



Forum

# Charging Futures Forum

18 December 2019



# Welcome

Colm Murphy

Head of Electricity Market Change  
Delivery

ESO

nationalgridESO



**Charging  
Futures**

Reforming electricity charging together





# Agenda

- > 10:00 – 10:10 **Welcome** – Colm Murphy, *ESO*
- > 10:10 – 10:30 **Overview of Future Charging and Access** – Frances Warburton & Andrew Self, *Ofgem*
- > 10:30 – 10:55 **Second BSUoS Taskforce** – Jon Wisdom, *ESO*
- > 10:55 – 11:20 **Panel** - Jon Wisdom, *ESO*; Frances Warburton & Andrew Self, *Ofgem*
- > **11:20- 11:35 Break**
- > 11:35 – 11:50 **Overview of Access SCR Overview** – Jon Parker, *Ofgem*
- > 11:50 – 12:30 **Distribution Connection Charging Boundary** – David McCrone, *Ofgem*
- > 12:30 – 13:10 **Small Users** - Amy Freund, *Ofgem*
- > **13:10 – 13:55 Lunch**





# Agenda

- > 13:55 – 14:45 **Focussed review of TNUoS Charges** – Jon Parker, *Ofgem*
- > 14:45 – 14:50 **Access SCR Way Forward & next steps** – Jon Parker, *Ofgem*
- > **14:50 – 15:00 Break**
- > 15:00 – 15:20 **Panel** – *Ofgem*
- > 15:20 – 15:30 **Closing Remarks** – Colm Murphy, *ESO*
- > 15:30 – 16:30 **TNUoS generator sensitivity scenario** - Jo Zhou & Alice Grayson, *ESO*



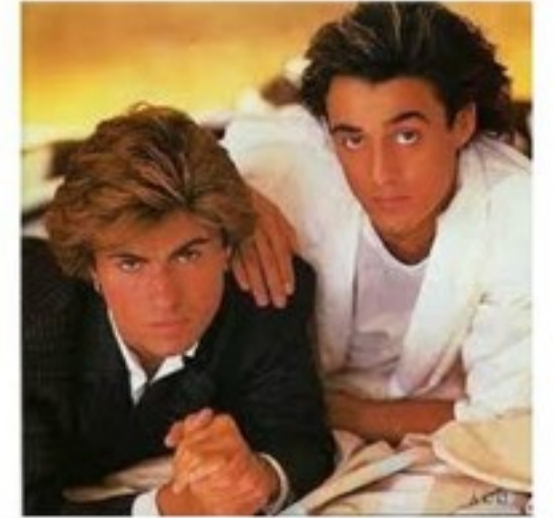
# Mentimeter

- > Please go to [www.menti.com](https://www.menti.com), using code on screen to access the presentation.
- > Submit Q & A questions at any time

# ➤ Menti Warm Up

What is your favourite Christmas song?

- > Mariah Carey 'All I Want for Christmas'
- > Wham! 'Last Christmas'
- > Slade 'Merry Christmas Everyone'
- > Chris Rea 'Driving Home for Christmas'



# Favourite Christmas Song?



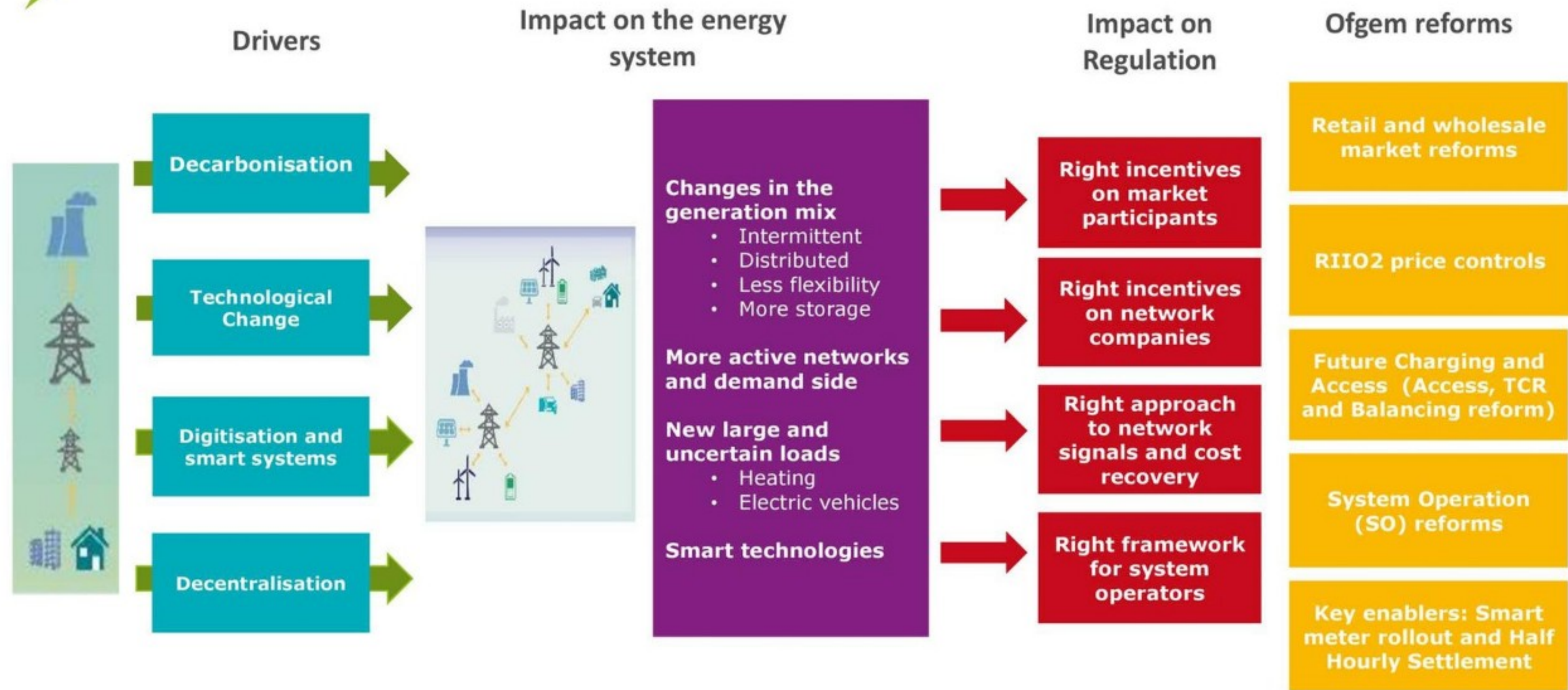


# Overview of Future Charging and Access programme

Frances Warburton and Andrew Self  
Ofgem



# Changes in the system mean changes to regulation







# Reforms for a smart, flexible system

- Retail market reforms need to:

- Ensure the retail market works well and facilitates the access of benefits of flexibility to consumers
- Protect consumers, in particular those in vulnerable situations

**Retail reforms**

- RIIO incentivises overall efficiency through total expenditure ('totex') mechanism, which addresses bias toward capital over operating expenditure
- In RIIO2, we will extend role of competition, ensure outputs include flexible options for meeting network needs and embed whole systems incentives

**RIIO2 price controls**

- Access reform will deliver better access right choice and stronger network charging signals to incentivise efficient use of the system and minimise future costs (called "network price signal flexibility")
- Targeted Charging Review (TCR) will reform residual charges and address Embedded Benefits
- Balancing Services Task Force will consider how these charges should be recovered

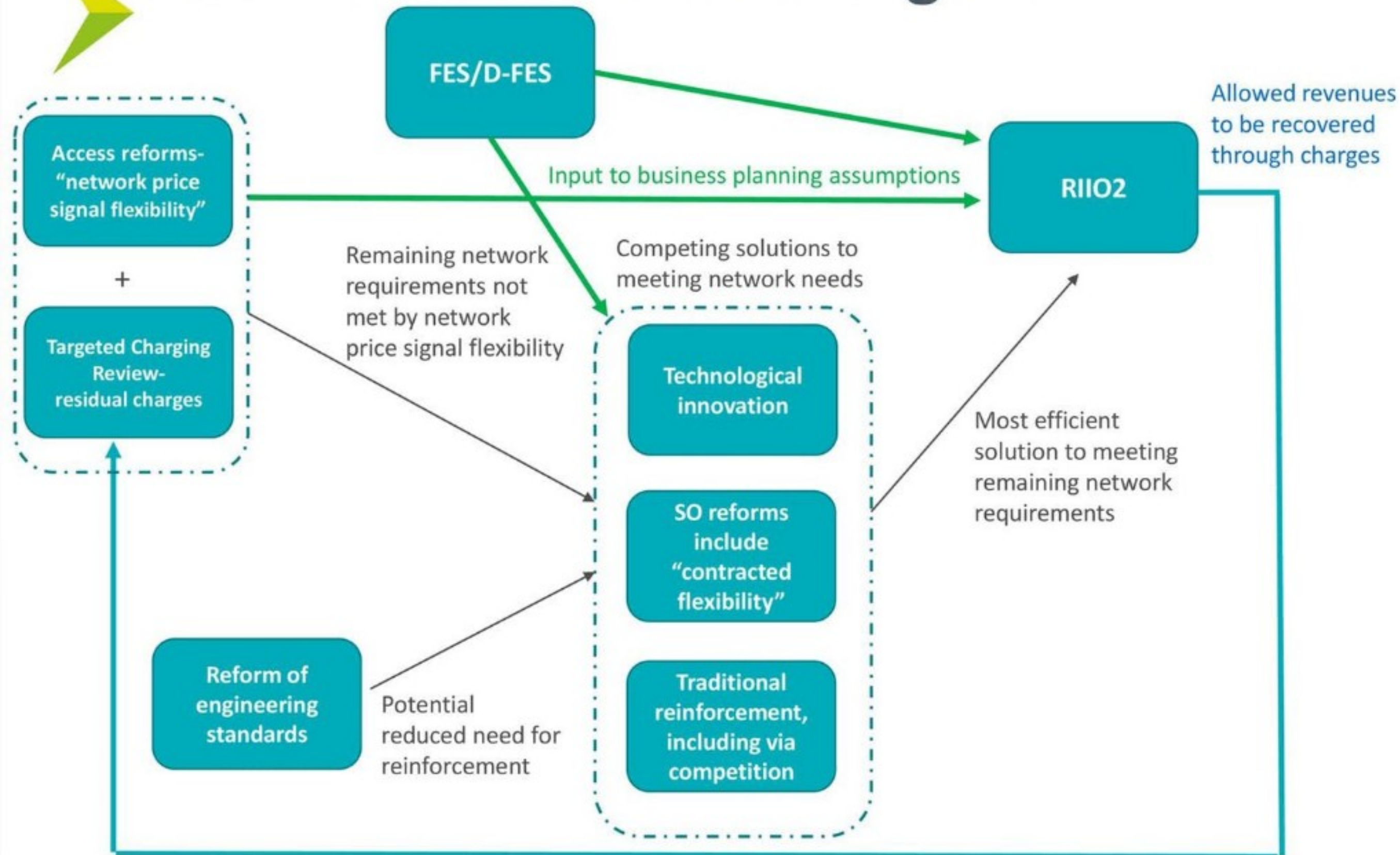
**Future Charging & Access**

- We want the Electricity System Operator (ESO) and Distribution Network Operators (DNOs) to:
  - Clarify boundaries & mitigate conflicts
  - Enable competitive markets, including through making data accessible
  - Neutrally tender network management and reinforcement requirements
  - Embed whole systems coordination

**System Operation reforms**



# How the reforms work together

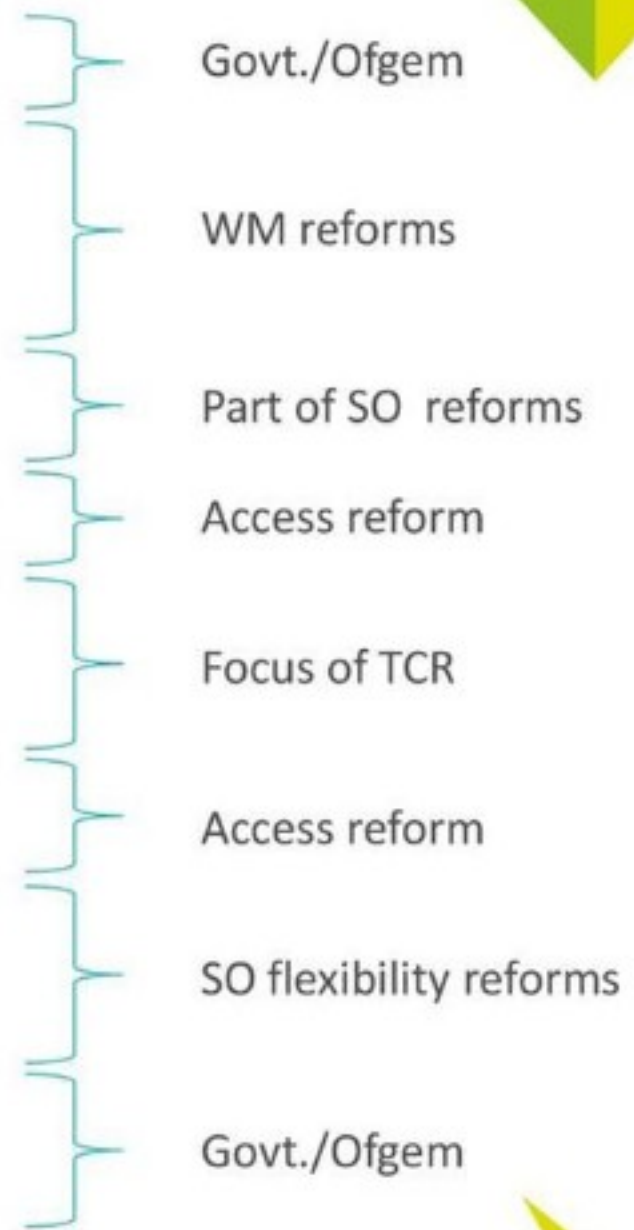


- Step 1:** ESO and DNOs develop FES/D-FES
- Step 2:** Users respond to network price signals
- Step 3:** Competition amongst solutions to address remaining network requirements, taking account of reformed eng. stds
- Step 4:** The most efficient solutions are selected
- Step 5:** Access reforms and these solutions are embedded within RIIO2 arrangements
- Step 6:** Allowed revenues are reduced from increased efficiency



# Sources of value across the value chain

Sources of value		
1) Carbon reduction	Value in reducing the carbon intensity of electricity supply	
2) Energy	Wholesale market (including Peer to Peer and price arbitrage)	
	Capacity market revenues	
	Balancing revenues	
3) Network management	Network charging	Access rights and forward-looking network charges/credits
		Embedded benefits
		Residual charges
	Contracted flexibility	Trading of access rights
		Shorter term network management tender revenues
		Longer term network reinforcement tender revenues
4) Policy and supplier costs	Policy costs/savings	
	Supplier costs/savings	





# Recap on network charging

- > The **electricity network and balancing costs** are **c£10bn per year** and represent c25% of electricity customer bills:
  - > Transmission Network Use of System (TNUoS) charges – c£3 bn per annum
  - > Distribution Network Use of System (DUoS) charges – c£6 bn per annum
  - > Balancing Services Use of System (BSUoS) charges – c£1 bn per annum
- > Approximately 50% of these charges (c£5bn/year) are designed to send signals to encourage efficient connection and usage of the networks
  - > This is covered by the **Access and forward looking charging reform**
- > The remaining 50% (c£5bn/year) is needed to recover the rest of company's allowed revenue through "residual" or "cost recovery" charges
  - > This is covered by the Targeted Charging Review



# Future Charging and Access programme

The energy system transformation will create challenges and opportunities for our electricity networks. We are considering how electricity network access and charging should be reformed to address these changes and existing issues:

**Access and forward looking charging reform (Access SCR).** We want to get better value out of electricity networks by using them more efficiently and flexibly. If we do this, the system will be able to accommodate more electric vehicles and other new technology at lowest cost.

**Mostly  
Ofgem -  
led**

The **Targeted Charging Review (TCR).** This seeks to remove some of distortions which are sending the wrong signals and costing consumers money, and to allocate residual charges in a fairer way.

The **Balancing Services Charges Task Force.** The Electricity System Operator led a review of balancing services charges in parallel with the Access reform and the TCR. This first review concluded that these charges recover costs rather than send signals. We have now asked the ESO to set up a second task force.

**NG ESO-  
led**

# Overview of TCR decision



# The TCR decision – the scope

**Background** – We launched the TCR in 2017 because we had concerns that the current framework for residual charging may result in inefficient use of the networks. We were also concerned about distortions and consumer disbenefits from the remaining non-locational Embedded Benefits

**Residual Charges** – forward looking charges + residual charges make up RIIO allowed revenue. The forward looking charges should send signals to users but the residual should not, as they are cost recovery charges

**Non-locational Embedded Benefits** – the name given to the difference in charges between larger generators and smaller distributed generators (<100MW connected to the distribution network)

# The TCR decision – residual charges

We published our decision on 21 November 2019, which will lead to changes to residual charges and non-locational Embedded Benefits

Embedded Benefit reforms will be implemented in 2021. Reforms to residual charges will be implemented in 2021 for Transmission and 2022 for Distribution

## Residual Charges:

- Should be paid by final demand only
- Allocation of the charge to segments will be set by consumption volumes at each voltage level
- Fixed charges will be based on agreed capacity or consumption volumes per site

**Industry Process:** there are a number of definitions and processes which now need to be worked on by industry to implement these changes. These are listed in the direction and will need industry cooperation to work across transmission and distribution. These include definitions of site and final demand and how to treat a site with less than two years data, new consumer allocations and dispute resolution for example.

Expectation of a detailed plan from Licensees by 21 December 2019



# ➤ The TCR decision – non-locational embedded benefits

## Decision:

- As final demand consumers only will be liable for residual charges, the **Transmission Generation Residual will be set to zero** (subject to compliance with the €2.50/MWh cap)
- Gross rather than net imports of electricity at the Grid Supply Point will be used to ensure **suppliers are liable for the correct level of balancing services charges**. This will prevent them reducing their share of charges through contractual arrangements with Smaller Distributed Generators
- **Industry work** – we have launched a second balancing services taskforce to consider balancing services charges using the TCR principles

Expectation that the taskforce will be set up and ready to begin work in January 2020



# Storage Charging

## Changes to Generation Licence

- Introduces storage definitions & new standard licence condition - E1
- Exempts licensees from payment of final consumption levies
- require licensees to sign-up to industry codes

We are reviewing responses and considering changes to the proposed Licence Condition E1.

## Network Charges

- TCR decision; indicated electricity consumed (other than for the purposes of generation or export onto the electricity network), defined as final demand.
- Storage only sites therefore exempt from residual charges - TNUoS and DUoS
- Industry led modifications currently in progress aim to remove 'demand residuals' from standalone storage facilities from April 2021 onwards

Storage to pay forward-looking charges that reflect future costs that incremental demand & incremental generation impose on networks.

Balancing Services Charges Taskforce concluded that BSUoS charges should be treated as cost recovery. Second Taskforce to determine who should pay BSUoS charges in line with the TCR principles.



# Second BSUoS Taskforce

Jon Wisdom, National Grid ESO



# Contents

- > First BSUoS Taskforce
- > Second BSUoS Taskforce
- > Second Taskforce Deliverables
- > Timeline
- > Getting in touch
- > Questions

# First BSUoS Taskforce

## Aims:

- > Assess whether there is value in seeking to improve the cost-reflective signal through BSUoS to bring consumer benefits, or
- > Whether BSUoS should be treated as a cost recovery charge

## Conclusions:

- > Current charge does not provide any useful forward-looking signal which influences user behaviour to improve operation of the market
- > Not feasible to change BSUoS in a more cost-effective and forward-looking manner to influence user behaviour to help the system or lower costs to customers
- > All BSUoS charges should be treated as cost-recovery

# Second BSUoS Taskforce

## Taskforce aims

- > Who should pay
- > How should charges be recovered - structure of charge
- > How can TCR principles be applied:
  - > Reducing harmful distortions
  - > Practicality and Proportionality
  - > Fairness
  
- > Aims will be met through working towards 5 deliverables



# Taskforce deliverables

- I. Consideration and assessment based recommendation as to who should pay balancing services charges
- II. Investigation and recommendation for recovering balancing services charges, including collection methodology and frequency
- III. Produce interim report providing detailed reasoning and any relevant analysis behind the initial conclusions
- IV. Consult on the interim report providing opportunity for stakeholder comment
- V. Issue a final report including consideration of stakeholder consultation responses providing a final recommendation on who should pay, the design of balancing services charges and potential timescales for implementation



# The Taskforce

- > Twice monthly meetings commencing January 2020 (frequency reviewed on regular basis), organised and chaired by ESO
- > Members will be selected to form a representative range of industry views
- > Regular updates on progress to be made available via Charging Futures
- > Findings to be published in an **interim report** and a **final report** produced by Taskforce



# Timeline

Deliverable	Date
i. Assessment for <b>who should pay</b> charges	January – February 2020
ii. Investigation and recommendation for <b>structure of charge</b>	February – March 2020
iii. <b>Interim report</b> with details reasoning and analysis behind initial conclusions	April 2020
iv. Interim report <b>consultation</b>	April – May 2020
v. <b>Final report</b> containing recommendations	June 2020



# Membership and getting in touch

- > An email will be sent to Charging Futures distribution list inviting industry members to say if they wish to be considered for Taskforce membership
- > Contact Charging Futures or ESO if you wish to take part in the Taskforce

# Table Discussion - Are there any issues not covered by the deliverables?





**What are your views on the proposed  
plan/timetables?**



# Q&A Panel

**Jon Wisdom, Frances Warburton &  
Andrew Self**

ESO and Ofgem



# Ask me anything



0 questions

0 upvotes

# Break 11:20 – 11:35

Restaurant

# Overview of Access SCR

Project update and winter working  
paper

Jon Parker  
Ofgem





# What are access arrangements and forward-looking charges?

**Access arrangements** - the nature of users' access to the electricity networks (for example, when users can import/export electricity and how much) and how these rights are allocated.

**Forward-looking charges** – the type of ongoing electricity network charges which signal to users how their actions can either increase or decrease network costs in the future.

# Background to the Access SCR


**Objective of Access Significant Code Review (SCR):** We want to ensure electricity networks are used efficiently and flexibly, reflecting users' needs and allowing consumers to benefit from new technologies and services while avoiding unnecessary costs on energy bills in general.

**We launched the Access SCR in December 2018.**

**The scope is:**

- > Review of the definition and choice of transmission and distribution access rights
- > Wide-ranging review of Distribution Use of System (DUoS) network charges
- > Review of distribution connection charging boundary
- > Focussed review of Transmission Network Use of System (TNUoS) charges





# Our approach

Our key focus this year is on developing and assessing a long-list of options. We are sharing our thinking through two working papers:

**1<sup>st</sup> working paper** - published in the summer

- An initial overview and assessment of options for access rights, better locational DUoS signals and charge design.
- The links between access, charging and procurement of flexibility.

**2<sup>nd</sup> working paper** – just been published

- Small user treatment
- Distribution connection charging
- Focused transmission charging reforms

We intend to determine a shortlist of options which we will assess in further detail early next year, with consultation on our draft SCR conclusions in summer 2020



# ➤ Overview of our second working paper

## Exec Summary

Distribution connection charging boundary

Transmission network charges

Small Users

External engagement

Illustrative examples


Consumer Panel Report

Behavioural Insights Report

Overview of current arrangements

# Distribution connection charging boundary

David McCrone  
Ofgem



# Overview of session

## The aim of this session is:

- > Describe the current connection charging boundary and potential issues Describe the possible options for change
- > Set out our initial views

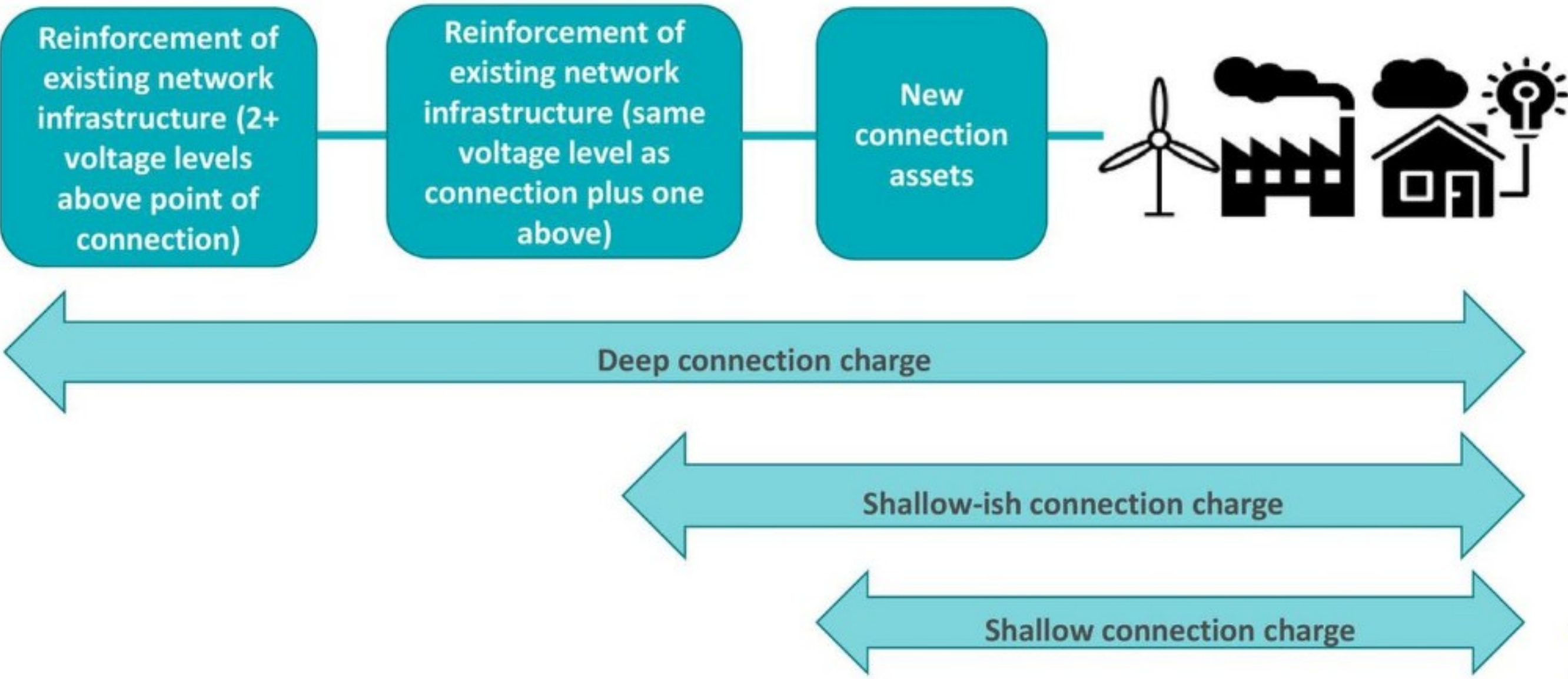
## We will be using Menti to hear your feedback on:

- > The issues currently faced by users
- > The possible options for change and what they might mean for users and networks



# Distribution connection charging boundary - overview

When connecting to the network, customers face connection charges. The “connection charging boundary” is the extent to which customers pay for different kinds of assets through this charge.





# Distribution connection boundary – problem statement

## Transmission

- **Shallow connection boundary**
- Pay for new connecting assets up front or over time
- TOs must fund any necessary reinforcement via RIIO allowances or the ESO could actively manage the constraints through flex markets
- To protect against TOs undertaking reinforcement that is not then used, users provide securities against them cancelling their projects ('user commitment')

## Distribution

- **Shallow-ish connection boundary**
- Pay upfront for new connecting assets and a share of any necessary reinforcement of the upstream network
- Can lead to high connection charges and might reduce incentives for DNOs to invest strategically, **but** provides a locational signal
- Protects wider consumers from the risk of stranded or under used infrastructure



## Potential problems with these arrangements

- The difference between arrangements may be distorting investment decisions or competition between projects
- The connection arrangements could be creating barriers to entry for some users (eg upfront cost) and slow down connections of new technologies like distributed generation and EV charging infrastructure



# ➤ Distribution connection boundary - evidence

- We are considering the level of upfront cost (extension assets, reinforcement & in totality).
- Cost of connections that are sole use-funded by the connecting customer is significantly greater proportion of connection charges than the charges relating to reinforcement costs.
- However, average cost of reinforcement liable by connecting user in rejected offers is a more than 10 x level of those which have been accepted.

	Connection offers	Element of the connection that is sole use funded			Element of the connection that is subject to the apportionment rule - customer funded			Element of the connection that is subject to the apportionment rule - DUoS funded		
		Total cost	% of total cost	Ave cost	Total cost	% of total cost	Ave cost	Total cost	% of total cost	Ave cost
<b>Full acceptance</b>	56k	£670m	71%	£12k	£64m	7%	£1k	£179m	19%	£3k
<b>Not accepted</b>	55k	£4.27bn	68%	£78k	£722m	11%	£13k	£1.16bn	18%	£21k

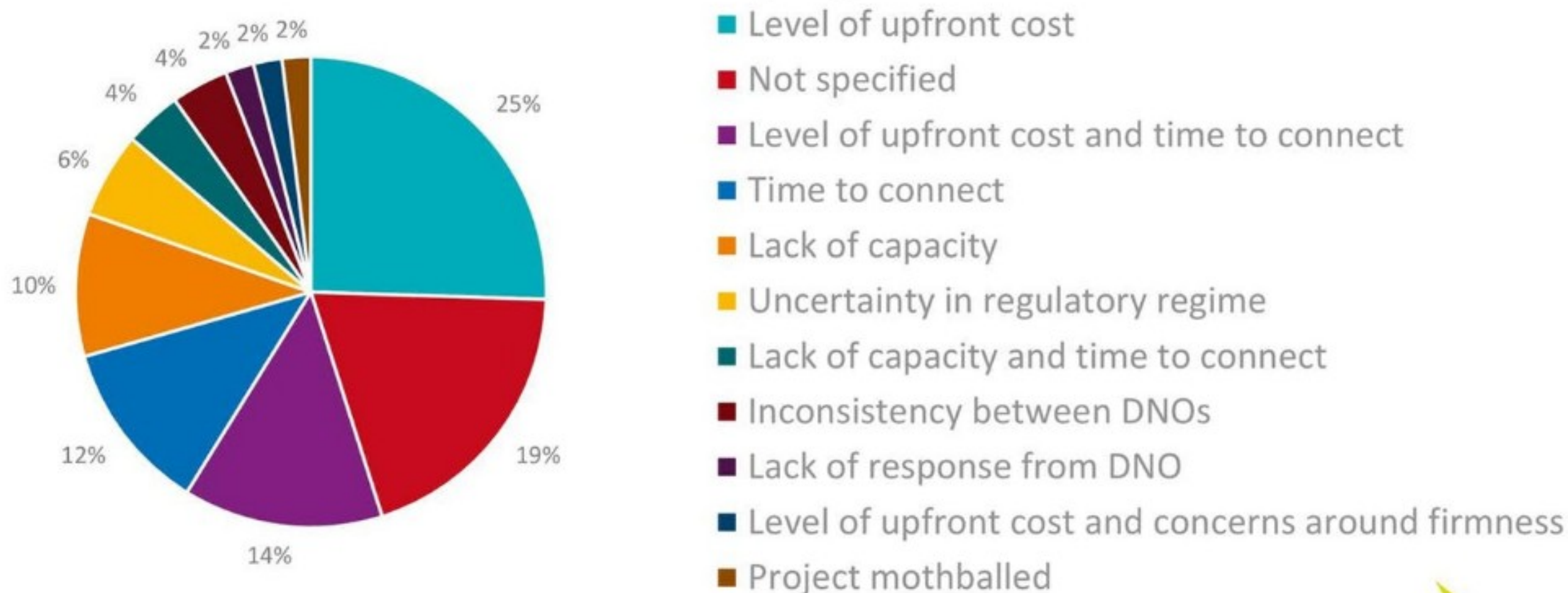




# Distribution connection boundary - evidence

We also issued a call for evidence to members of the Access SCR Challenge Group and other interested stakeholders in October 2019 to explore this matter further. It is difficult to draw definitive conclusions as it represents only a small proportion of connecting customers – but the level of upfront cost was highlighted as a potential issue.

Reason for non-progression

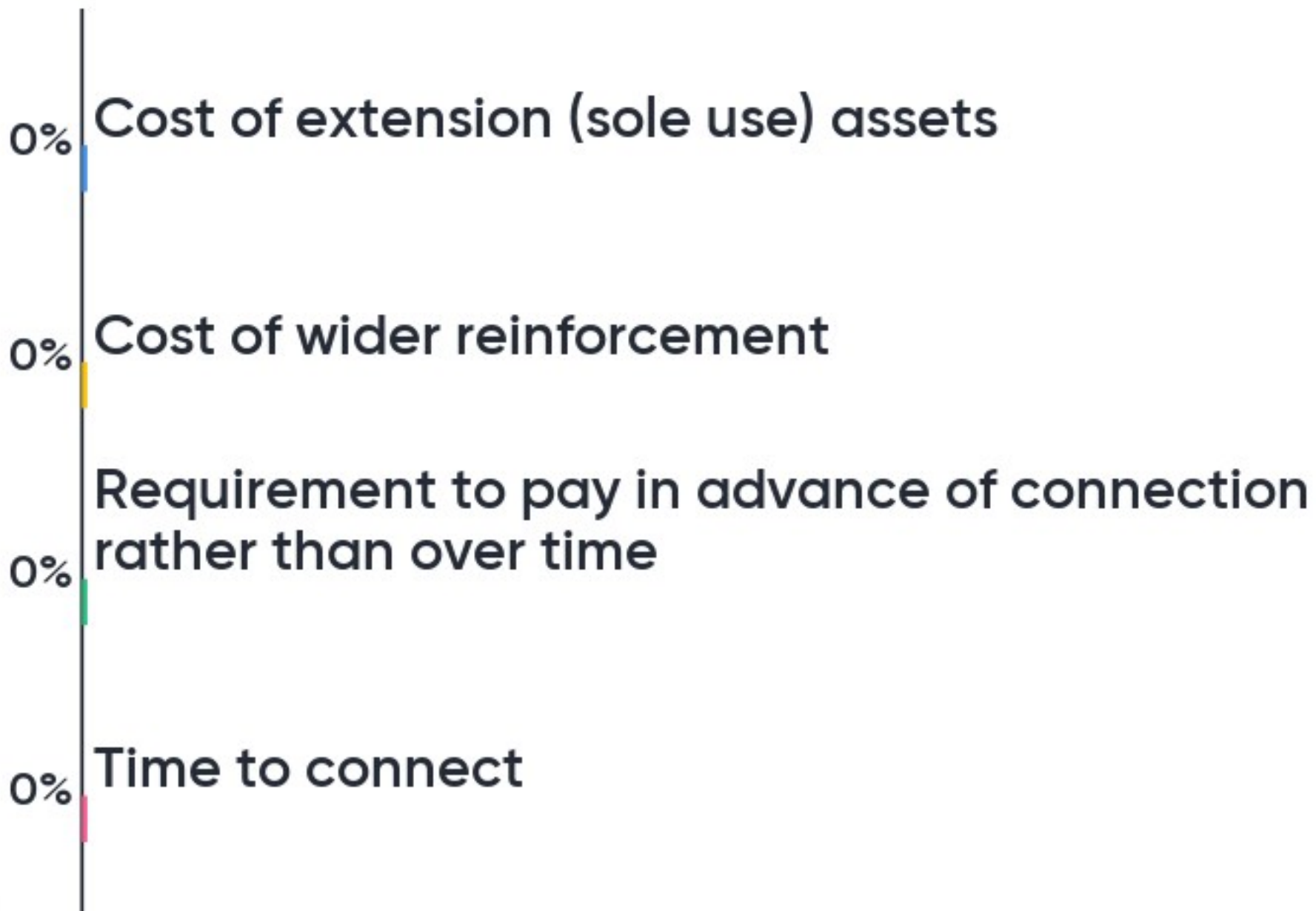


We are also working with the ENA on different charging scenarios looking at whether having different arrangements at transmission and distribution could be influencing decisions.

**Table discussion – Do you perceive there to be issues with the current arrangements? What evidence do you have of this?**

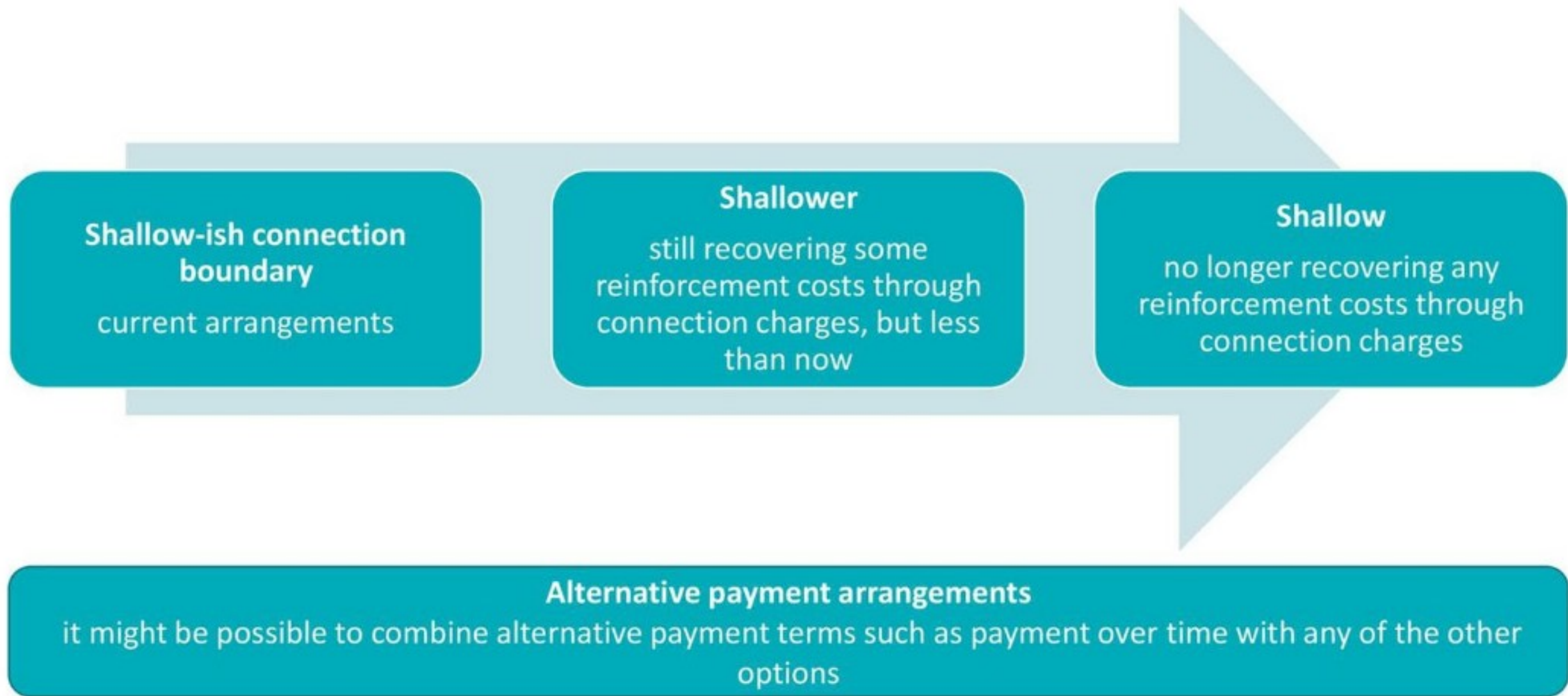


# Rank the following factors in order of importance (100 points)





# Distribution connection boundary - options





# Distribution connection boundary – initial views

Connection boundary depth	Pros	Cons
<ul style="list-style-type: none"> <li>• <b>Shallow-ish</b> (keep the existing boundary but could still implement other approaches such as alternative payment terms)</li> </ul>	<ul style="list-style-type: none"> <li>+ Delayed payment may <b>reduce issues associated with high upfront cost.</b></li> </ul>	<ul style="list-style-type: none"> <li>- Could expose DNOs to <b>bad debt risk.</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Shallower</b> (still recovering some reinforcement costs through connection charges, but less than now)</li> </ul>	<ul style="list-style-type: none"> <li>+ Would reduce cost but <b>keep some locational signal</b> depending on where new level is set.</li> <li>+ Recovering more from network charges could mean <b>more opportunity for innovative/ more strategic solutions</b> to network development.</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Weaker locational signal</b> but could be mitigated by more locational DUoS charging.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Shallow</b> (no longer recovering any reinforcement costs through connection charges)</li> </ul>	<ul style="list-style-type: none"> <li>+ Increased opportunity for DNOs to consider <b>alternative approaches to developing their network</b></li> <li>+ <b>Lowest level of upfront cost</b> to connecting users</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Weakest locational signal</b> and could create an incentive to over-request capacity required.</li> <li>- May be <b>excessively complex</b> and/or risk introducing cross-subsidies between users</li> </ul>



# ➤ Distribution connection boundary – liabilities and securities

- Bulk of transmission connection costs are recovered through ongoing use of system charges (rather than connection charges).
- If a project has triggered the need for transmission upgrades to not go ahead, and there has already been some investment made by the Transmission Owner, there is a risk that these costs will be recovered from wider consumers.
- A User Commitment (for generation) & Final Sums (for demand) methodology requires connectees to enter into an agreement for some or all of the liability, and to provide financial securities for it. This aims to find balance of risk sharing between the transmission network charge bill payer and new connecting user.

We are considering whether there would be a case for introducing liabilities and securities arrangements for distribution investment if we moved to a more shallow boundary or allowing connection charges to be paid over time, to mitigate stranding risks for wider consumers. **This needs to be balanced with the risk of creating new barriers and what is practical and proportionate for distribution connections.**



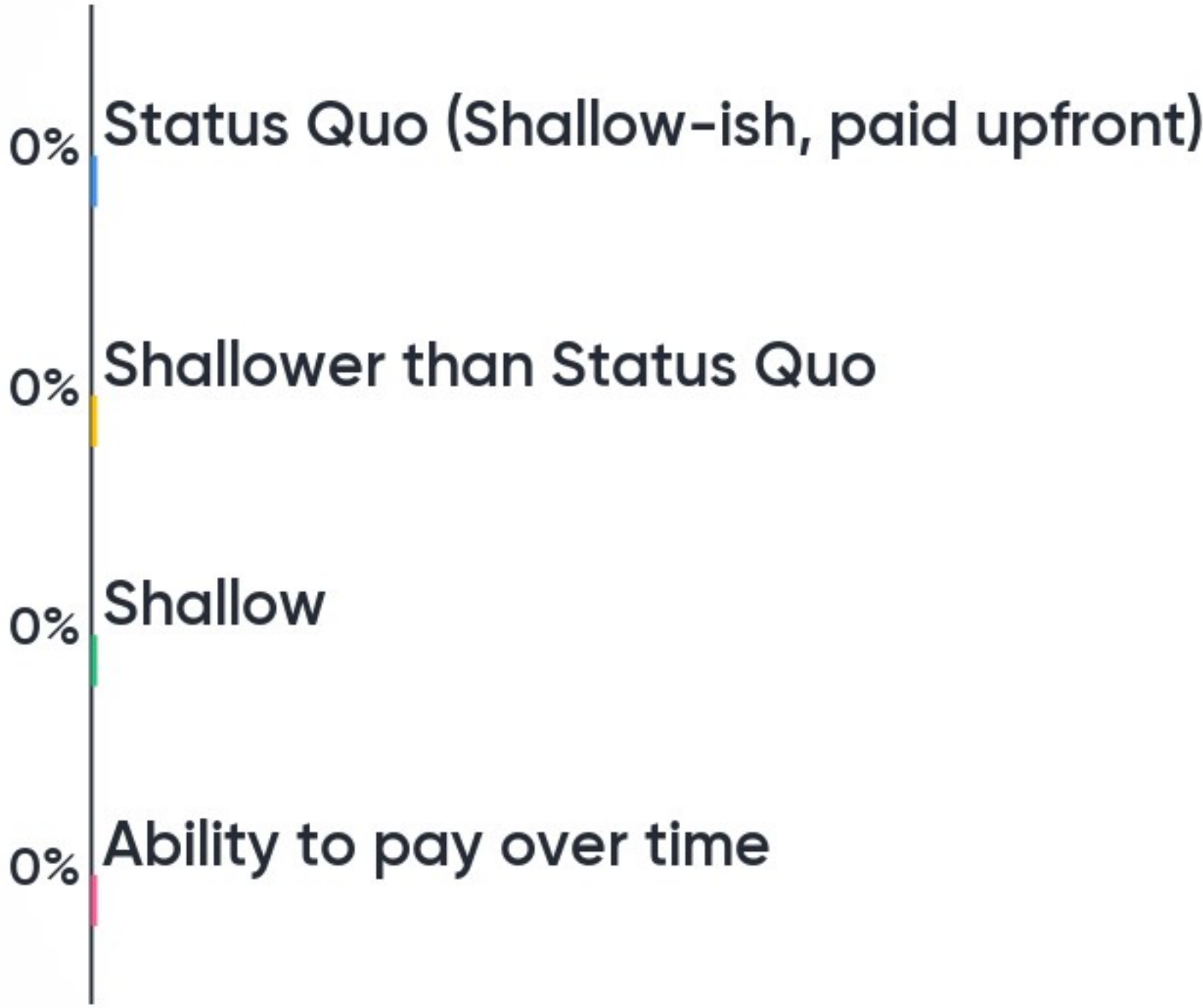
**Table Discussion - What are your thoughts on the options and our preliminary assesment of them? How would they impact users and networks?**



# Have we missed anything?



# Rank options in order of preference (100 points)





# Small Users

Amy Freund

Ofgem



# Overview of session

This element of the working paper considers whether the access and charging options for reform we have identified for larger users should/could be applied to small users, or whether any protections or adaptations may be needed. It draws on work by a sub-group of our Challenge and Delivery groups.

## We will cover:

- How the access and charging options could apply to small users, how they could benefit from our reforms and what potential risks they could create
- Potential for mitigations/adaptations for these
- Our initial views on the suitability of access and charging options and potential adaptations or protection measures
- Next steps



# Overview of session

## We will be inviting your views on:

- The suitability of access and charging options for small users and the risks they could create
- What type of mitigations/adaptations would be best suited to address these risks

‘Small users’: those distribution-connected users who do not have an agreed capacity. However, the primary focus of this workstream are domestic customers, particularly focussing on those who may be vulnerable & small non-domestic demand customers (microbusinesses).





# How the options could apply to small users

We expect consumers overall could benefit from our reforms. We have additionally identified some potential types of risks that could apply for small users:

**Non-financial impacts**  
Welfare impacts due to lower access/usage

**Direct Financial impacts**  
Unexpected high charges resulting in high bills

**Broader affordability impacts**  
Potential distributional impacts and implications for affordability for small users

## How it could apply

## Opportunities for benefits

## Potential risks

	How it could apply	Opportunities for benefits	Potential risks
<b>Definition and choice of access</b>	<ul style="list-style-type: none"> <li>Requiring small users to nominate their max capacity level</li> <li>Could give choices – eg willing to be curtailed, off-peak, shareable</li> </ul>	<ul style="list-style-type: none"> <li>Could encourage users to opt for less access where they can be flexible, reducing need for future network investment</li> </ul>	<ul style="list-style-type: none"> <li>Difficult for consumers to understand capacity requirements</li> <li>Risk do not obtain sufficient access</li> <li>Or pay for too much</li> </ul>
<b>More time varying charges</b>	<ul style="list-style-type: none"> <li>Charges could vary for usage at different times of day and by season</li> <li>High charge periods could be set a year-ahead or close to real-time</li> </ul>	<ul style="list-style-type: none"> <li>Could incentivise users to shift their usage at times which are more costly, so reducing the need for future network investment</li> </ul>	<ul style="list-style-type: none"> <li>Unexpectedly high bills</li> <li>Affordability pressures for those unable to flex demand</li> <li>Cutting usage could impact welfare</li> </ul>
<b>More locationally varying charges</b>	<ul style="list-style-type: none"> <li>Charges could vary in different locations within a DNO region according to differential network costs</li> </ul>	<ul style="list-style-type: none"> <li>Could provide stronger signals to incentivise users to be flexible in constrained parts of the network, to make better use of available capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affordability pressures for those unable to flex demand</li> <li>Cutting usage could impact welfare</li> </ul>
<b>Connection charging options</b>	<ul style="list-style-type: none"> <li>Reduce or remove requirement to pay towards reinforcement</li> <li>Allow to pay charges over time</li> </ul>	<ul style="list-style-type: none"> <li>Charges could reduce barriers to small users connecting new low carbon technologies</li> </ul>	<ul style="list-style-type: none"> <li>Risk locked into long-term commitments if paying over time</li> </ul>

**What are your views on the suitability of these options for small users? Have we missed any risks/issues?**





# Rank by suitability

Highly Unsuitable

Defining and giving choice over small user's access rights

Time varying charges

More locational granularity of charges

Allowing users to pay connection charges over time

Not charging for reinforcement works required through connection charges

Highly Suitable





# Suitability of access and charging options

## – our initial views

**Defining & giving choice over small users' access rights**, with an associated agreed capacity charge, could be more complex than some alternative routes to send signals.

- Expect degree of standardisation of access levels/choices if taken forward
- Potential for an 'opt-in' approach
- Measures such as automated increases or overrides potentially more appealing for consumers; although would need to understand the impact on network cost savings.

**Time varying charges options**; potentially more simple approach to incentivising efficient use of the network, compared to changes to access rights, although may offer less certainty of response.

➤ Further work is needed to understand how the benefits which may be achieved under each compare

**Connection charging**; we do not expect to change previous decision that small users should not pay for reinforcement for changes in connection within their current fuse size; will continue to assess other options

**Suppliers** under all options will have a key role in informing their customers and deciding how to package offers for them, which is likely in many case to involve managing risk on their behalf. Automation enabled by smart appliances, will also be important in enabling consumer flexibility.



# Options to mitigate the potential risks

We think that suppliers have a key role in managing volatility and complexity for their customers and are required under our principles-based regulation to ensure they act in consumers' interests. For example, they are required to:

- treat customers fairly, including each domestic customer in a vulnerable situation
- ensure consumers can easily compare tariffs and make informed choices.

These have been designed considering how consumers will be protected under many of the sorts of tariffs that are emerging and may become more prevalent in future.

We are considering where further mitigations or protections may be needed, and whether particular adaptations or protections are most suited to different types of potential consumer risk. Broadly these include:

## Retail market adaptations

- **Principles-based approach:** there could be a need for new or updated obligations. Further considerations could be needed for non-regulated parties
- **Introduce more specific requirements** on tariff offers or design for certain consumer groups. This could include standardisation of tariff features, eg limits for access or dynamic options
- We will also consider the role of wider policies such as WHD and ECO

## Make explicit changes within the network access and charging options

- Only apply options with less strong / dynamic time/location signals or without requiring users to make access right choices
- Thresholds for usage (usage below this would have weaker time/location signals) or minimum guaranteed access levels (eg default minimums which all householders could not go under)





# Potential adaptations or protection measures

## – our initial views

### Potential retail-focused approaches

- Regulatory approaches could be a combination of principles, more prescriptive requirements or standardisation eg through codes of practice. This may depend on the basic options adopted.
- There may be areas where more **specific requirements** may have merit, including in relation to the roles of third parties or new activities (eg setting access levels). This may particularly be the case where consumers may be at risk from a lack of coordination or standardisation.

### Access and charging adaptations

- We will continue to consider **the case for minimum guaranteed access levels and basic charging tiers**, considering the extent of potential risks or distributional effects, potential impacts for reform benefits and whether retail measures may offer a more suitable, targeted approach.

**Vulnerable consumers** may also be able to benefit from being flexible with their usage, and may be enabled to do so. It may be challenging to target vulnerable consumers groups specifically for different access or charging arrangements due to the challenges of identifying those who may be vulnerable, given its transient nature.

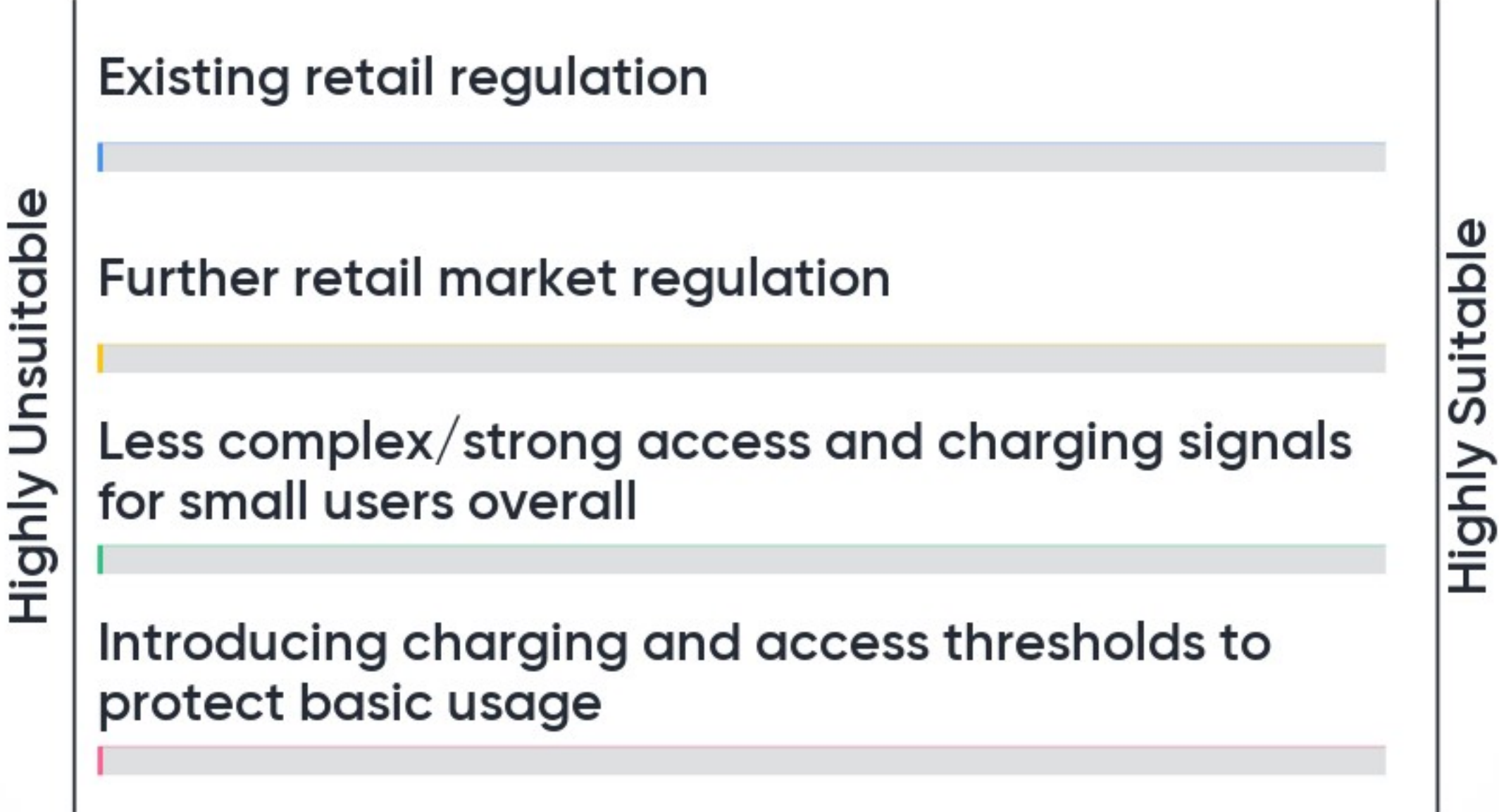
**Overall, the protection approaches we have considered are not mutually exclusive but could complement one another. But there are likely to be trade-offs between different options** such as tailoring and standardisation, complexity and ease of engagement, and the benefits would need to be considered under any approach.



**Table Discussion - What are your views on the different options to mitigate potential risks? Are there other options we should consider?**



# What is your view on the potential role for different mitigation options?





# Next steps

We intend to undertake further analysis as we progress through the shortlisting of options and our impact assessment to better understand:

- **Any distributional impacts** of our proposed options
- **The relative benefits of different option variants**, particularly of defining access options vs charging-based approaches, and how they may be mitigated through future retail market provisions
- **The level of behavioural response** which might be anticipated under different approaches
- The extent to which the current connection charging arrangements for small users could **impact the uptake of anticipated levels of LCTs**
- **The ease with which the options can be implemented**, considering any need for legislative changes or transitional arrangements as well as complexity.




# Lunch 13:10 – 13:55

Restaurant

# Focused review of TNUoS charges

Jon Parker

Ofgem



# Overview of session

In this session we intend to provide an overview of the options we are considering within our review of transmission charges and our initial assessment of them:

- > Forward-looking transmission network charging design and access arrangement for demand users;
- > Forward-looking transmission network charging design and access arrangement for Distributed Generation; and
- > 'Reference node' used in pricing model used to calculate transmission charges provides an overview of four basic options we have identified for transmission demand charges

## **We will be inviting your views on:**

- > Merits of the different options we are considering across these areas
- > Have we missed any options or key issues in our initial assessment



# Focused review of TNUoS charges

Suppliers and generators face **transmission network use of system (TNUoS)** charges, reflecting their use of the networks to access or export electricity. These charges are the output of a long-run incremental pricing model.

Within this SCR, we are undertaking a focused review of forward-looking transmission charges and access arrangements covering:

- > Forward-looking transmission network charging design and access arrangement for demand users;
- > Forward-looking transmission network charging design and access arrangement for Distributed Generation; and
- > The “reference node” used in the pricing model used to calculate transmission charges.

**We aim to ensure the charging and access arrangements provide:**

- > A level playing field for investment for different types of users; and
- > Charges that give sufficiently predictable signals about how users impact future network costs and do not distort other market signals

# Forward-looking transmission charges and access for demand users

Existing **demand** charges follow a critical peak “Triad” approach, where charging periods are determined after the fact based on peak demand. We are considering four basic options:

- 1. Improving the cost reflectivity of the Triad model
  - 2. Providing advance notice of the peak charging periods (“ex ante critical peak”)
  - 3. Setting fixed charging time bands at the start of each year (“static time of use”)
  - 4. Moving to charges based on a user’s agreed capacity that don’t incentivise demand response
- Different variants of time varying charges**





# Improving the cost reflectivity of time varying charges

Peak demand charges are only cost reflective if they coincide with periods of system cost

## National Peak Demand / Flow

### Preliminary assessment

- > Charges set at peak demand, which on system level is same as peak flow
- > Efficient where national peak correlates with local flows
- > More predictable
- > Simple, low change, centralised

## Local Peak Demand

### Preliminary assessment

- > Charges relate to local demand peaks
- > Not likely to be useful, as local peak demand may not align with generation outputs
- > Less predictable
- > Depends on granularity. More complexity.

## Local Peak Flow

### Preliminary assessment

- > Charges relate to local flow peaks (generation or demand), so more efficient if local flows do not correlate with national peaks.
- > Less predictable, more complicated.
- > Most complex, decentralised forecasts needed



# Preliminary assessment of demand charge options

## Ex-post (Improved Triad)

- > Peak periods not known in advance. Persistent demand reduction incentive.
- > Potentially distortive as many periods of user action, good chance of reducing peaks
- > Less predictable, similar to status quo
- > Similar to status quo
- > Depends on improvements chosen

## Ex-ante critical peak

- > Peak periods designated in advance. Targeted demand reduction incentive.
- > Minimises distortion outside peak periods. Could be more suitable if network costs driven by small number of significant peaks.
- > More predictable than ex post, user friendly, but needs way to notify users and forecast peaks

## Fixed time bands/static Time of Use charges

- > Time-bands known in advance.
- > Broader signals, could be more suitable if network flows peak relatively consistently across a number of periods.
- > If not, less well targeted responses with smaller but more constant distortion.
- > Predictable, user friendly, simple.

## Agreed Capacity

- > Investment signal only. For use where demand reduction distortive or can be signalled more effectively through other means
- > Simple, no real-time user engagement needed, but capacity must be determined
- > Demand users would need agreed transmission capacity

**What are your views on the different options? Are there options or issues we have missed?**



# Which option has the most merit?







# Forward-looking transmission charges and access for Distributed Generation – current arrangements

	Transmission access rights	Wider locational transmission charges	Local circuit charges
Transmission-connected generation	Explicitly agreed access right	Receives credits or pays charges, based on agreed capacity	Pay charge where relevant
Distribution-connected generation >100MW	Explicitly agreed access right	Receives credits or pays charges, based on agreed capacity	Do not pay charge even where relevant
Distribution-connected generation <100MW	Generally not explicitly agreed right, unless have BEGA	Receives credits but charges capped at zero, charges as inverse demand	Do not pay charge even where relevant

We are concerned that these differences could be distorting competition and leading to higher system costs for consumers.



# DG Charging options – preliminary assessment

## Removal of charging cap w. inverse demand charges

- > Smaller DG (SDG) wider transmission charges the inverse of demand charges, but no longer capped at zero
- > Network savings to be weighed against potential security of supply and decarbonisation impacts
- > Practical issues surrounding charging these users

## Removal of charging cap with agreed capacity charges

- > SDG pay wider transmission charges based on agreed capacity
- > Network savings to be weighed against potential decarbonisation impacts
- > Less security of supply risks
- > Dependent on defining DG transmission access rights

## DG pay local circuit charges

- > DG pay local charges where relevant
- > More likely to lead to efficient outcomes as cost-reflectivity improved
- > Network savings to be weighed against decarbonisation impacts
- > Dependent on defining DG transmission access rights

Less harmonised

More harmonised





# Smaller DG Access options – preliminary assessment

SDG have different Access arrangements to large generators. Very few have explicit transmission system rights, which limits charging options

## Explicit rights via agreement

- > Requires users to agree explicit access to the transmission system and enter into new agreements
- > Would significantly increase ESO admin/client base

## Explicit rights via third party

- > DNOs or suppliers could obtain access on behalf of customers
- > More likely to give efficient outcomes, cost reflectivity improved, clarity around rights
- > Requires users to engage with DNO/supplier to obtain access, or could be based on DUoS agreed access levels



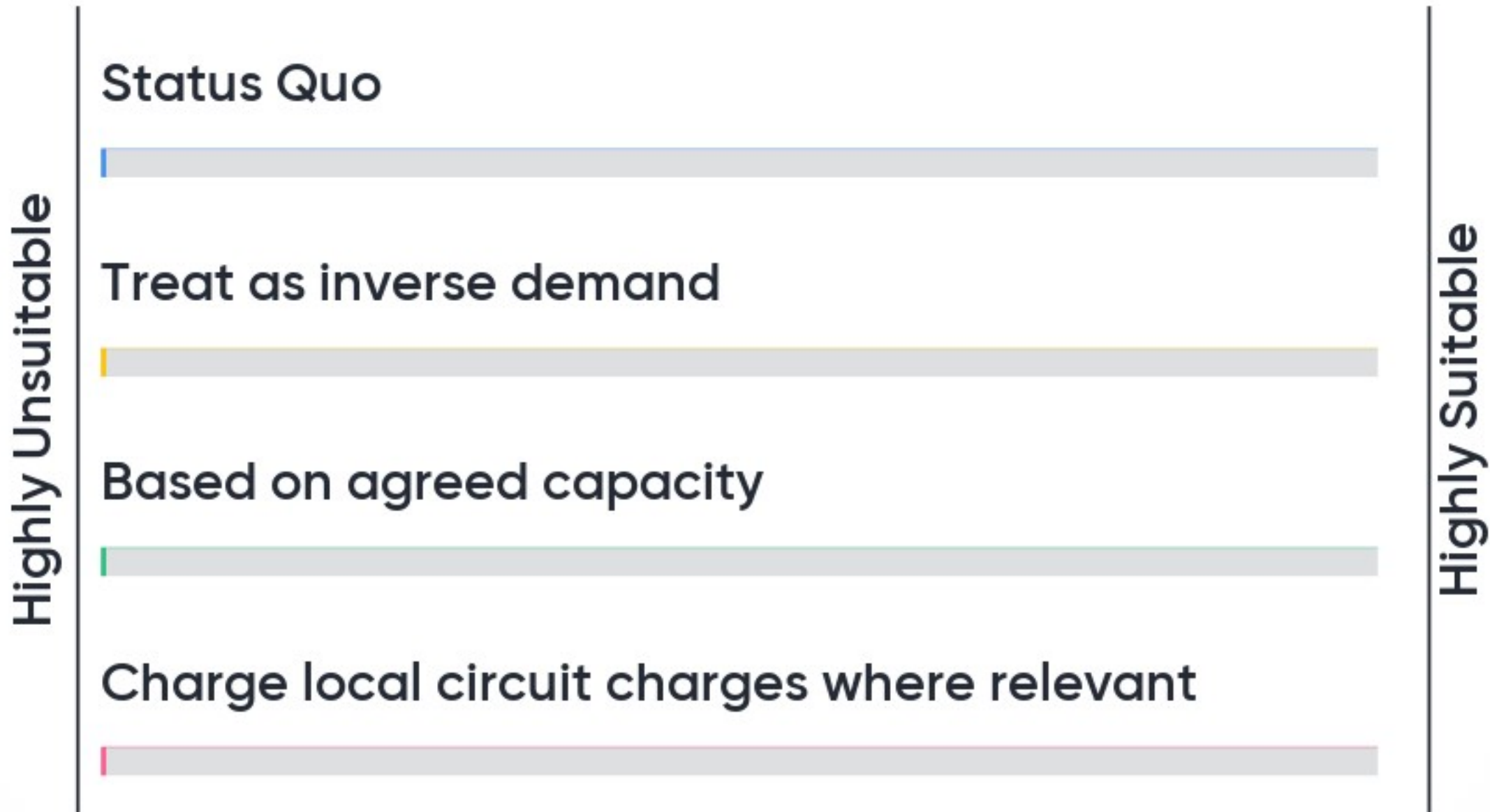
**What are your views on the different charging options for DG?**



**What are your views on the options for defining smaller DG's access to the transmission network? Which is most practicably and proportionate?**



# How suitable do you think the options for charging DG are?







# The “reference node” used in the model used to calculate transmission charges

The existing transport model includes a number of assumptions and processes that have an impact on the charges produced.

- > One is the use of a distributed reference node. When additional power is added to the system, it distributes the offtake across the system.
- > Different approaches lead to differences in the electrical flows that are modelled.
- > As a result, different choices here can change the costs allocated to different users.

We intend to review these arrangements to understand the potential benefits and impacts of change, particularly focusing on whether there are options that can reduce distortions between users and so drive system efficiencies.

## We intend to:

- > Consider the potential impacts of change
- > Consider the practicality of the different options
- > Consider whether any benefits can be achieved through other means

# Reference node options

## No change

- > Retain the existing distributed demand node
- > System costs are calculated according to generation's cost to deliver power to the computed centre of demand.
- > Recovers more revenue from generation.

## Recover more from demand

- > Reform the model to incorporate a "distributed generation reference node",
- > System costs calculated according to the cost to transmit power away from a computed centre of generation.
- > Recovers more revenue from demand.

## Hybrid

- > An option that seeks to find a middle ground between these two options.
- > There may be multiple approaches of achieving this.

# Table Discussion – Do you have any views on the reference node issues or options?





# Way forward and next steps

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Ofgem



# Next steps

Any comments on our first working paper are welcome. Contact us on [FutureChargingandAccess@ofgem.gov.uk](mailto:FutureChargingandAccess@ofgem.gov.uk)

- > We will continue to work with our Delivery Group and Challenge Group.
- > We intend to determine a shortlist of options which we will assess in further detail early next year.
- > We will consult on our draft SCR conclusions in summer 2020 and make a final decision in early 2021.
- > Any changes will come into effect in April 2023.

To keep up to date with all our work on Future Charging and Access - get added to the Charging Futures distribution list at <http://www.chargingfutures.com/sign-up/sign-up-and-future-events/>

# Break 14:50 – 15:00

Restaurant



# Q&A Panel

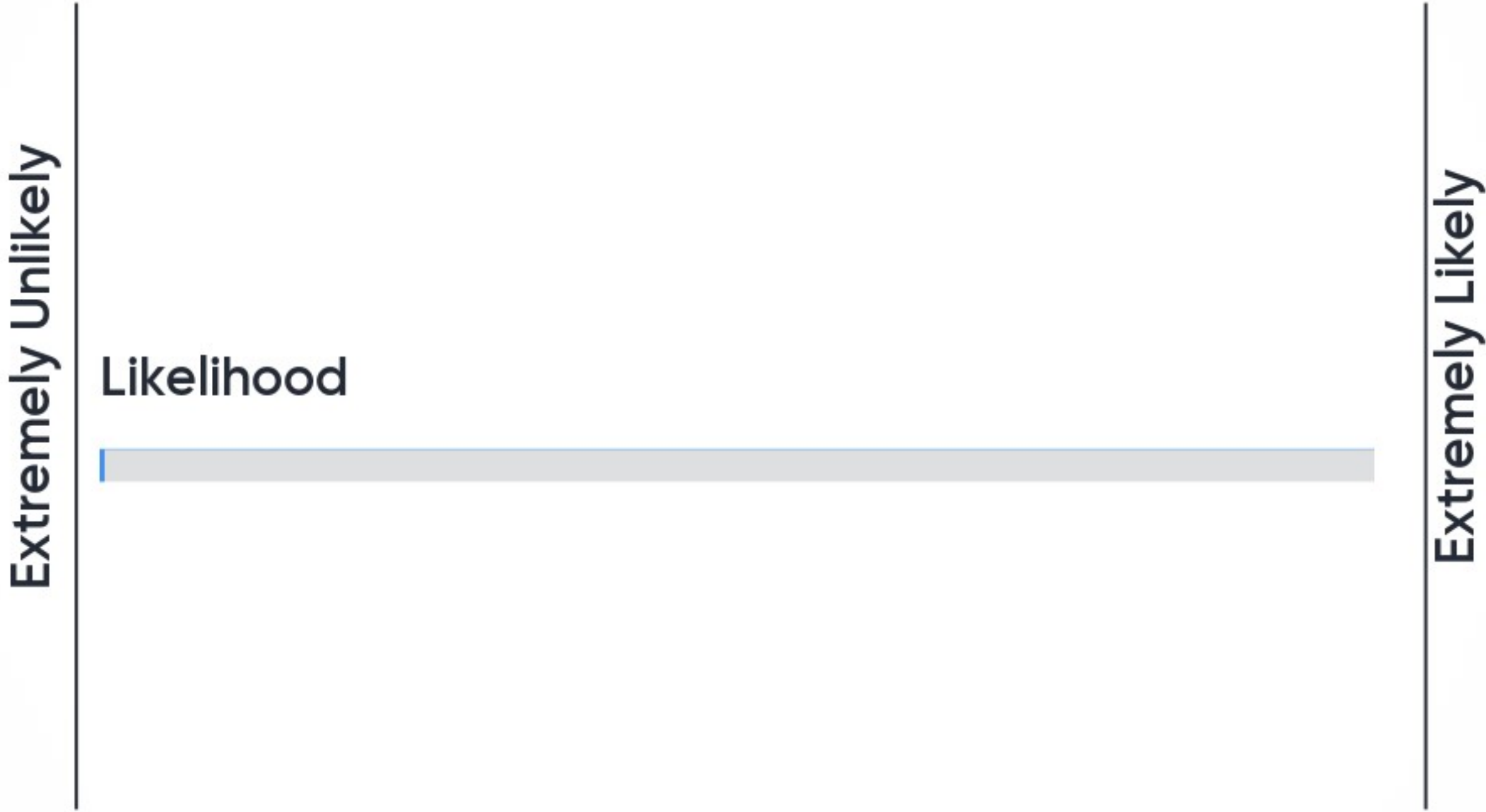
Ofgem

# Closing remarks

Colm Murphy

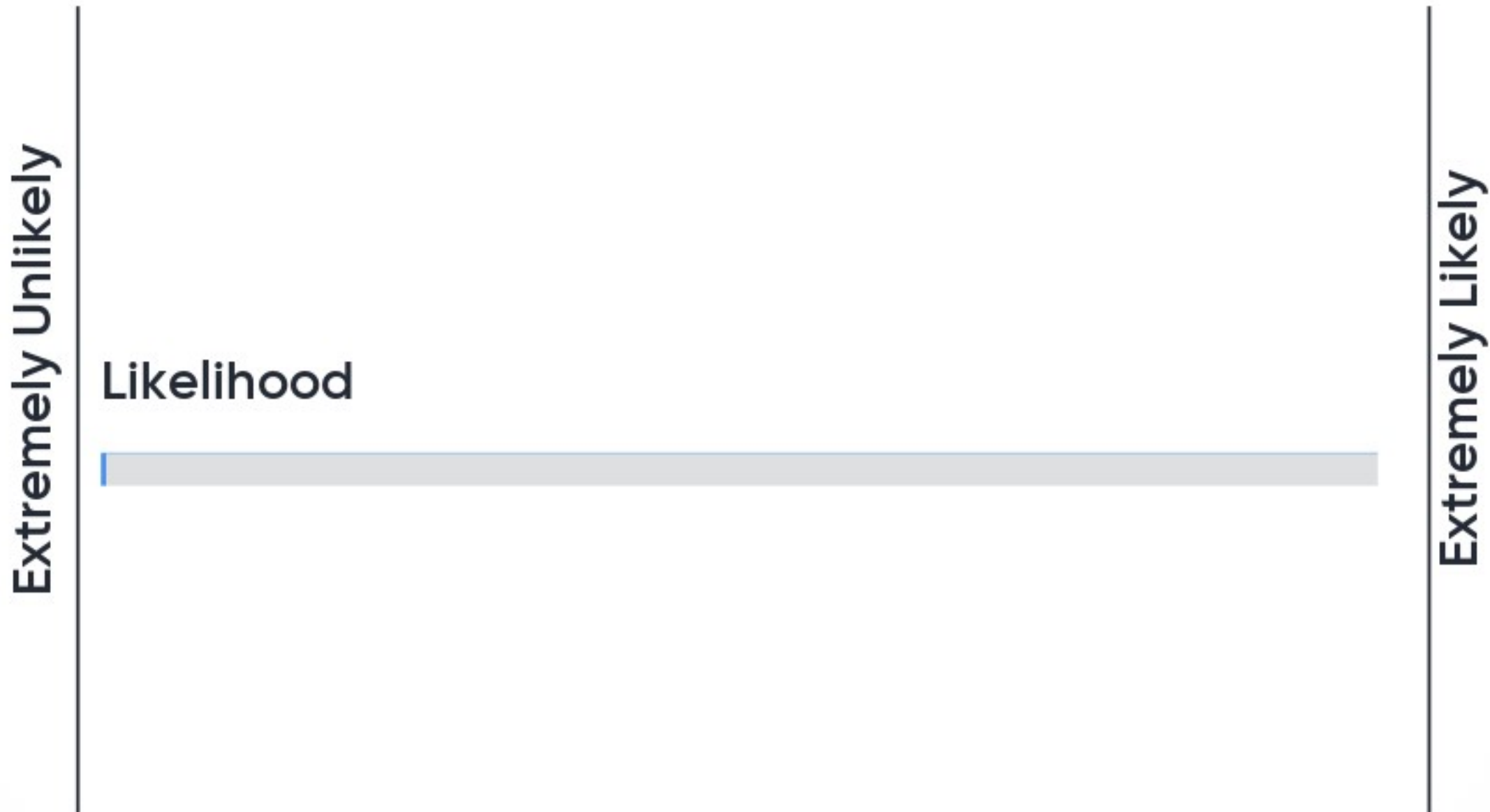
ESO

# How likely are you recommend this forum?





# How likely are you to recommend the secretariat of this forum?



# What went well?



# How can we do better next time?

