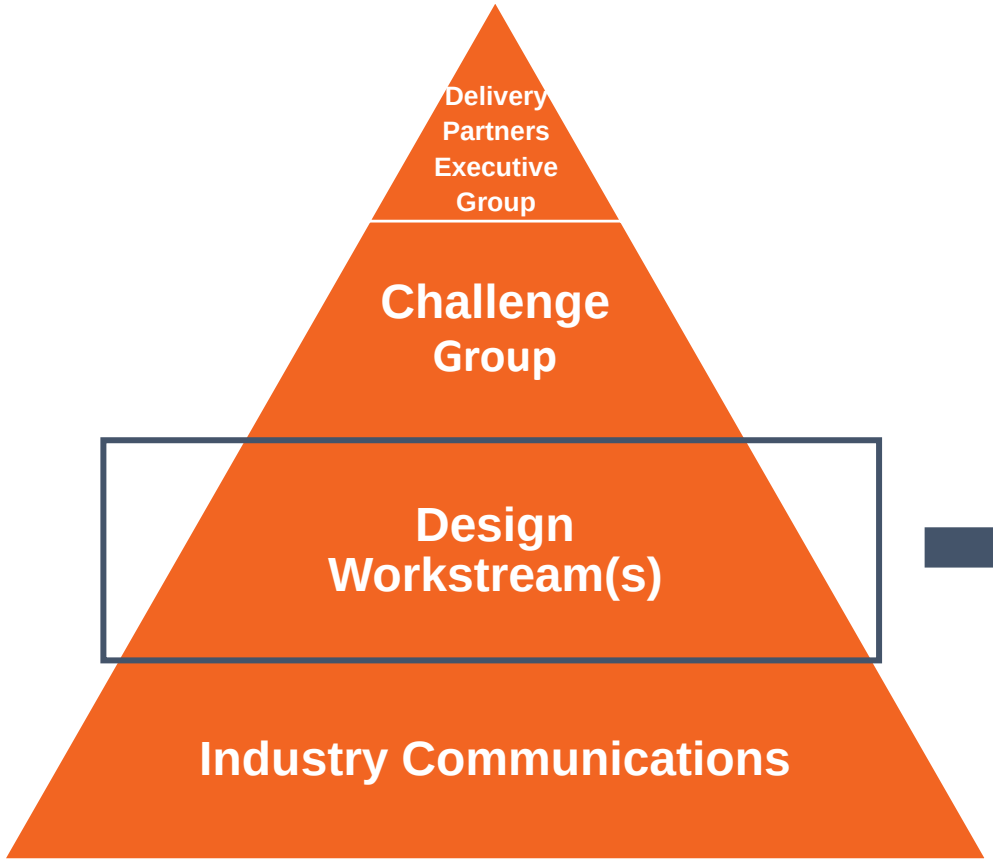
- Ensure all stakeholder groups are actively engaged through regular updates
- Involve all parties at the right levels
- Integrate communications - look for opportunities to deliver communications aligned to other connections changes
- Track and monitor engagement, continuously improve its delivery
- Provide opportunities for feedback and interaction in all sessions

Future Engagement

- We aim to begin establishing these groups and communication channels in February 2023 with progress to be made rapidly afterwards
- We expect to share a high-level delivery roadmap with industry during April 2023



Project Governance in Phase 2



Design Workstreams:

In Phase 2, we expect to establish several design workstreams whose focus will be the design and development of solutions for Connections Reform, building on the Case for Change themes identified in Phase 1.

Workstream 1: Customer Journey & Process Design
(L2 process, SLAs/KPIs and solution requirements)

Market Enablement (Pre-Application)

Application to Contract Journey (Within-Application)

Contracted Capacity Management (Post-Acceptance)

Workstream 2: Data & Technology

Workstream 3: Organisation & Skills

Workstream 4: Regulation & Codes

Phase 1 set our Phase 2 Design Objectives

- The 5 key themes which emerged from our stakeholder engagement on the Case for Change in Phase 1 form the core of our Phase 2 Design Objectives
- These are complemented by a couple of Design Objectives to ensure we meet the broader requirements of (a) the UK's Net Zero ambition and (b) the ESO's License objectives
- We have also derived key Design Criteria which map to these Design Objectives and a set of overarching Design Principles which will guide how we determine options in Phase 2

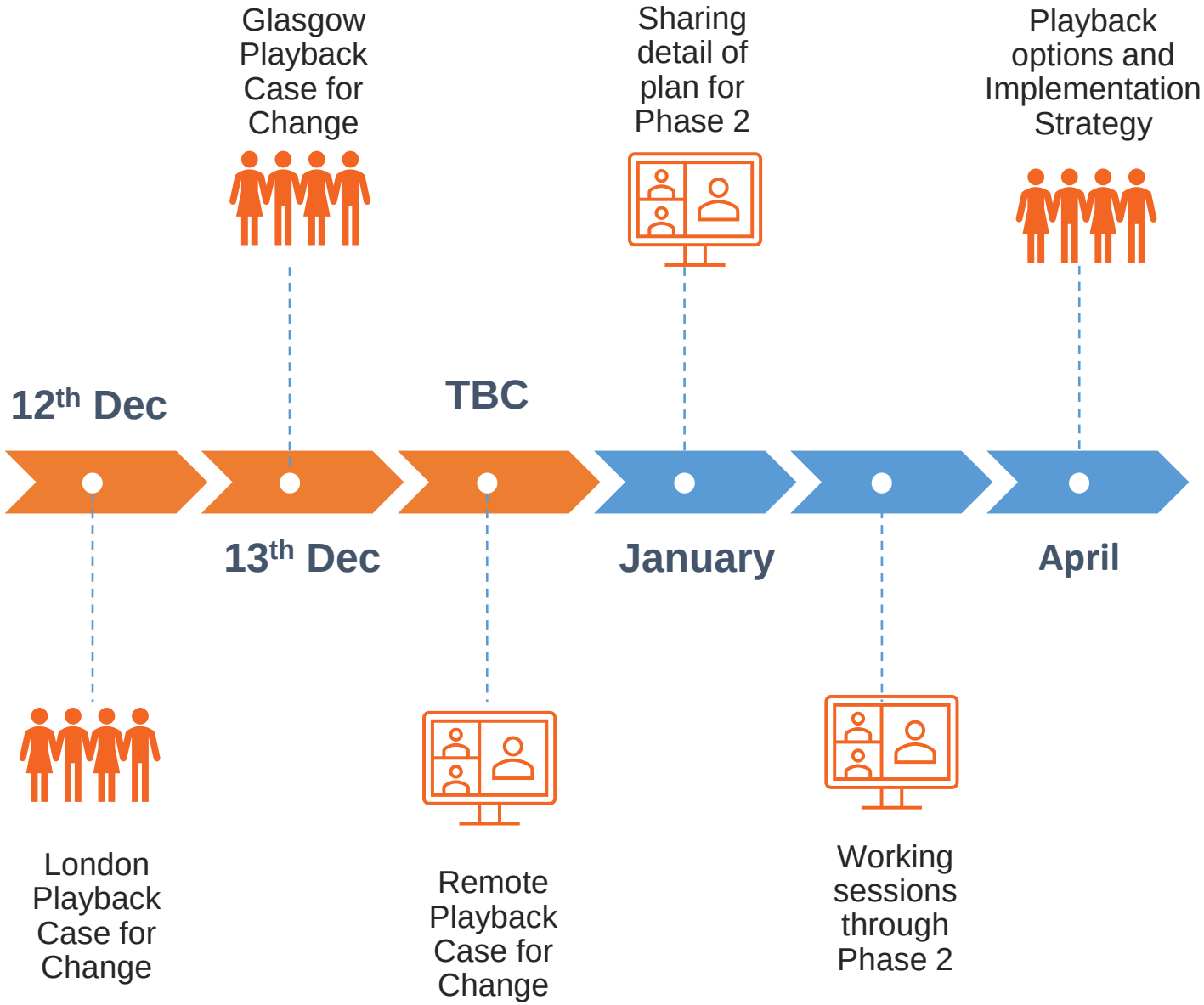
Design Objectives	Design Criteria
Options collaboratively developed throughout the connections lifecycle	• Better informs when, and where, to connect • Reduces risk of wasted effort • Parties able to engage to identify best option(s)
Rapid connections progressed on their merits	• Better recognises nature and status of connectees • Enables “Shovel Ready” projects to progress more quickly • Accelerates timing of connections
A simple, transparent and coordinated approach to connections	• Enables economic, efficient, coordinated network design • Improve Transmission & Distribution coordination • Improve the connections process experience of connectees • Efficiently manages policy complexity/interdependencies
Easy access to self-service tools, consistent data and quality insight	• Gives better access to and visibility of data and info for parties • Enables parties to plan and act more effectively • Reduces reliance and/or workload on others
Consistent, skilled and well-resourced engagement	• Provides coherent customer experience across networks • Skills and capabilities matched to responsibilities and customer needs
Future proof process which supports efficient delivery of Net Zero	• Adaptability to changes in the market landscape • Supports greater investment certainty across industry • Flexibility to evolve process to deliver future needs
Better system operability and cost outcomes for the end consumer	• Maintains or improves operability of network • Delivers more efficient use of network capacity • Reduces overall costs to end consumers • Can be implemented in a timely and effective manner

Design Principles

1. **Start (and finish) with customer needs -** The more we focus on customer needs the better we can meet them
2. **Digital convenience, human empathy -** Provide digital options for convenience and the human touch to build empathy and relationships
3. **Embrace new and evolving business models and technologies -** Enable different ways of working with the industry through mechanisms and innovative technology
4. **Clarity of roles and responsibilities for connections -** Drive and shape the right ownership across the industry

Next steps and get involved

Next Steps


Glasgow Playback Case for Change
Sharing detail of plan for Phase 2
Playback options and Implementation Strategy
12th Dec
TBC
13th Dec
January
April
London Playback Case for Change
Remote Playback Case for Change
Working sessions through Phase 2

Continuing the conversation

Email us with your views on this document at: box.connectionsreform@nationalgrideso.com and one of our team members will get in touch.

Get involved by ensuring you sign up to our newsletter

Get the latest from ESO - Customer Connections (nationalgrid.co.uk)

For further information on ESO publications please visit: nationalgrideso.com

Write to us at:

Electricity System Operator

Faraday House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Appendix

ESO

Appendix A: Assumptions for Calculations

All information for this case for change is from:

a) The Transmission Entry Capacity (TEC) register and Interconnector register published by ESO as of 5th December 2022 (https://data.nationalgrideso.com/data-groups/connection-registers) with the following changes and clarifications;

   i. Removing projects that were unsuccessful in offshore leasing rounds (e.g. ScotWind).

   ii. Not removing oversubscription from future leasing rounds (e.g. Celtic Sea) or the results of the TEC amnesty (as these processes are ongoing).

   iii. Ensuring there is no duplication of capacity from multi-staged projects.

   iv. Not adding embedded generation unless already on the TEC register – i.e. with a Bilateral Embedded Generation Agreement (BEGA). Therefore these figures do not include the Embedded Register (also on the above link) or any 'Appendix G' submissions by Distribution Network Operators (DNOs)

b) The Future Energy Scenarios - https://www.nationalgrideso.com/future-energy/future-energy-scenarios.

c) Internal ESO data captured by the connections team as part of the connections process between 28th April 2017 and 14th November 2022.

d) Industry workshops completed as part of this case for change between 1st November and 17th November 2022.

Appendix B: Summary Outputs from Each Stakeholder Group

This section includes the additional detail around stakeholder pain points and needs from each of the workshops we held (both externally – Connectees, DNOs, TOs – and internally – ESO colleagues) as follows:

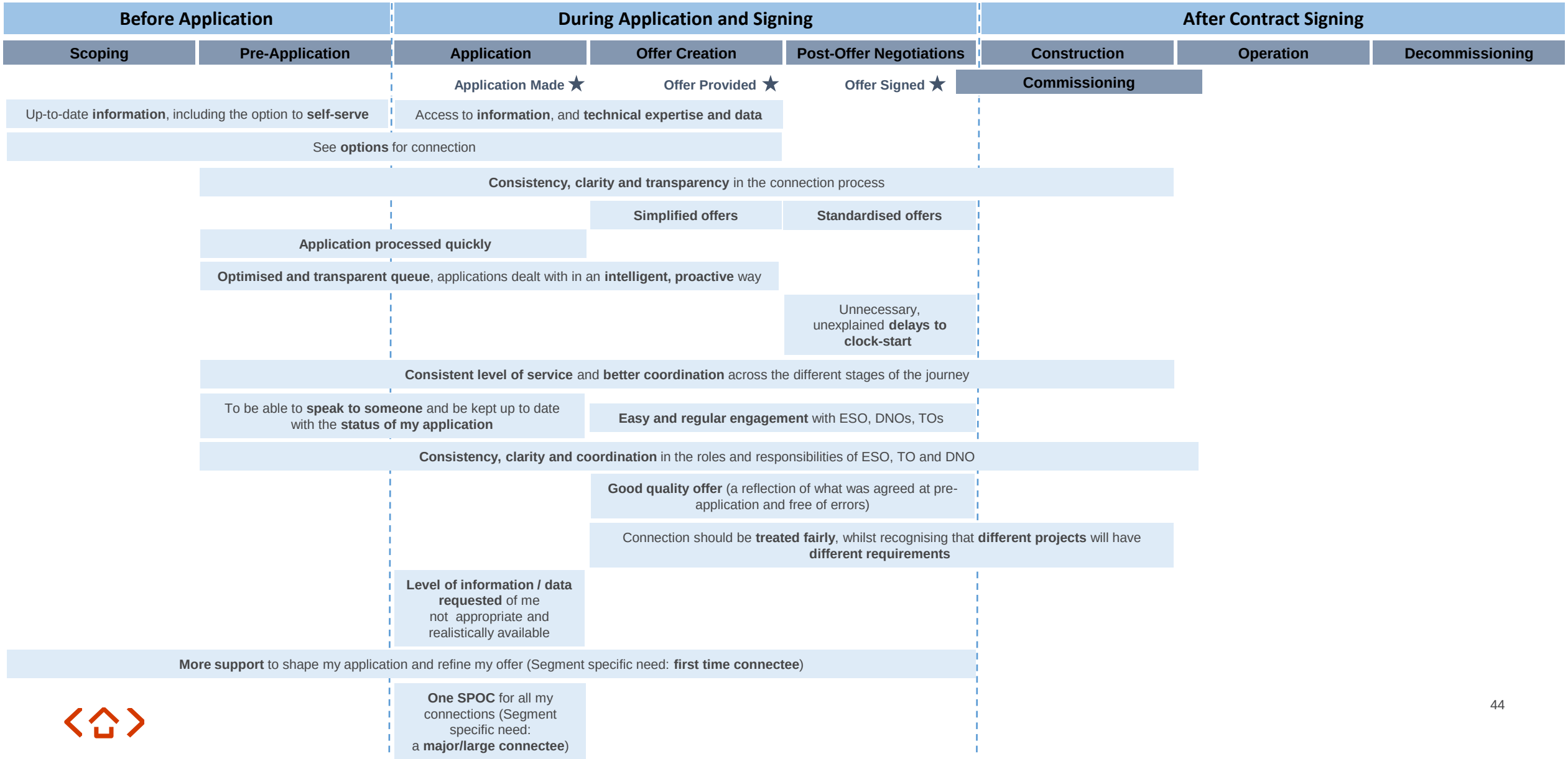
1. Connectee Pain Points and Needs;

2. DNO Pain Points and Needs;

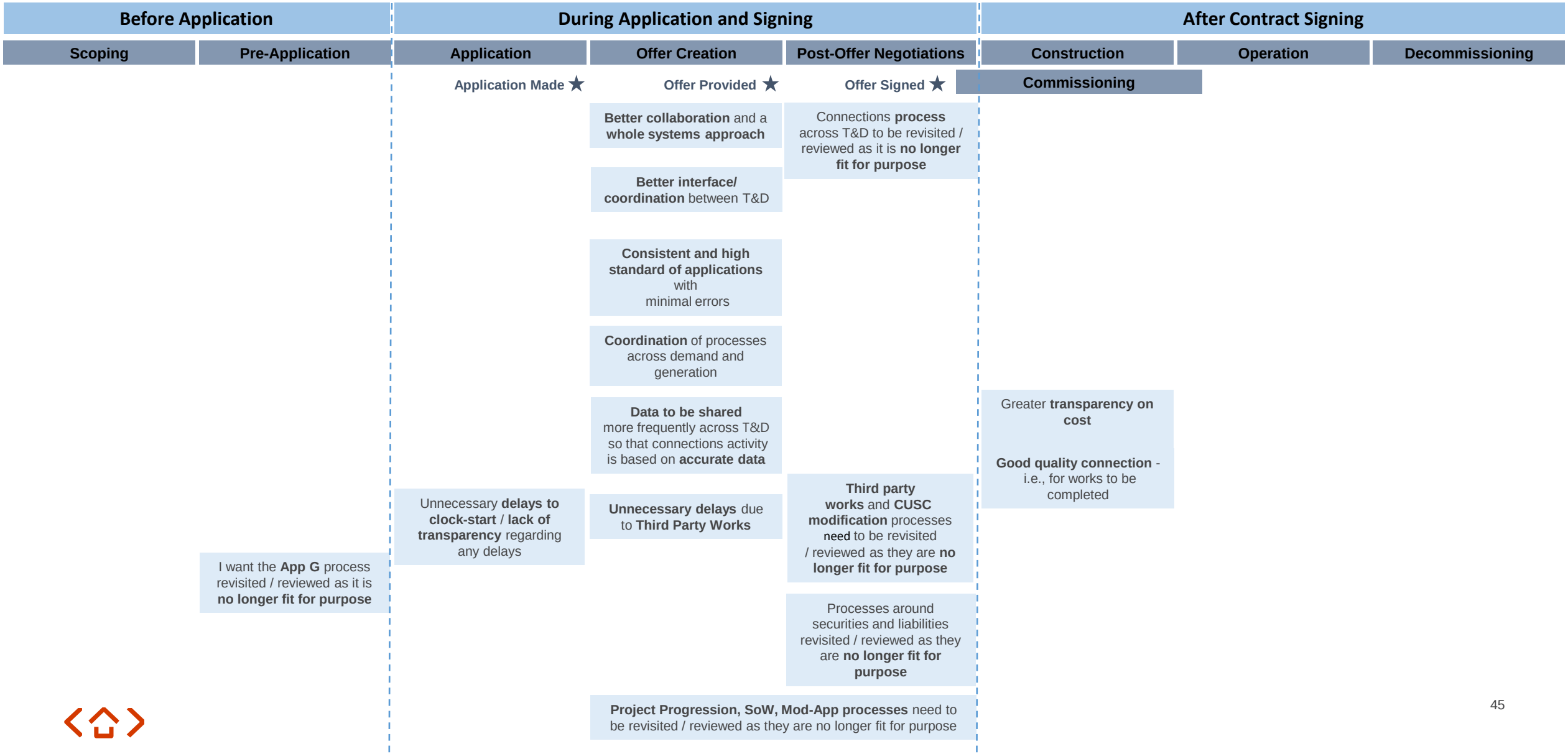
3. TO Pain Points and Needs; and

4. ESO Pain Points and Needs.

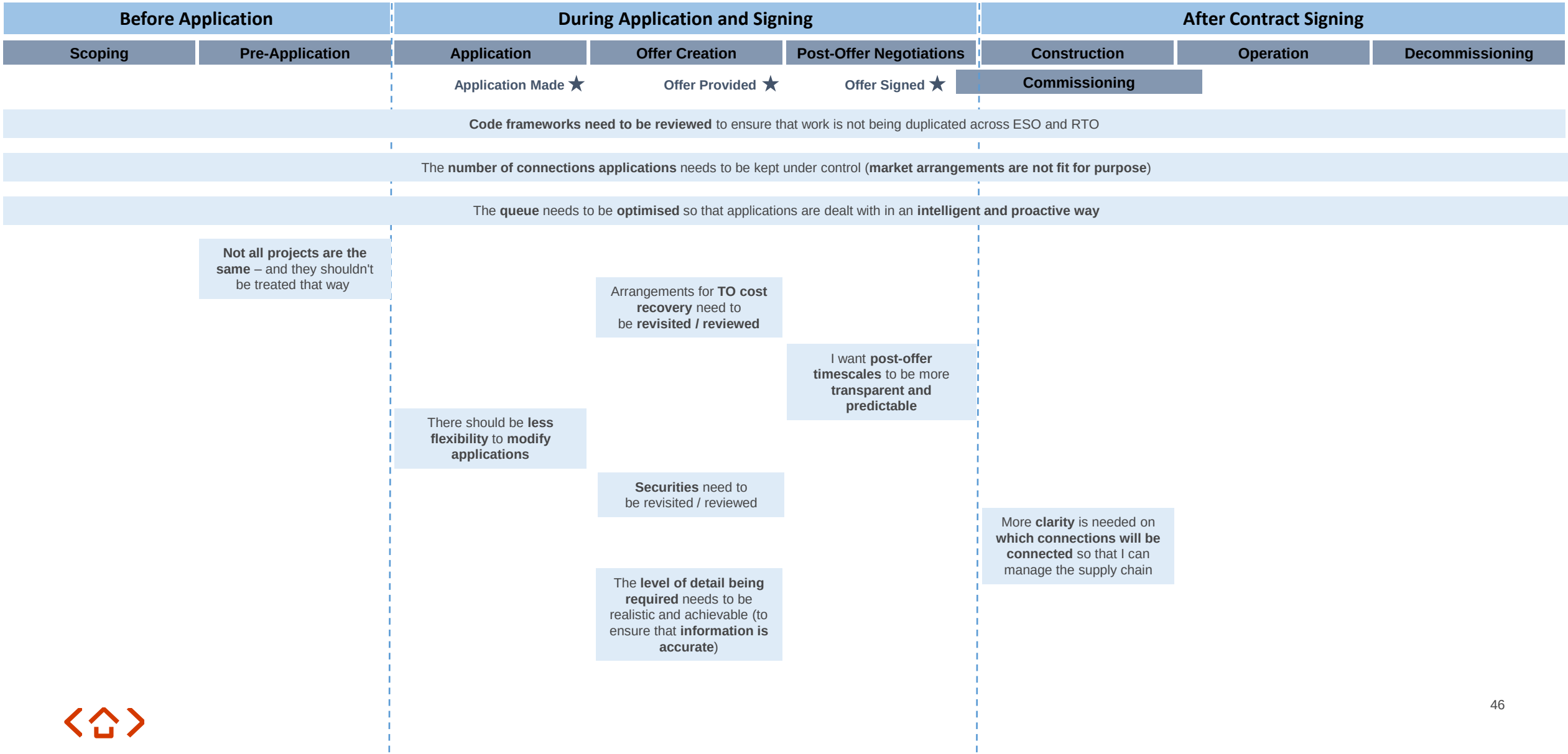
Connectee Pain Points and Needs



DNO Pain Points and Needs



TO Pain Points and Needs



ESO Pain Points and Needs

Before Application

Scoping

Needs to **incorporate generation, (direct demand) and DNOs** as all have different requirements.

ESO hold little of the data customers want to see – it's mostly in TOs

More opportunities to **self-serve** at scoping stage are needed

More **information** could be made available at scoping stage

Pre-Application

Better guidance for connectees needed including support with **optionality**

Roles and responsibilities between TOs and ESO are **unclear** to connectees

Connections Managers need better **access to information** to support connectees

Connectees struggle to get the **support** they need from Connections Managers e.g., pre-app calls (resource/capacity) - affects the **quality of their application**

Quality of pre-apps highly **variable**

TO availability for pre-apps can be limited

During Application and Signing

Application

Application Made ★

Some connectees submit applications **without any previous engagement with ESO (especially DNOs)**

Unrealistic connectee **expectations** on application form - caused by **lack of information / lack of co-creation in previous offers?**

Better guidance for connectees needed (e.g., support with form, engagement with and assignment of **Connections Managers)**

There is a disconnect between the **level of detail** the TO expects and what the connectee can provide

Process is **slow and difficult**, and it's hard for connectee to get **engagement**

Lack of coordination within **ESO** leading to different connectee experiences / levels of service

Offer Creation

Offer Provided ★

Lack of transparency on offer status / contents / roles and responsibilities

Quality of communication and offer documents is **inconsistent**

Different TOs have **different processes / engagement approaches,** before and during offer process

Post-Offer Negotiations

Offer Signed ★

Review and acceptance processes vary by connectee

Offer may not reflect what the customer wanted, or come with an adequate communication / explanation of the change

Revised offers (reoffers) are not bound by licence so can come with **significant delays**

Sometimes the connectee has to sign the offer in order to be able to change something about it

Offer signing **deadlines** are **often extended**

Connectee is **not always clear on process / what is expected** of them at the 'offer signed' stage

After Contract Signing

Construction

Construction and Operation:
Minimal involvement from connections team (other than answering queries and supporting customer / TO co-ordination) so we received no commentary on this stage

Commissioning:

Forms, templates and process complex and codified - **difficult/slow to change**

Applicability and suitability of **technical requirements** is an issue

Reconciliation of costs can take a long time, meaning CCMs can't close budget

Difficulty/delays obtaining the **FON** (Final Operational Notification)

Operation

Decommissioning

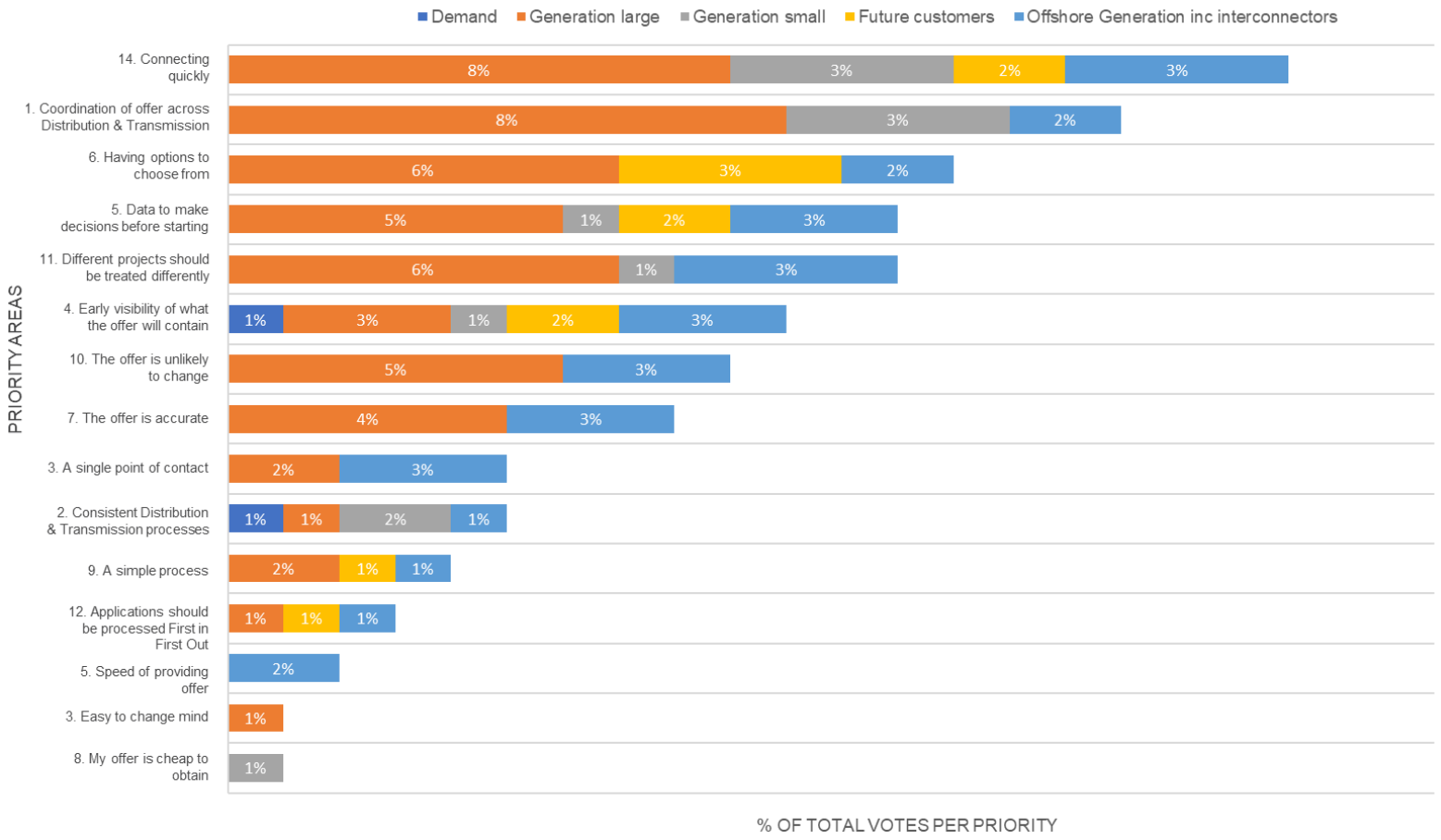
Decommissioning:
Minimal involvement from connections team so we received no commentary on this stage. In addition, no set process has been defined for decommissioning

Commissioning

Appendix C: Participating Organisations

Appendix D: Prioritisation Voting

During Phase 1 of Connections Reform, we spoke with connectees, we asked them to vote on their priorities for connections reform. The detailed results of the polls can be found below.



NB.
This shows voting percentage across all votes

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