Charging Futures
Reforming electricity charging together

Forum

Mentimeter

Access and Forward Looking Charges SCR

The webinar will begin shortly

Charging Futures | Forum

Reforming electricity charging together

Mentimeter

Access and Forward Looking Charges SCR

16 July 2020

Mentimeter

nationalgridESO

Charging Futures

Reforming electricity charging together

Charging Futures

Agenda

- Access and Forward Looking Charges
  - Overview of the SCR and its timeline
  - Update on the qualitative assessment
  - Q&A with Ofgem

This afternoon at 1pm

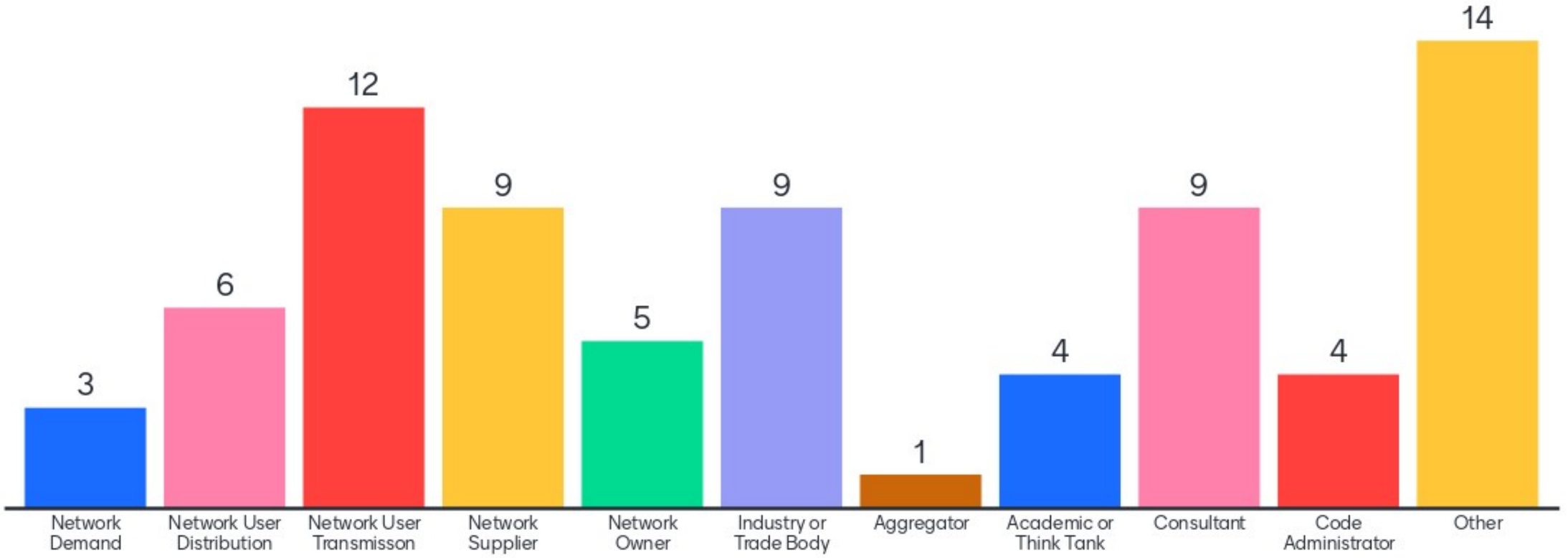
- Targeted Charging Review
  - Update on modifications
  - Q&A with ESO, Northern Powergrid and Ofgem

Mentimeter

- Please go to www.menti.com, using code on screen to access the presentation.

- Submit Q & A questions at any time

Which category best describes your organisation?



Mentimeter

Update on Access SCR

Andrew Self and Jon Parker, Ofgem

Structure of today's session

- **Overview of our Access Significant Code Review (SCR):**
  - How Access SCR, including how it fit with our system operator reforms
  - Approach to timescales and approach to assessing options
- **Provide an update on our qualitative assessment of the options**
  - Review of the choice and definition of access rights
  - Wide ranging review of DUoS charges
  - Review of the connection charging boundary
  - Focused review of TNUoS

There will be opportunities to input throughout and a general Q&A at the end of the session.

Mentimeter

Charging Futures

Changes in the system mean changes to regulation

Mentimeter

Drivers

- Decarbonisation
- Technological Change
- Digitisation and smart systems
- Decentralisation

Impact on the energy system

- Changes in the generation mix
- More active networks and demand side
- New large and uncertain loads
- Smart technologies

Impact on Regulation

- Right incentives on market participants
- Right incentives on network companies
- Right approach to network signals and cost recovery
- Right framework for system operators

Ofgem reforms

- Retail and wholesale market reforms
- RIIO2 price controls
- Future Charging and Access (Access, TCR and Balancing reform)
- System Operation (SO) reforms
- Key enablers: Smart meter rollout and Half Hourly Settlement

Future Charging and Access programme

Mentimeter

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 low carbon technologies at lowest cost.

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

Mostly Ofgem - led

The **Balancing Services Charges Task Force.** The Electricity System Operator is now leading a second task force to consider how balancing services charges should be structured, given the conclusion of the first task force that it is a cost recovery charge. This will take into account our decision under TCR.

Industry led

Access SCR - what are we reviewing and why?

Mentimeter

	Why are we looking at each area?
Wide ranging review of DUoS	• Improvements to locational granularity and the cost-reflectivity and distribution network charge signals to users should encourage better use of existing network capacity and minimise future costs.
Distribution connection charging boundary	• Amending approach to distribution connection charging may help reduce barriers to new connections at distribution level, remove distortions between transmission and distribution-connecting projects, and better support efficient network development.
Focused TNUoS reforms	• Improved cost reflectivity of transmission charge signals for distributed generation and demand users should encourage better use of existing transmission network capacity and could reduce distortions between different types of users, to reduce future whole system costs. • Reviewing the "reference node" would adjust cost recovery between different types of users, potentially helping reduce distortions.
Improved choice and definition of access rights	• Improved choice and definition of access rights could help ensure users are able to get quicker or cheaper access to the network in line with their needs and support more efficient use and development of network capacity.

Our approach

Mentimeter

Assessing against our guiding principles throughout:

1. Supporting **efficient system development**

2. Reflecting **energy as an essential service**

3. **Practicality & proportionality** of implementation

In March we published our consultation letter on our shortlisted options

We have developed the shortlisted options in more detail to put through our draft impact assessment. **Today focuses on explaining the options we are taking forward to modelling**

We have commissioned CEPA-TNEI to undertake modelling to assess the potential quantitative impacts of the shortlist of options. This will support our qualitative assessment of the shortlisted options. **For more information on our approach to the Impact Assessment listen to our recent webinar.**

Alongside this we have issued a Request for Information on the costs associated with implementing potential reforms.

We intend to publish our consultation on our draft impact assessment and minded-to decision in autumn 2020.

Impact assessment

Mentimeter

Our Impact Assessment will inform our assessment against our principles, including:

Impact assessment modelling: We have commissioned CEPA-TNEI to undertake modelling to inform our assessment.

- We will model **coherent packages** of reform options across the policy areas.
- Key modelling outputs will include **system benefits** (NPV), **distributional impacts** (static and dynamic) and implications for **decarbonisation pathways**.
- Our choice of modelled scenarios will include consideration of **2050 net zero carbon targets** by using the 2020 FES.
- Feedback from CG and CFF members in our recent webinar strongly supported reflecting net zero in scenarios.

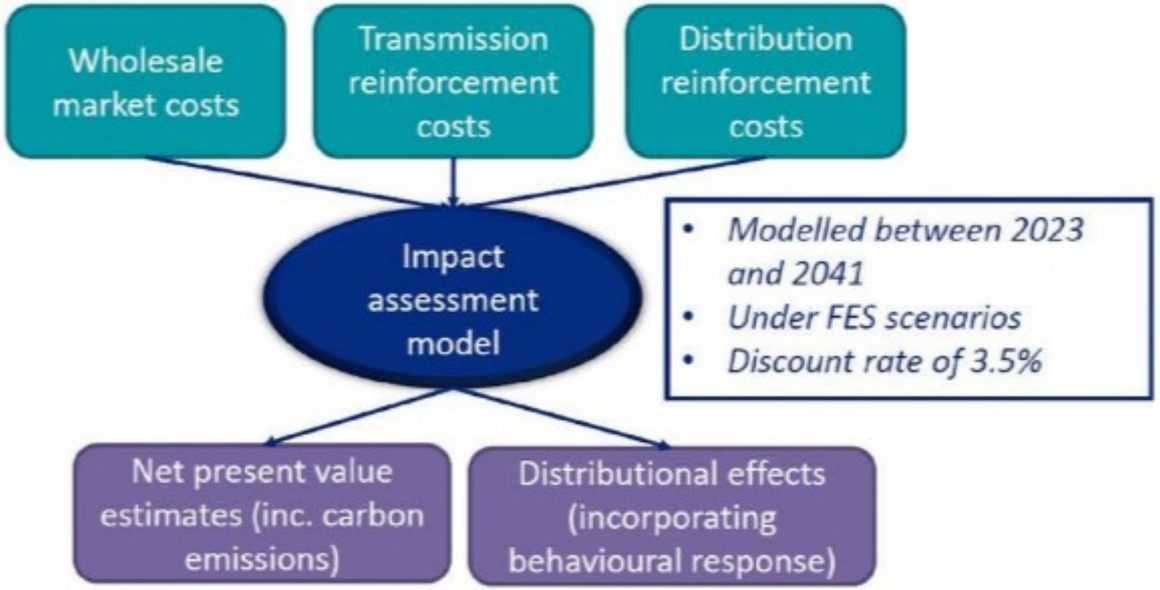
Charging Futures

Impact assessment

Implementation cost input: We are also seeking input on the costs of implementing our reform options through a request for information.

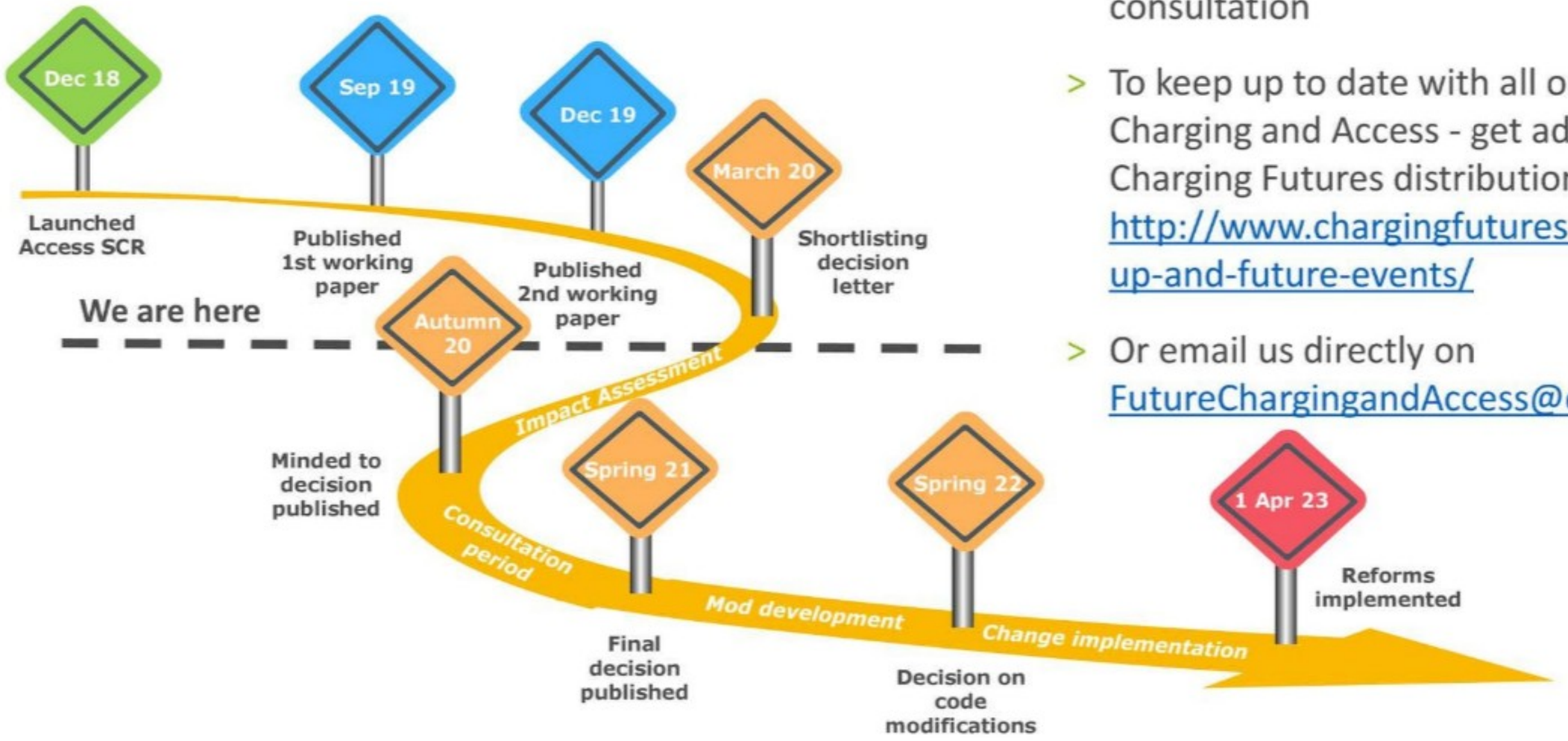
We intend to consult on our draft Impact Assessment together with our minded-to decision in autumn of this year.

CEPA-TNEI – overview of Impact Assessment model



Timeline and how to engage

Mentimeter



- We will continue to work with our Delivery Group and Challenge Group and will engage with Charging Futures Forum ahead of consultation
- 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/
- Or email us directly on FutureChargingandAccess@ofgem.gov.uk

Charging Futures

Mentimeter

Distribution Use of System Charges

Beth Hanna, Ofgem

DUoS locational signals

Mentimeter

What are cost models? **The cost model is the underlying methodology that determines which costs should be signalled through charges and how they should be assigned to different categories of customers.**

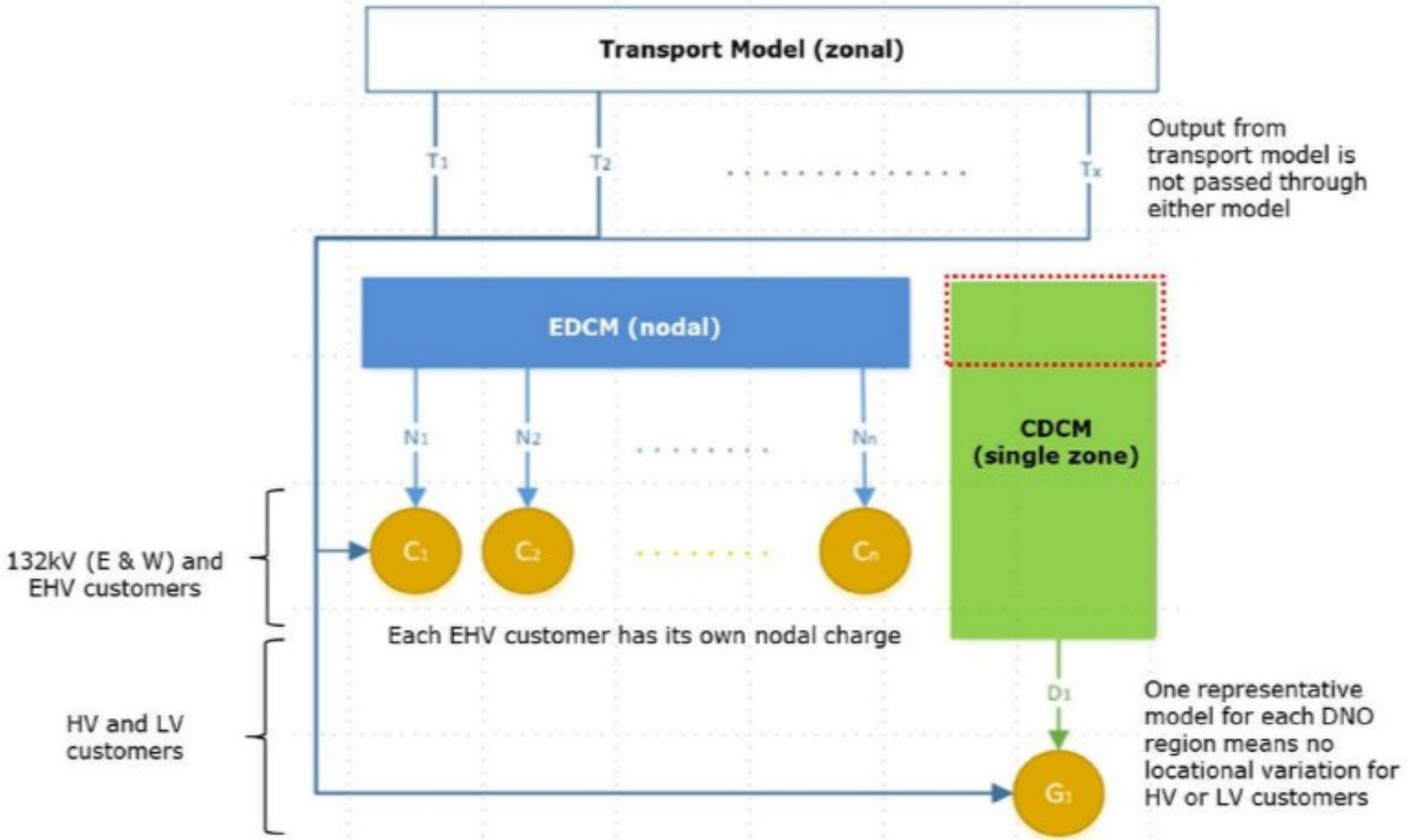
- There are a number of **choices** that will determine the forward looking charges faced by users, including:
  - The methodology used to calculate costs
  - Size of charging zones
  - The use of temporal signals (including seasonality)
  - Use of charges and credits
  - For HV and LV connected users (CDCM): ultra long-run model applied across a whole DNO region

Charging Futures

DUoS locational signals

Mentimeter

- There are currently **different models** applied to use of system charges in GB:
  - For transmission related costs (Transport Model): ultra long-run model supported by load flow modelling
  - For EHV connected users (EDCM): incremental model supported by detailed load flow modelling



- **Transport model** applies to costs associated with use of the transmission network
- **EDCM** applies to users connected at EHV (22kV up to 132kV in England and Wales), or customers connected to a substation where the infeed is at 22kV or above.
- **CDCM** applies to users connected below 22kV.

Charging Futures

Issues with the current arrangements

Mentimeter

Charges for EHV customers may be too volatile and unpredictable to provide a meaningful signal	This means…	That an approach that seeks to signal the timing and location of spare capacity on the network may not, in practice, result in signals that customers can response to
		Users only face a fraction of overall network costs through forward looking charges, which may limit the effectiveness of the charge to change behaviour
Users at HV and LV do not receive locational signals about how their impact on the network could differ across locations in a DNO region	This means…	That the charging signal for behavioural change does not indicate the impact of users' behaviour at different locations
		Customers who are able to locate in less constrained parts of the network do not see the benefit of where they locate
There are hard commercial boundaries between the methodologies	This means…	This creates a non-cost reflective 'cliff edge' in charges at the boundaries because the charge for each portion of the network is derived in isolation
		Customers can be incentivised to make inefficient decisions about where to locate

Mentimeter

Overview of our current thinking

EHV connected customers

- Retain **nodal** EDCM
- Move to **zonal** EDCM
- Move to zonal **ULR model**

EHV costs for HV and LV customers

Layered onto HV and LV costs

- Move to **zonal** incremental model
- Move to **zonal** ULR model

All-the-way tariff

- Retain **single zone** ULR model*

HV and LV costs

Level of locational granularity under unrefined ULR model

- Move to basing on **dominant flows**
- Move to basing on **asset mix**
- Retain **generic model across DNO region**

Charge design options

Charge design

- Capacity charges only
- Hybrid of capacity and volumetric

Time bands

- Move to **seasonal** time bands for all users*
- Move to time bands that **vary within a DNO region**

Refinements for zonal ULR model for EHV costs

- Apply a zonal ULR model **with a spare capacity discount** to indicate where there is capacity EHV network
- Apply a zonal ULR model **without spare capacity indicator**, similar to the Transport Model
- Apply **charges and credits**, based on dominant flows at primary substation
- Retain **credits only** for generation export, regardless of dominant flows
- Primary substation
- Bulk supply point
- Grid supply point

*Small users will be considered in our impact assessment, including the extent that increasing granularity should be applied to them

Charging Futures

How granular should charges be?

Mentimeter

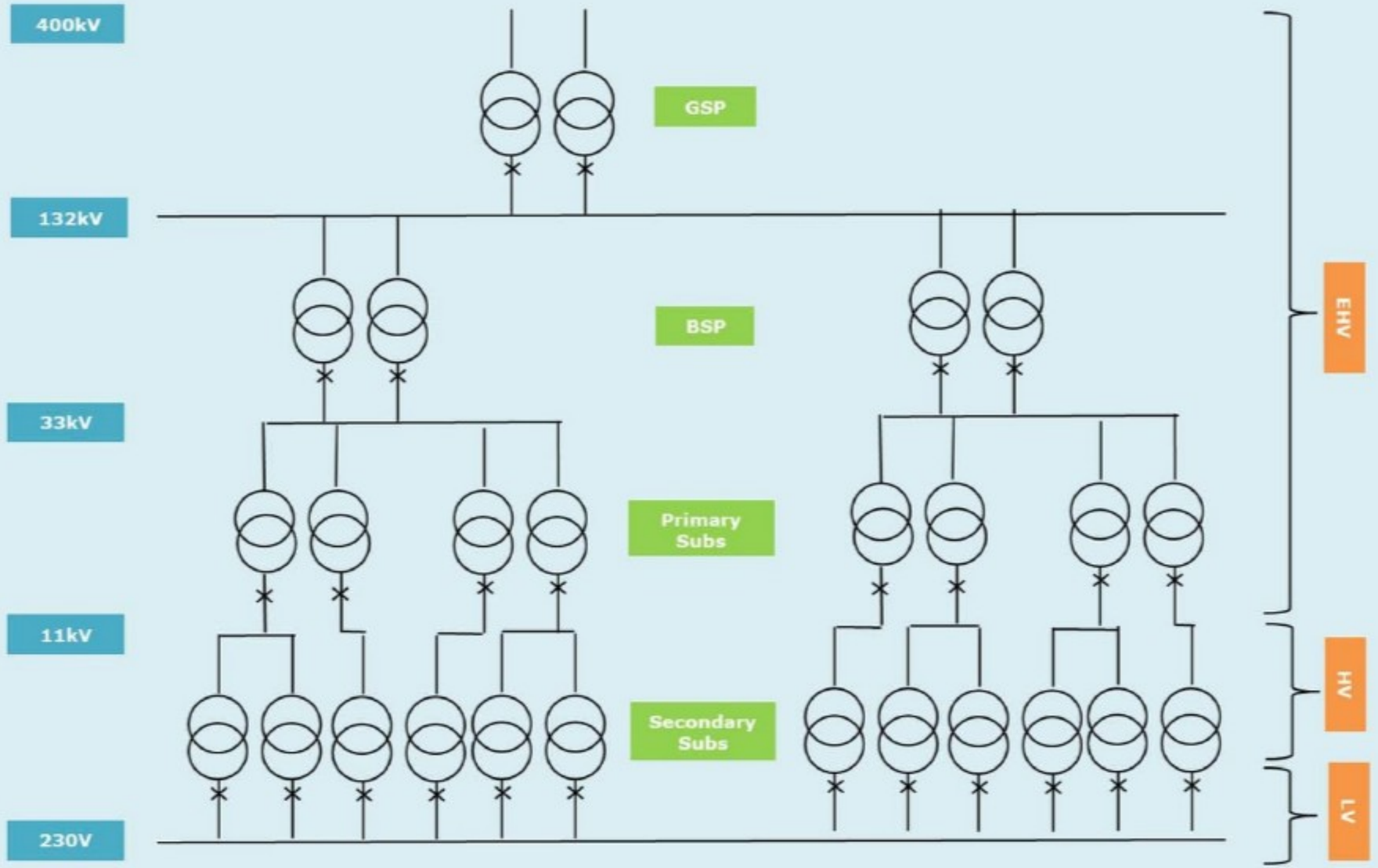
- The level of monitoring currently available on the DNO networks means that it is only possible to apply granular network charges down to the primary substation level. The EHV related charges could be layered onto HV and LV related charges for customers connected at these voltages, which would give them a locational signal.

- We are assessing the benefits of applying charging zones at the primary substation or bulk supply point (BSP) level (note that in Scotland grid supply points (GSPs) would most likely be used as a proxy for BSPs)

Charging Futures

How granular should charges be?

Mentimeter



Grid supply point (GSP)

- Main point of supply between the transmission and distribution networks
- There are approximately 145 GSPs across GB

Bulk supply point (BSP)

- Any point where electricity is delivered from the transmission to distribution networks
- There are approximately 800 BSPs across GB

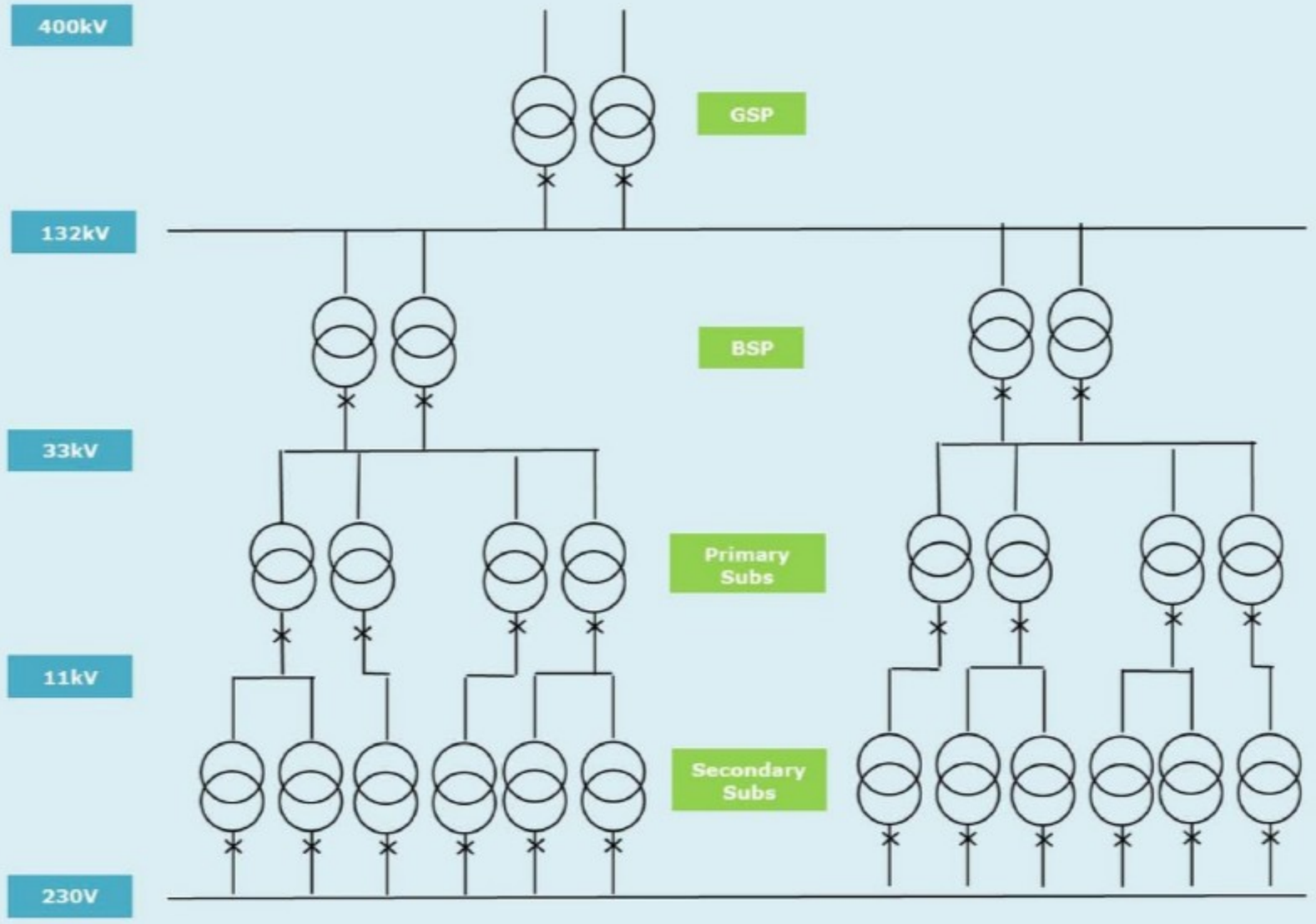
Primary substation

- Transformation level between EHV and LV networks
- There are approximately 6,000 primaries across GB

Charging Futures

How granular should charges be?

Mentimeter



EHV related costs

- Approximately 50% of forward looking costs relate to the EHV network
- This makes up a significant amount of the costs faced by HV and LV connected customers

HV related costs

- Approximately 30% of forward costs relate to the HV network
- These costs would be recovered from HV and LV connected customers

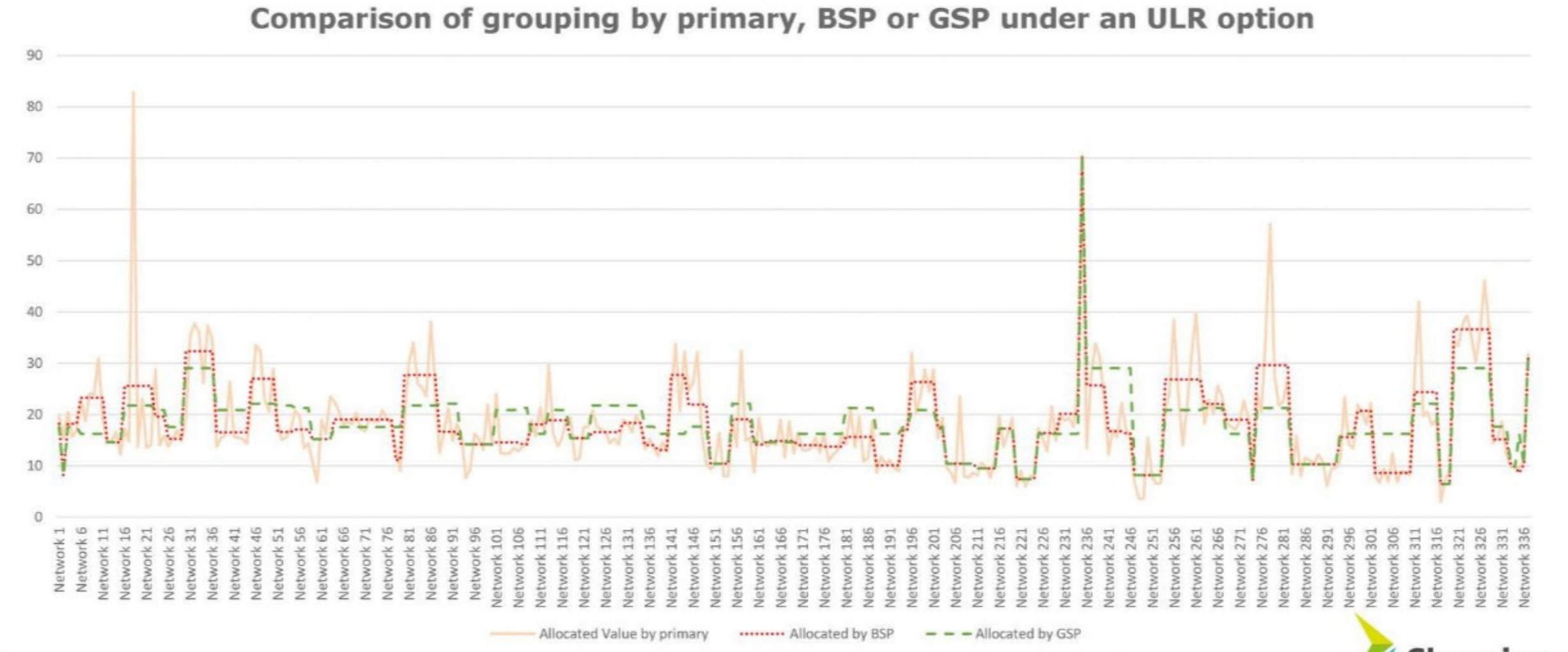
LV related costs

- Approximately 20% of forward looking costs relate to this voltage level

Charging Futures

Comparison of different size charging zones

Mentimeter

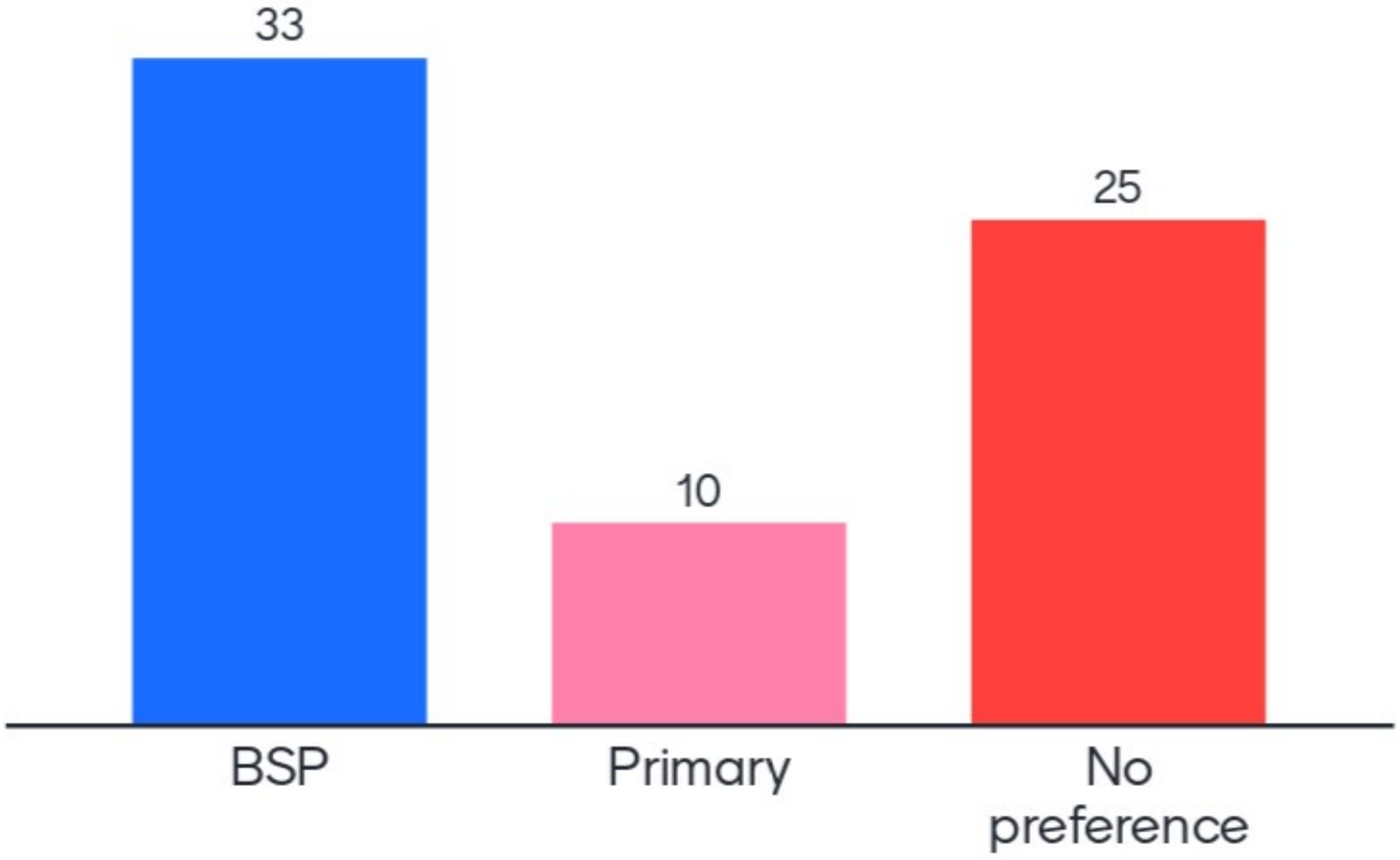


Charging

Do you have a preference between BSP or primary substation level granularity in charges and , if so, why?

Do you have a preference between BSP or primary substation level granularity in charges?

Mentimeter



68

If you indicated a preference, please explain why

Mentimeter

Primary substation is too granular

Not sure what the implications are at this stage.

Fine with either

Donøt know. Too complex to understand impact

Becasue based on primary will be fairer!

I need time to think

Primary will just be too hard for users to understand. Will reduce ability to make effective decisions

The more granular the better

Better granularity must be better!

If you indicated a preference, please explain why

Mentimeter

Because I don't understand enough about it to give a preference

More granular areas will provide greater price signals for flexibility

Too much volatility across small geographical regions. Difficult to explain to customers.

More stable charges.

No preference as it's not clear yet whether it would be materially different

For multi-site customers, having the bandings set at a primary level would be prohibitively complex to administer

Primary seems too complex to be manageable

Less Charging Points for BSP

Feels like higher granularity results in better cost-reflectivity

If you indicated a preference, please explain why

Mentimeter

Difficult to determine a preference without evidence of the potential charges, their stability and the practicality of deriving them

Lower administration requirements at BSP level due to sheer number of primary subs.

Customers do not have this information readily available to allow pricing and billing of contracts. Will require major Supplier system changes.

difficult to decide without indication of impact

More granularity gives a better reflection of true costs/impacts of user

More Granularity

Not sure exactly how it would impact our customers

Preference for BSP as this is likely to add less complexity than primary substation level

Risk of extremes and inability to choose where we locate our sites

If you indicated a preference, please explain why

Mentimeter

More granular signals are VITAL to avoid street cable issues with EV and HP demand growth

BSP strikes a balance between complexity and cost reflectivity.

Most suppliers will group areas together for tariff purposes anyway

To reduce volatility in pricing

Impact not clear. Would help if presenter can explain more.

Stable signals

More reflective of forward looking area wide planning, development and reinforcement

The price incentive should not be diluted by spreading across a BSP. This will reduce the value for those customers that can affect the peak.

voltage difference between Scotland and E&W seems to have been missed for relevancy of topic (GSP/BSP/primary)

If you indicated a preference, please explain why

Mentimeter

BSP seems less complex to manage

Pricing consumers on so many tariffs is a nightmare. Bsp therefore better than primary

Administrative complexity at primary level

Don't know enough yet

More granular is best

would want some examples to decide

Community led energy projects are bound by their geography as theyhave local connections and impact. There therefore can't move the location of proposed projects to reduce their costs

What are the tradeoffs?

BSP instinctively sounds less volatile

If you indicated a preference, please explain why

Mentimeter

Investment decisions also constrained by land rights, cust sites, etc. Won't only look at charging. Better to go one level up, as there is a limit to how much one can purely decide on charging.

6,000 tariffs! Huge volatility in very small areas, likely to lead to ignoring charges in decision-making, like current EDCM. GSP is preference, but BSP is at least better than Primary.

Will be more cost reflective and should reward more optimised local energy systems

need to understand the potential impacts

On the other had, GSP (BSP in scotland) level charges would have same granularity as Transmission Charges which would be nice.

Hybrid model will drive more optimisation and should reward smart local energy systems

Major systems changes

Hybrid

Shallower looks to be the fairest option

If you indicated a preference, please explain why

Mentimeter

YES!

Yes agree strongly!

Could time profiled access create new peaks over night that could be hard to manage?

We are seeking a migration to overnight charging for EV's etc - this is small now but will grow. What will happen if the peak period 4-7pm no longer exists?

It should be possible to model agreed supply capacity for large users and then assess the impact

It would be interesting to see the materiality of the impact of SDG

Structure of DUoS charges

- **As set out in our shortlisting open letter:**
  - For small users, we are not taking forward defined access rights, so they will continue to receive a combination of ToU volumetric and fixed charges
  - For larger users, we are considering capacity charges only or a hybrid of capacity and ToU volumetric charges
- **Based on input from the network planners, a hybrid option is generally consistent with how the networks are planned:**
  - **At the voltage of connection:** the DNOs ensure they are able to meet a customer's agreed capacity needs, even if they are not currently using it
  - **At higher voltages:** diversified demand mean that the network does not need to be sized to accommodate each customer's agreed capacity and their contribution to peak load is the key driver. However the extent of this varies by voltage level

Structure of DUoS charges

Mentimeter

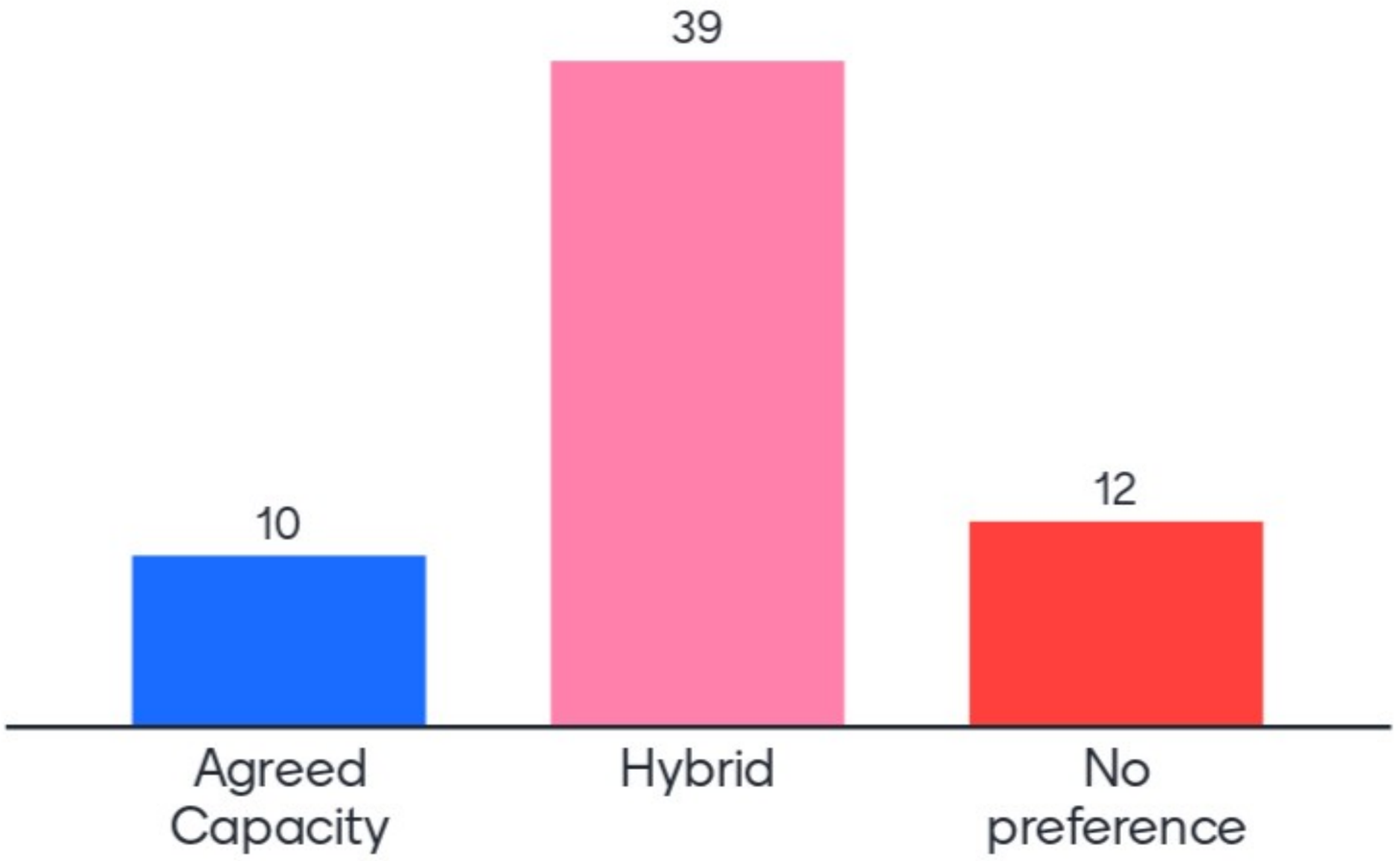
- Based on the previous slide, our initial view is that a **hybrid option** for customers with an agreed capacity is reflective of how costs are incurred. However, for EHV connected customers, we are still considering an **agreed capacity only option**
- Under a hybrid option there are several refinements we could make to the time bands to help ensure the volumetric signal does not over-incentivise customers to change their behaviour outside of periods of peak load:
  - Introducing seasonality to charges for HV and LV connected customers
  - Enabling time bands to vary within a DNO region to reflect any significant variations in local network peaks

Do you have a preference between Agreed Capacity Only or Hybrid charges and , if so, why?

Charging Futures

Do you have a preference between agreed capacity only charges and hybrid charges?

Mentimeter



61

If you indicated a preference, please explain why

Mentimeter

Fairer

Need more information to form a view.

No incentive to energy efficiency with capacity only

Hybrid charges allow some usage signals to be sent

Seems like there is a risk of users requesting a lower than necessary agreed capacity to receive lower charges.

Network costs are independent of volume - so cost reflective charges should not include volumes

Agreed capacity only will provide very strong signal for onsite flexibility

Clearly articulates what access is required

Similar to the existing structure

If you indicated a preference, please explain why

Mentimeter

Volumetric element Allows short term behavioural changes so allows more efficient response from users

Hybrid - potential to change capacity, potentially saving costs, how often / complex could this be?

Given agreed capacity can also be temporal then difficult to differentiate

Difficult for intermittent generators to forecast on a half hourly basis

can't form view without info/ undetsanding of what options mean

Enhanced cost reflevtivity for flow based and capacity based costs/charges should be achieved

Connected capacity is the basis for network investment therefore network charges

the hybrid gives an opportunity to respond to higher charges

Hybrid charges may allow better reflection of the different impacts of low-using network users eg. renewables, peakers

If you indicated a preference, please explain why

Mentimeter

the usefulness of the signal will be linked to the type of asset that is using the system.

Hybrid better supports innovation in business models and technology development

Less system change required - seems fairer based on usage

Value of network usage is related to both capacity and volume of usage

hybrid better reflects a user's use of network

The hybrid option is consistent with trying to incentivise flexibility behaviour in the new energy landscape. The capacity approach isn't

Need to charge for capacity wherever possible, but utilisation element may be more cost-reflective too as network costs don't only vary with capacity

Gives customers more scope to take actions to help the network and lower their bills.

Hybrid facilitates innovation of energy management

If you indicated a preference, please explain why

Mentimeter

Improves Energy Management and efficiency and is also fairer for consumers

I'd need to know more to have a firm view

Hybrid can be adapted to changing consumptions patterns if necessary

Hybrid charged preferred for Intermittent embedded generators as a lot of variability to network usage (and revenues)

If only capacity based, reduced incentive to install on site solar/storage/energy efficiency. If only volume based, miss out on efficiency signals.

When EV's are more prevalent time of use might be less reflective of network congestion so a capacity based charge is future prof

clearer signal

Access and forward-looking should send signals not only for grid costs but also for the amount of electricity that they consume . We should be encouraging large users to adopt more energy efficient processes

Hybrid better signals, some users will need reserve capacity for peaks,but not always use

If you indicated a preference, please explain why

Mentimeter

Even with variable capacity, full capacity would not allow for load shifting

hybrid - but it depends on the allocation of costs between the options int he hybrid charges

In its simplest form, agreed capacity might disadvantage renewables

Including usage allows pricing signals to reflect how & when there is usage, not just peaks.

If shallow - what is the impact on existing generators that paid shallowish charges?

Agree with Ofgem on this one

Do not agree

Are you intending to have more demand as well as generation zones

SDG charging must be set by connection voltage EHV,HV or LV etc

Mentimeter

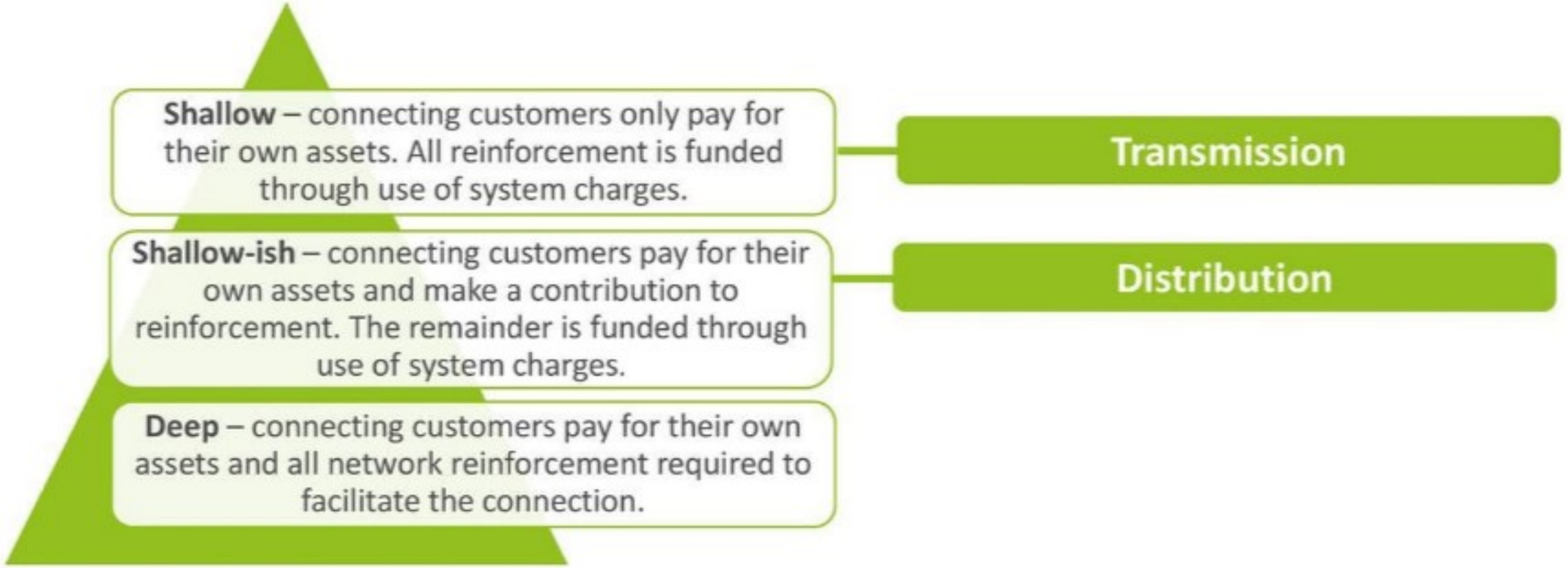
Distribution Connection Boundary

Jon Parker, Ofgem

Distribution connection boundary

Mentimeter

What is the connection charging boundary? The connection boundary is the extent to which customers pay for their connection including any reinforcement that is required. Customers connecting at distribution currently face a “shallow-ish” boundary.



Amending the distribution connection charging may help remove barriers to new connections at distribution level, remove distortions between transmission and distribution-connecting projects, and support efficient network development.

Mentimeter

Options for making the connection boundary more shallow

We are considering whether to make changes to the existing arrangements to make the connection boundary "shallower", but not fully shallow; or move to a fully shallow connection boundary. We have not ruled out either of these high level options yet and propose to look at both as part of our impact assessment.

Amend the existing arrangements ("shallower")	Move to a shallow connection boundary
• Customers still face a charge for any reinforcement costs on connection, but less than they do today • The reduced contribution from the connection customer would be recovered through network charges • This can be achieved in several ways – see next slide	• No charge for any reinforcement costs on connection. Connection charge only recovers the cost of extension assets • All reinforcement is funded through network charges

An important part of our assessment is how well any changes to connection charging would work with our other reforms, in particular the ability to send improved locational signals through DUoS.

Charging Futures

Defining a shallower connection boundary

Mentimeter

There are several ways we could achieve a shallower connection boundary than we have today. Our proposed approach is based on considering how much greater locational granularity through DUoS could reduce the need for the reinforcement costs to be signalled through connection charges. We currently think this option should be defined as follows:

Amend the "voltage rule" for HV and EHV

- Connection customers currently contribute to reinforcement at the same voltage level of connection plus one above
- HV and EHV connection customers would only pay towards reinforcement at the same voltage level as connection
- We're considering whether we should extend this to LV connections

Amend the security level Cost Apportionment Factor (CAF) for demand and EHV DG

- The CAF apportions reinforcement costs between connection and DUoS customers
- The contribution to thermal reinforcement from demand and EHV DG-led reinforcement would be reduced
- DG contributions to LV and HV thermal reinforcement, and all fault level contributions, would be unchanged

Recover the cost of transmission reinforcement through DUoS

- Transmission Attributable works triggered by a distribution connection are currently targeted at the individual
- Under this option these costs would be recovered through DUoS charges instead

Keep the High Cost Cap

- DG currently pay for all reinforcement above £200/kW – we could remove this and apportion it in the same way as other reinforcement costs
- But this rule currently protects wider customers from these costs
- Our current view is to keep this rule in place but look at whether other changes are appropriate

Deferred payment and Liabilities & securities

We have assessed the case for DNOs to offer deferred payment of connection charges. We are not minded to consider deferred payment any further at this stage. We think there could be a number of negative consequences of introducing it – and these may outweigh any benefits. We are continuing to consider the case for introducing liabilities and securities.

Deferred payments	Liabilities and securities
• Cash flow benefit for the connecting customer • May not be appropriate for DNO to bear risk of providing finance if a customer cannot secure finance elsewhere • Could distort competition in connections if applied to contestable work (if IDNOs/ICPs less able to offer terms)	• Could incentivise users to engage with DNOs early to avoid inefficient investment • Need to consider how this will be administered • Requirement to provide security may be as much of a barrier as an upfront charge

Charging Futures

What are your views on the options for connection charging that we are taking forward?

Mentimeter

Shallow will support decarbonisation better

Shallow for consistency with Transmission

Shallow. Helps implement net zero -although it means costs are socialised

shallow connections - this is consistent across the networks.

Support shallower connection charges to support investment in decarbonisation

The hybrid option would be best

Go shallow and allow charges to reflect constraints on capacity

Maintaining the status quo unless a good benefits case can be provided for shifting the boundary.

Cost-reflective charging is the best starting point

What are your views on the options for connection charging that we are taking forward?

Mentimeter

I like the shallower approach as you have outlined it. I don't agree with deferred payment either

Shallow- be consistent with transmission

Not clear on argument for either. Why does shallow or shallower improve efficient use of the network?

need to know how offsetting the charge interfaces with UoS

Shallow

shallower - not complete shallow - is better

Should match transmission at EHV at least. Potential for different arrangements at different voltages?

Changing connection charging boundary may have a detrimental impact on market opportunities for ICPs and IDNOs

shallow is better - in line with TNUoS connection. Connection charges a barrier to decarbonising our electricity system

What are your views on the options for connection charging that we are taking forward?

Mentimeter

As shallow as possible. But what do you do about customers who have paid Deeper - do you refund?

Shallower supports investment in decarbonisation efficeintly

We should look to align T and D connection charging arrangements - Shallow is best

shallow as it will be consistent across the network

Shallower. Need to get investment in the network where there are renewable resources.

Current situation is well understood

no deferred payment

Not clear on the benefits of shallower - as this reduces a locational signal to an individual user whilst does not enable wider strategic investment by network operator

Not clear what you are actually proposing still - looking at thus and that, but what does it mean in combination with the other changes?

What are your views on the options for connection charging that we are taking forward?

Mentimeter

Shallow

agree

Prefer shallow. Want to see reinforcement decisions at whole system level. Better transparency that DNOs are choosing flex ahead of reinforcement. Also easier to consider investment ahead of need if decoupled.

Connecting parties should be required to bear some of the burden - they are bringing forward costs that would not otherwise occur. Why should all users bear the full cost?

Yes, distributors should not be used as lender of first or last resort

Deferred Payments should be an option. But do need to address independent connection / engineering ability to offer similar payment model/security.

Agree! Should not risk all the customers

No. Not consistent with transmission connection approach. Can be a show-stopper for small projects

non firm access will be helpful for new installations

What are your views on the options for connection charging that we are taking forward?

Mentimeter

Don't agree with SDG paying TNUoS

Do you agree with our view not to consider deferred payments any further at this time? Please explain why.

Mentimeter

Yes.

Yes, agree

Agree

YES. DNOs are not banks.

Agree

Agree with you COMPLETELY!

Agree

It should be the same as transmission

Yes. Banks can be bankers... why would network companies do this?

Do you agree with our view not to consider deferred payments any further at this time? Please explain why.

Mentimeter

Yes, need to reduce credit risk to all other DUoS payers

Yes, high risk of bad debt being ultimately borne by customers.

Yes as DNOs are not well placed to deal with bad debt.

Agree completely

agree

Yes, it seems unnecessary to consider

Yes, agree.

Yes. Will distort competition in connections.

I agree that the reasons not to do it are strong, in particular the transfer of business failure risk

Do you agree with our view not to consider deferred payments any further at this time? Please explain why.

Mentimeter

IDNOs and ICPs currently offer deferred payments.

Deferred payments should not be considered,i it's too much of a risk

Agreed as the supplier licence review

In competition context yes. But DNO can borrow cheaper than developer so efficiency question overall

n/a

Agree. Network owners/operators should not be financing commercial organisations connection. If they cannot access finance through normal routes, how viable are they.

Mentimeter

Access rights

Stephen Perry, Ofgem

Access rights

Mentimeter

What are access rights? 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.

Current arrangements	Potential future arrangements
• Traditionally users have little choice • DNOs have begun offering "flexible connections" which have no defined cap on the extent to which they can be interrupted. Flexible connections have allowed users to connect cheaper or quicker connection	• A choice of well-defined access right choices • This could help support more efficient use and development of network capacity. • Whilst still ensuring that users get the level of access that meets their needs

Types of access rights:

Non-firm: Choices about the extent to which users' access to the network could be restricted

Time profiled: This would provide choices other than continuous, year round access (eg off-peak access)

Shared: Users across multiple sites in the same local area, to obtain access up to a jointly agreed levels

The focus of these slides is distribution, but these options could also apply at transmission

Charging Futures

How to value access rights

How we value access rights has a big impact on the design of the access rights. There are two options for signalling the financial value of access rights:

- A reduction in the upfront connection charge
- A reduction in the ongoing use of system charges.

Our decision on how to value access could impact the availability and standardisation of alternative access choices (see boxes below).

Our decision on how to value access rights is influenced by our decision on connection boundary and DUoS charges. Under either options, access rights may also allow for a quicker connection.

A reduction in the upfront connection charge

- Only likely to be taken up where alternative access rights result in cheaper (or quicker) connection.
- Bespoke connection charge, allows for bespoke access right design.

A reduction in the ongoing Use of system charges

- Only available where alternative access rights deliver identified network benefits.
- Limited ability to reflect tailored access rights in UoS charges. UoS charges based on standardised options.

Non-firm access rights

Mentimeter

Current thinking about design of non-firm access options:

- **Non-firm access should be defined in relation to user's experience of access.** This provides users with more certainty about experience of curtailment, but requires network operators to translate physical assets into consumer experience.
- **Specifically the % of time that users are willing to be curtailed.** This is a good reflection of users' experience and allows users to conduct their own forecasts to understand impact on future export/imports.
- **Users would be able to identify their % of total access rights that is non-firm.**
- **Users would be protected from the risk of DNOs exceeding the level of curtailment agreed.**
- Some levels of curtailment may take longer to provide. To accept earlier connection to the network, a user may accept a lower level of access until wider reinforcement has taken place.
- If access rights are signalled via UoS charges, then UoS charges could be based on standardised options.

1	% of the time
2	2.5% of the time
3	5% of the time
4	10% of the time
5	20% of the time
6	Unlimited

Charging Futures

Time-profiled access rights

Mentimeter

- **Time profiled access rights may help to develop a more efficient electricity system if users profile their access rights to move away from the network peak.**
- **Users would be able to identify their % of total access rights that is time-profiled.**
- **Users could request to either have no access or non-firm access during the "peak periods".**
- If valued through a connection charge, then users and network operators would be able to agree the precise time-profiling that users are willing to be flexible for.
- If valued through use of system charges, then users would need to agree standardised access options. The periods would be would be aligned with R/A/G time-of-use periods and could be updated annually. The periods could be different between different locations.

	When?
24/7 Access	All day
Off-peak	All times apart from 16:00 – 19:00 on weekdays
Super-off-peak	All times apart from 07:00 – 23:00 on weekdays

Charging Futures

Shared access

Mentimeter

We have developed our thinking of how shared access rights could work:

- **Eligibility:**
  - **Sharing must deliver identified network benefits** (eg reduce cumulative access requirements, approved by network operator, reduce/avoid network constraint).
  - **Sharing group participants must sign up to Sharing Group participation agreement.**
- **Sharing Group Participation Agreement**
  - **Practical elements** (eg participants, start date, cumulative access rights)
  - **Identify 'Sharing Group Manager'** (eg responsible for cumulative compliance, trade/request additional access on behalf of the group). Could increase risk for individual users.
  - **Agree terms and conditions** (eg individual users would still be responsible for ensuring technical compliance of each site, if users want to leave sharing group it is treated as a request to modify access rights).
- **We have concerns about:**
  - The practicality of this option (eg DUoS billing if users have different suppliers). We consider that it may be helpful to trial arrangements.
  - The level of take-up of shared access rights (for many users this option may be too risky).

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

I think shared access is very niche and maybe only interesting for aggregators

How to define the level of reduced access? I think this needs to be clear

Seasonal access rights

Access timings challenging annually would worry me as a business. Would need guarantees for long term investment

Yes

yes

There has to be a sufficient benefit either through the connection or UoS costs

We are interested in Shared Access. We are councils have generation and demand at different sites which are suitable for this

They all seem to make billing more complicated?

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

Reduction in use of system charges could encourage flexibility from existing users. Reduction in upfront charges only incentivises new connections

Interest in shared access rights as have many sites located near each other that don't use at same times so could make a saving if sharing

Time profiled and non firm look good, but severe reservations about shared access - too much risk

Yes. The financial incentive will make a big difference to encourage off-peak operation.

shared access has potential but could be complex

Depends how it links to business case

Shared won't work

It is the riht approach to test interest on these - a risk that a lot of development goes into options that are under-used

How would upfront valuation work for existing connections?

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

Looks very complex

yes but more detail required to meaningfully assess.

Being designed out, not considered fairly

All options can be considered. The price signal will be the driver of interest.

flexible access rights: maximum % curtailment is not very informative - needs to be time and volume specific

Shared access very interesting for large, multi site customers

Shared options can help the uptake of large scale storage if adequate commercial arrangements are made

Shared access would be an interesting trial for community projects to reduce costs. Would need to assess how to reduce risks

How will you ensure DNOs offer the options fairly? (Presumably DNOs will prefer unlimited control rather than timed options, but timed options better for the network user)

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

Any investment case built around flexibility income would be considerably hampered by hard and fast access time buckets, as flex income streams value only become manifest in the short term, so I think you'll get little take up

All of them actually. Storage would want time profiled. Bus EV fleets could want shared. Non-firm would be attractive for storage.

non-financially firm access might be worth to consider further and how it aligns with the wider package of reform (e.g. connection boundary changes)

Users must retain a fall back access right when leaving a group.

We would not be interested, as we would need constant access.

How do the access rights align with market access?

Shared not mutually exclusive to the other options?

How will access over runs be dealt with ie the group exceeds allocation?

Network users also need an idea of when access will be reduced, not just maximum % reduction

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

Shouldn't adopt a system which disproportionately punishes those who can't shift load like utilities

Non-firm is promising as it has the option of firm/financially firm access

The role of storage seems to be neglected in most of the discussions made so far. There is a need to analyse the use of storage for network deferral and how network charges can create an investment signal, not only for colocation.

Will this conflict with the TCR decision to base residual charges upon the Average MIC over the previous 2 years ?

Options should be aligned across Transmission and Distribution boundary

Should be considered alongside market access (BM access)

Not enough user response here - networks and suppliers do not like shared access and are conspiring to put it in too difficult box

All options attractive, but need to be able to reasonably estimate the cost in order to make investment decisions.

How on earth do you calculate overrun charges and apply them to squabbling shared users who over-ran

Could your organisation be interested in any of these access right options? Are there changes that would make them more or less attractive?

Mentimeter

No

Will storage pay demand tnuos? what about distribution connected generation?

Feels like focused review of transport model should be included within focused review of tnuos

Encourage the 'improved Triad' model for large users and accept the need for a winter/summer TNUoS tariff differential.

Mentimeter

Break

Mentimeter

Focused TNUoS reforms

Harriet Harmon, Ofgem

Recap – focused TNUoS Reform

Mentimeter

We are undertaking a focused review of TNUoS

- Our review of TNUoS is concentrating on:
  - The structure of demand charges;
  - The approach to the demand-weighted distributed reference node; and
  - The extent to which Small Distributed Generation should face the same/similar TNUoS signals as Transmission-Connected Generation

The Transport Model, used to calculate the nodal £/kW TNUoS price signal is not in scope of this SCR, except for the extent to which changes would be needed to reflect any SDG or Reference Node approach reforms

This session will update you on the work undertaken since the last CFF, and on the tariffs we have asked the ESO to model for the purposes of our Impact Assessment

Charging Futures

Demand TNUoS

In our March 2020 shortlisting letter, we confirmed that we would look at the following charging options for demand TNUoS:

- Time of Use charging – where the TNUoS prices, and the times at which they will apply are known in advance;
- Agreed Capacity charging* – where TNUoS is levied on the basis of the MIC agreed with the DNO;
- Improved triad* – where users face known TNUoS charges over variable periods

For the purposes of modelling tariffs, we have further refined these options through both qualitative assessment, and broader discussions with the ESO, and will receive zonal locational tariffs illustrating:

- Time of Use for all demand based on 4-7pm consumption, with a seasonal summer/winter split;
- Time of Use for small users based on 4-7pm consumption, with a triad approach for large users, both with a seasonal split

Agreed Capacity charging has not been modelled as in practice to levy charges on such a basis would require changes to the Transport Model – this is out of scope of this SCR

* Large users only

Charging Futures

Demand TNUoS

Mentimeter

For the purposes of modelling, we have decided to assess a <u>4-7pm only ToU structure</u>

Maintenance of equal and opposite signals:

- TNUoS charges are calculated using a capacity-based model – the output, before the ESO constructs tariffs is a £/kW charge for a generator or demand consumer connecting at a particular point;
- Generation charges are levied based on Transmission Entry Capacity*;
- To maintain an 'equal and opposite signal' for demand and generation at the same point, a proxy for Transmission Demand Capacity is needed;
- For the majority of consumers, the 4-7pm period is that at which they will use the most power, serving as a reasonable proxy for transmission capacity, to ensure consistency of signals

The transport model does not consider different demand profiles:

- There are two scenarios in the model used to create the initial £/kW charge, but charges are derived based on the assets used by different technology types to meet the same level and location of demand;
- Changing the demand levels and locations in the Transport Model are not in scope of the SCR;
- Without a network-related basis to differentiate charges (i.e., "at peak, demand will use this asset which costs £x, but during baseload it only uses this asset which costs £y"), the apportionment of a £/kW TNUoS charge against RAG-style timebands would be somewhat arbitrary;

Charging Futures

*Except in zones where the tariff is negative

Seasonality

Mentimeter

We have asked ESO to consider a Summer/Winter split in TNUoS for demand

Although the transport model does not look at when demand is taken, there is a case to say that a winter-only approach to triad no longer reflects system peaks:

- We have previously seen system peaks outside of the triad window (Nov-Feb) – only NHH demand paid against these times;
- The difference between winter and summer demand is flattening, but the current triad mechanism only considers winter;
- It is possible that a site's summer peak is higher than its winter – this means that they are not paying TNUoS against their capacity, so the equal/opposite TNUoS signal is diluted

Charging Futures

Do you have any comments on our approach to modelling Demand TNUoS?

Mentimeter

How do you approach the peak and year round background for demand tariffs?

no

Agree with the current method

Bias introduced between TEC and TDC

Don't agree capacity is the right way as max capacity isn't reflective of consumed capacity on all sites, and there for emergencies only

Do we have any early indications as to how this affects the g:d split?

You will need to define the months that count as summer triads and if this will change yearly

Is there any data to back up the development of the proxy demand values?

Seems dangerous to get rid of the triad. Maybe introduce a "Summer" triad as well?

Do you have any comments on our approach to modelling Demand TNUoS?

Mentimeter

triad approach should not be retained. 4pm to 7pm consumption sounds fine as new basis

How often have system peaks occurred outside Triad period and are expected to occur in the future?

I question why triad is wrong for residual charges but OK for forward looking charges

Capacity can be set at a "once in 5 year event" and not indicative of overall usage

Support reforming triads.

Surely the time based charging should be consistent with DUoS in their seasonality.

Hopefull Suppliers adopt a common method for this new complex charging.

My main observation concerns what this forum considers winter v summer. Let's have a Winter that reflects the EFA winter i.e. is Oct-March. I don't agree with Triad generally - it's a weird construct, and certainly NOT a summer Triad

Dont agree with maximum capacity as basis as capacity may only be used on small percentage of occasions. Summer and Winter would be a major issue to industry

Do you have any comments on our approach to modelling Demand TNUoS?

Mentimeter

Designed to shift balance from demand to generation

demand is represented in the transport model as a single figure - how does this relate to the proposals

Predictable triads have been effective at changing behaviour so far. Should continue to be predictable

What is the reason for using 4-7pm timeband? Is there a case to consider different timeband for summer triad for example?

The network is build to meet the capacity of users - therefore charges should reflect this capacity

Happy if agreed capacity removed as an option as does not give customer much scope to reduce bills. Too much like TCR

for large users at some locations forward looking charges are irrelevant

Does this not conflict with CMP 343 - to introduce demand residual bandings?

How strongly do you support changes to enable Agreed Capacity charges for Large Users?

Mentimeter

Support

If agreed capacity can't be modelled, how are we meant to understand it? Strongly disagree

Seems like focused review of TNUoS should include focused review of Transport Model to allow for this

We would strongly support changes to enable Agreed Capacity charges for Large Users. This would be very valuable to the ESO and incentivises site peak take management.

Don't support. Need modelling to understand impact and agreed capacity doesn't always reflect utilised capacity due to need for spare capacity for emergencies.

Capacity drives investment therefore charges

Need to establish clear cost reflective pronciile

Support - would incentivise onsite balancing

Agreed capacity too much like TCR

How strongly do you support changes to enable Agreed Capacity charges for Large Users?

Mentimeter

This would finish off certain industry

10

SDG Charging

Mentimeter

We have asked ESO to provide us with tariffs reflecting >1MW SDG paying the Wider element of TNUoS

We are planning, for the purposes of modelling, to assess treating >1MW SDG in the same way as TG:

- The SQSS no longer treats embedded generation as inverse demand – demand imports are no longer net of EG flows;
- In principle, 1MW of SDG could have the same effect on the Transmission network as 1MW of directly-connected TG – we are working with the ESO in this area;
- The threshold of 1MW is a well-established limit in both markets and networks – it is currently the threshold at which the DNO must notify the ESO of a connection (outside of Statement of Works), and it is also the minimum capacity at which a generator can gain access to the ESO's markets (BM/Ancillary Services);
- Separately, there is further work to do on how any liability would be established and the mechanics of how charges would be levied, if we did decide that SDG should pay either the TNUoS charge itself, or an equivalent

Charging Futures

Reference Node Approach

Mentimeter

We received a lot of feedback following our reference node webinar

Key points from stakeholders:

- More work is needed on the node owing to its complexity – there is a risk that smaller participants are unable to engage with this topic;
- The choice of node affects the absolute but not relative signals between users and therefore we should look at how much revenue should be collected from Generation vs. Demand;
- Changing to a Generation-Weighted approach may support competition with European generators and could, in some circumstances better reflect system conditions/the NOA;

Our current thinking:

- The reference node approach has not been a key focus of our activities;
- However, following your responses to our webinar/request for evidence, we asked ESO to provide tariffs for some scenarios;
- Whilst we do not currently plan to feed these into the main IA modelling, we do think there is some further work to do on the reference node approach in light of the feedback we have received, and so will conduct some standalone analysis as part of the SCR – details will be shared with industry as soon as is reasonably practicable

Charging Futures

Do you have any comments on our approach to modelling either SDG TNUoS or the demand-weighted distributed reference node?

Mentimeter

More work on reference node is needed

The change of reference node work should be a priority

Disagree with the SDG TNUoS - the rationale as set out seem weak and unjustified

SDG should not pay TNUoS

Seems sensible to review both

Think it is very important that we resolve these areas

change of the reference node should be part of the main IA

Very disappointing ref node issues will be put in the too difficult pile by the sound oc it

The reference node should be a priority

Do you have any comments on our approach to modelling either SDG TNUoS or the demand-weighted distributed reference node?

Mentimeter

Current SDG TNUoS is good

Agree with both

If eg pay generation TNUoS, will need to be included in 838/2010 calcs

Will you consider impact on deployment on full range of scale of generation, and the possible need for introduction of support for generators too small to qualify for CfD?

Agree need to review reference nodes and address complexity for small users

SDG totally lacking transparency, it's a major point of principle, not a technicality.

Pleased that more work is to be conducted in this area and haven't been disregarded

SDG-TNUoS - What about aggregators of SDGs equal or more than the 1mw threshold?

Ofgem need to catch up on RN - Industry have started the work that should hvae been more progressed by now

Do you have any comments on our approach to modelling either SDG TNUoS or the demand-weighted distributed reference node?

Mentimeter

SDG TNUoS should absolutely not be a priority in the current context

Ofgem cannot claim to be considering reform to enable fundamental change to deliver the net zero system but then ignore the reference node. the SCR principles need be revisited.

How do you scale SDG in the transport model

Ofgem recently published letter enabling a delay to ED2 by three months. If this is triggered, would it also mean a delay to implementation of charging reform?

Mentimeter

Option packages

Amy Freund, Ofgem

Key options for modelling

Mentimeter

Modelling of the proposed reform options will inform our principles-based decision

- As the basis for this modelling, we are developing **packages of coherent sets of reform options** across our policy areas which **could be implemented together** and will be **modelled jointly**
- In parallel, we are also exploring **potential sensitivities or other supporting analysis**, which may allow us to test **option variants** or isolate the impacts of **specific aspects of reforms**.
- We are considering **how well options work together** in practice and where we expect modelling to offer **particular insights** for our decision, in a **proportionate way**.

A reminder of key shortlisted options for modelling

DUoS cost models and locational granularity

Ultra long run cost model with / without spare capacity indicator

Granularity of EHV costs by primary / BSP group for EHV only / all customers

Upstream only charges, equal and opposite credits

Access rights

Improved choice of non-firm, time-profiled and potentially shared access rights.

***Principal variables for structuring modelling packages**

DUoS charge design

Hybrid of Static ToU & Agreed capacity

TNUoS

Static ToU

Seasonal triad (large users)

DG charges

Connection boundary

Shallow charges

Shallower charges

Shallowish charges

Small users

Basic charging options

Adaptations – to reduce seasonality / locational granularity

Charging Futures

Main variables for packages

Here we outline the **potential packaging** and areas for **additional analysis**, which we **continue to refine** as we finalise our approach. Our current view is packages would be structured around **options for the DUoS cost model** and **level of locational granularity.** Alongside this, each package will also include a fully specified set of **options across all policy areas**.

Proposed principal variables for structuring modelling packages:	DUoS cost models and locational granularity	Ultra long run cost model with / without spare capacity indicator	Granularity of EHV costs by primary / BSP group for EHV only / all customers

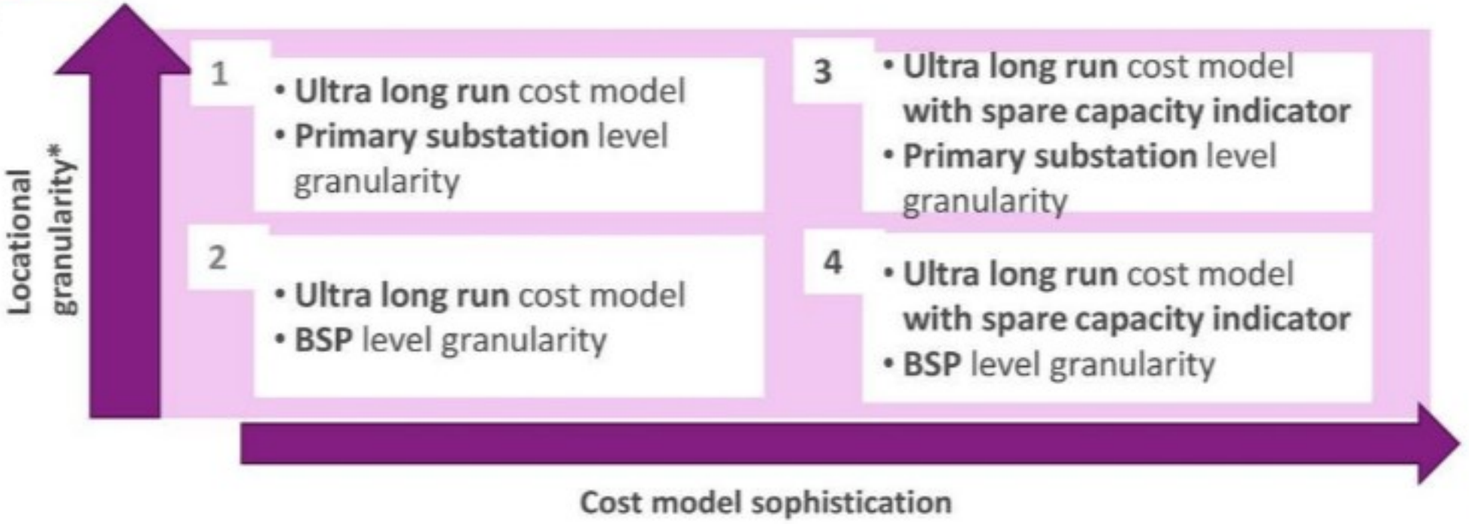
These would translate to **a matrix of packages** structured around these variables as follows:

Potential fully modelled packages

To be modelled alongside the baseline

**Nb*

- *This reflects our current thinking for locational granularity - we continue to develop our assessment.*
- *Should we reach a decision on a principles basis ahead of modelling, we would expect to focus this locational granularity axis on packages with and without layering of EHV charges for customers at lower voltage levels.*



Other policy aspects

Mentimeter

Each package will include a fully defined, coherent set of policy options for modelling across each policy area, with this choice decided on a **principles basis**, as set out below. We propose to assess a **limited number of alternatives** through sensitivities or additional analysis.

Policy workstream	Option expected to be included in main packages
Access rights	**Large users:** Access choices included in all modelled packages (non-firm, time-profiled) valued through discounts to DUoS, connection charges or a combination, depending on connection boundary choice. **Small users:** no enhanced access choices offered
DUoS charge design*	**Small demand users:** Static ToU **Large demand users:** Agreed capcity only at EHV, hybrid of static ToU and agreed capacity at HV and LV **DG:** charge design as for demand, with inverse of ToU charge *nb charges / credits based on dominant flows
TNUoS	**Small demand users:** Static ToU charge **Large demand users:** Revised (seasonal) triad **DG:** Generator charges apply
Connection boundary	**EHV:** Shallow connection boundary for EHV connected customers under packages 3 & 4 (with spare capacity indicator), shallower 1 & 2 (without). **HV / LV:** Shallower options for customers at HV / LV. **Small users:** existing 100A limit would continue to apply.
Small users	Main charging options modelled as applied above, together with an early principles based assessment of distributional impacts.

Charging Futures

Potential supporting analysis

Mentimeter

In general, we will be modelling a complete set of policy options jointly as part of a package. We may undertake sensitivities to assess specific impacts of a limited number of specific aspects. Our current expected view is set out below.

1) Sensitivities to isolate the **impacts** of **specific aspects of** reform, to help inform our assessment against **our principles.**	**Small users:** to isolate the NPV of small users reform as baseline for adaptations **Charging reforms for DG**: to isolate the impacts of options that increase DUoS and TNUoS charges for DG
2) Additional **policy option variants** against the main packages**,** where we are considering multiple options	**TNUoS charge design:** variant of ToU for all demand users. **Connection boundary:** variant on the main option set per package. **Small users** – Further small users adaptation to mitigate distributional impacts, if initial distributional analysis suggests needed – to remove **seasonality** and / or **locational** granularity
3) Potential additional sensitivities to build a picture of contribution of different aspects of reform to benefits – **lower priority**	**Connection boundary:** to isolate specific impact of connection boundary – noting this may be informed by the variant above **Access rights:** to isolate contribution to benefits of access rights **DUoS charge design** – potential alternative charge design variant

Charging Futures

Do you agree with our proposed basis for packaging? Why / why not?

Mentimeter

Why has Ofgem abandoned its focus on consumer when it comes to network charging and access?. The level playing field has been defined at the transmission level, not at point of consumption. Antiquated and biased against decentralised energy models.

1

What are your views on the other potential option variants we are considering and which are the priorities?

0

Mentimeter

Next steps

Next steps

Mentimeter

- Thank you for the discussion today. Your feedback will input into development and assessment of options
- Any further written comments should be sent to futurechargingandaccess@ofgem.gov.uk
- For more information on our approach to Impact Assessment – listen to our recent webinar.
- We will provide more information on our ‘Request for Information’ on implementation costs.
- We will continue to engage with the Charging Futures Forum, in advance of our Minded-to Decision in Autumn 2020.

Mentimeter

Q&A session

Ask me anything

Mentimeter

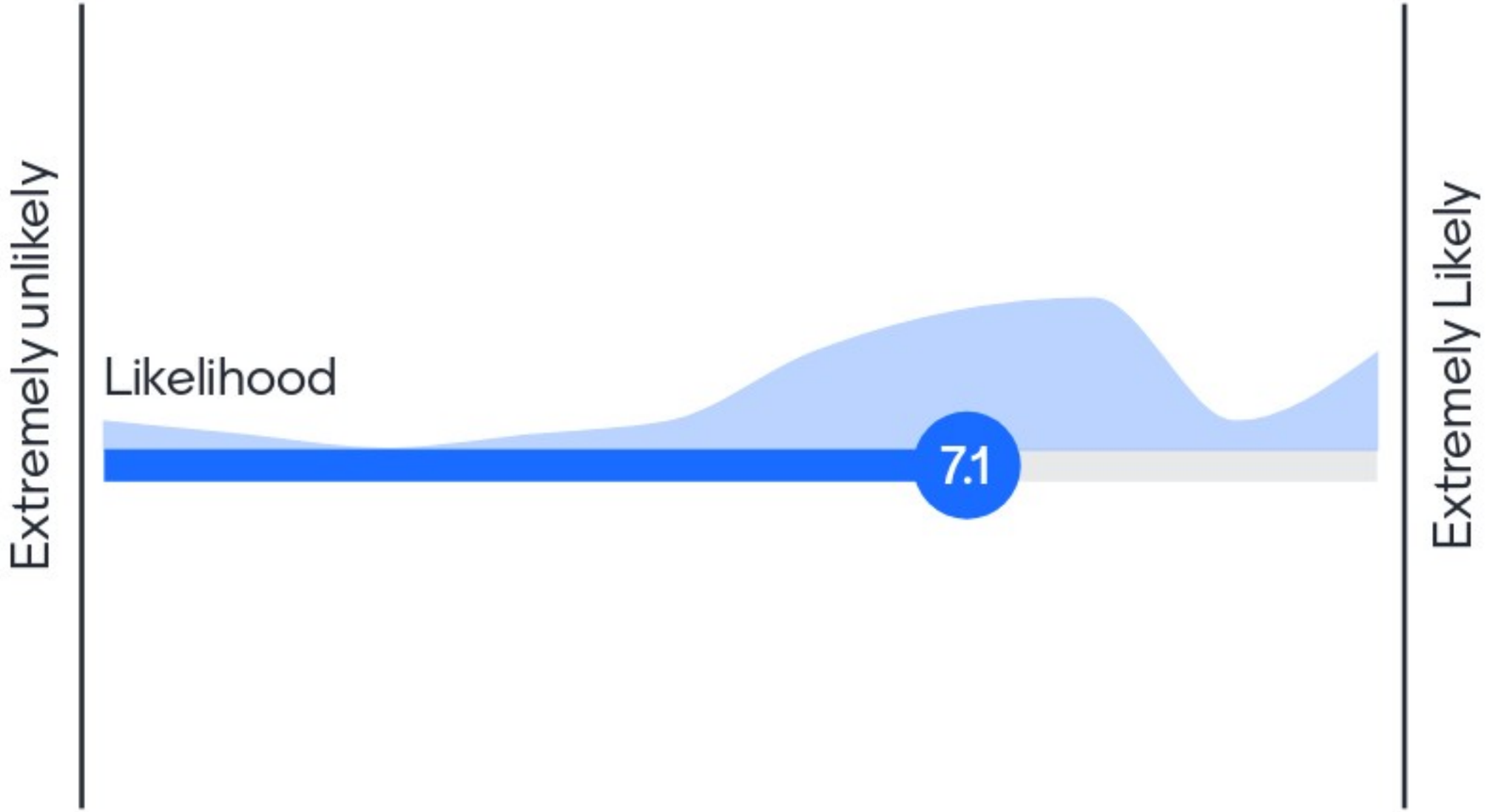
57 questions
69 upvotes

Mentimeter

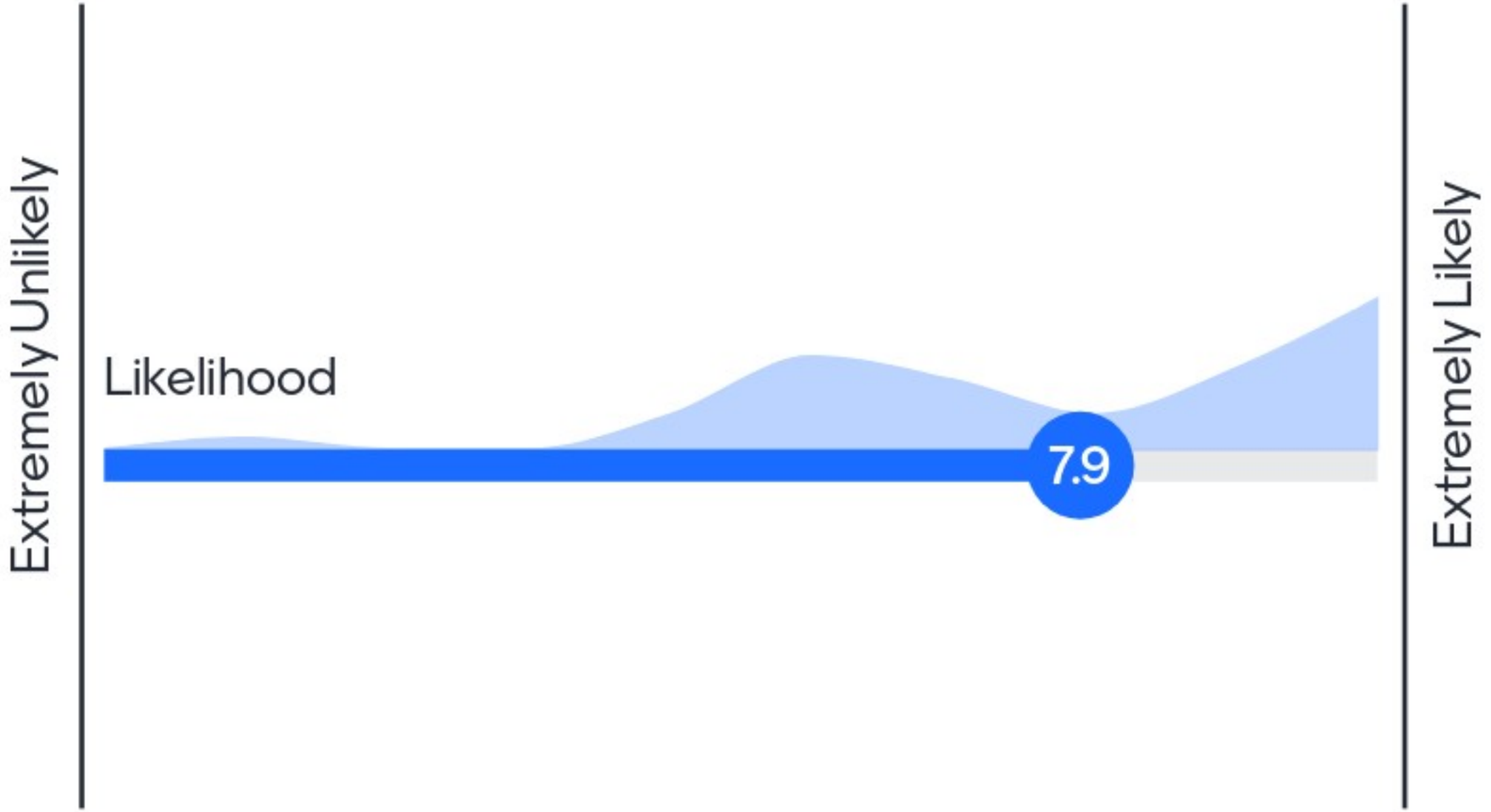
How did we do?

Lets us know!

On a scale of 1-10, how likely are you to recommend this event to a colleague or friend?



On a scale of 1-10, how likely are you to recommend the secretariat of this event?



Is there anything different you would like from virtual forums in the future?

Mentimeter

Could the presenters actually makntain timings? Seemed rushed

I've really enjoyed the use of menti and found it very useful.

Perhaps getting a 1 pager with acronyms used and the main points to be discussed would be useful

More time please, today was very rushed to give comments

Slides in advance

Great webinar thanks. I enjoy the flexibility of not having to travel in.

Try to keep the information more focussed - we are trying to cover too much ground

Like the BEIS format of having a period of time where one can answer questions over a couple weeks. (Meeting Sphere)

We really need analysis next time. Too much on the one hand this, on the other hand this. Give us the tariffs.

Is there anything different you would like from virtual forums in the future?

Mentimeter

greater opportunity for Q&A and more time dedicated for this segment

more time for Q&A. debate is being stifled only through time restriction.

all of the very good questions disappear into the ether never to be seen again

Better timings, important stuff that shouldn't be rushed

Need more time to consider all issues fully eg SDG

Virtual component should continue when things return to normal - hugely valuable for those who'd otherwise struggle to get to London

More time for Q&A. There are always lots of comments/questions but never seems to be enough time to go through responses and never see a follow up

Session felt slightly rushed, therefore longer sessions, with quick breaks in between

Presentations in advance would be helpful - some great content today thank you!

Is there anything different you would like from virtual forums in the future?

Mentimeter

Copy of slides in advance!

This morning was a bit too short but Menti is very helpful

Need more question answering time to much is going without being considered carefully

More details on what would be covered in advance of the webinar.

Virtual forums are more accessible for those of us who live far from London

Struggling to see the real material differences between the proposals. is it possible to have some examples that will highlight how charging for customers will differ in future

Prefer the online format to in person - removes hours of travelling & lets attendees schedule their normal work around the sessions.

A virtual forum focussed on specific users e.g. community energy as well as greater opportunity for questions. Continue the use of the polls - they are a useful and easy way to feed into your work

Better time mgmt and structure - short slots, feed back time, breaks

Is there anything different you would like from virtual forums in the future?

Mentimeter

analysis required

Mentimeter

What's next?

Any further written comments should be sent to futurechargingandaccess@ofgem.gov.uk

Join us at 1pm for an overview on the Targeted Charging Review SCR

Charging Futures
Reforming electricity charging together

Forum

Mentimeter

Thanks