

Challenge Group – 25 November 2019



Objective of today's session:

- General update on the project since the last time we met and next steps
- Overview of the 2nd working paper

Item	Timing
Introduction and overview	10:00 - 10:10
Project update	10:10 - 11:00
<ul style="list-style-type: none"> • 2nd working paper • Impact assessment • Access, charge design and cost model workstreams 	
Transmission network charging – way forward	11:00 – 11:15
Connection boundary – overview of 2 nd working paper	11:15 - 12:30
Lunch	12:30 - 13:15
Small users – overview of 2 nd working paper	13:15 - 14:45
Non SCR – Access update	14:45 - 15:00
Next steps	15:00 - 15:05

Project update

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.

The **Targeted Charging Review (TCR)**. This seeks to remove some of remaining embedded benefits, and to allocate residual charges in a fairer way. These should not send signals and are there for recovery of the allowed revenue for the network companies.

**Mostly
Ofgem -
led**

The **Balancing Services Charges Task Force**. The Electricity System Operator has led a review of balancing services charges in parallel with the Access reform and the TCR. It concluded that these charges should be treated as cost recovery.

**NG ESO-
led**

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.

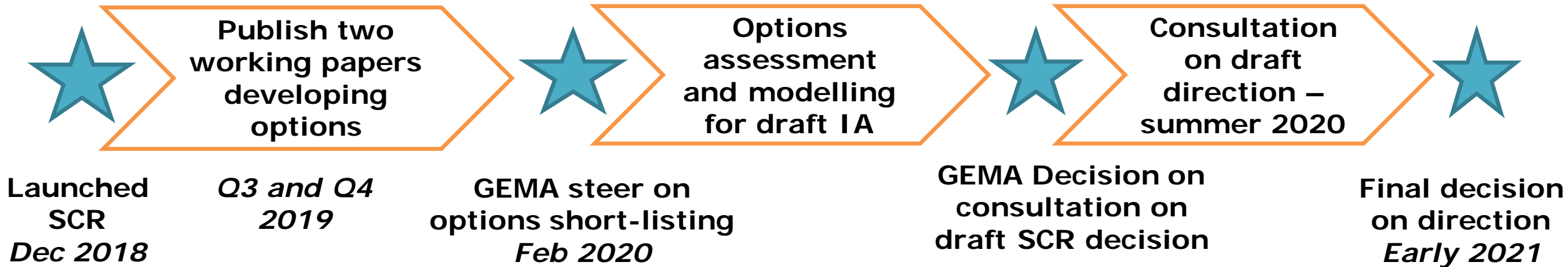
We launched the Access SCR in December 2018. The scope is

- 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.

The key milestones are:

- Publish 2nd working paper – before the end of this year.
- Publish minded to consultation – summer 2020
- Publish final decision – early 2021
- Implement options – April 2023

Our work on the Access SCR will continue into next year. This will include continuing our option assessment and the development of the IA.



We are expecting the DG and CG to continue next year. You will help shape our options assessment and modelling for draft IA.

1st working paper: We published our first working paper at the start of Sept. The paper covers:

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

2nd working paper: We intend to publish a second working paper at the end of year. The paper will cover:

- Small user consumer protections
- Distribution connection charging boundary
- Focused transmission charging reforms

CG feedback has been hugely important in shaping our thinking. For example:

- Developing our understanding attractiveness of different access choices (Eg access choice survey)
- Developing alternative access choices (eg “dynamic time-profiled access”).
- Informing our assessment of access choices (eg whether access choices would limit ability of users to operate in wider markets).
- Informing our assessment of access right, network charges and procurement of flexibility.
- Challenging how cost model and charge design reflect actual network costs.
- Shaping our assessment of the charge design options (eg charge design survey).
- Helping us understand how suppliers would respond to forward-looking charge and access reform (eg interviews with suppliers).

Hopefully you have seen how your feedback shaped our thinking in the 1st working paper. Your feedback will also shape the 2nd working paper.

**Update on access, charge design, impact
assessment and
cost model work streams**

Area of work

How have we taken this work forward and our current thinking

Network Modelling

- CEPA and TNEI have commenced their support to the cost model subgroup, reviewing and updating the network model and reviewing LRMC approaches
- The group has refined the approaches to be incorporated, including testing spare capacity
- The sub-group is testing the model, with finalisation in mid-December

Tariff Modelling

- CEPA and TNEI submitted final specifications in late October and a proposal for the next phase of input to Ofgem and DCUSA
- The DCUSA Panel has signed off Phase 2a of the modelling, which kicked off on 15th Nov
- Ongoing focus will be on managing the linkages between this and network modelling

Impact Assessment

- Six proposals were received to support impact assessment modelling
- Following shortlisting and presentations, we have appointed CEPA and TNEI, subject to contract following the 10-day OJEU standstill period
- We have commenced a literature review to support qualitative options assessment



Network Benefits

- We met with network planners at each of the DNOs, to better understand how the options we are considering would impact how the system is designed. The next slide highlights our key conclusions from this session.

As we noted on a previous slide, we have appointed CEPA and TNEI to undertake our required impact assessment modelling. This contract is scheduled to be formally awarded following standstill on 26th November. The key next steps will be:

- A contract kick-off meeting between Ofgem and the CEPA and TNEI team followed by further development of the methodology and underlying project plans
- Commencement of work in early December on:
 - Definition of scenarios, user archetypes, sensitivities and materiality
 - Review of available literature and evidence to underpin behavioural response assumptions
 - Definition of links with reference network models and tariff modelling
- Opportunity for CEPA and TNEI to attend and present at next DG and CG (we note that specifics are to be confirmed)

Area of work

Update

1. Monitoring and enforcement note: capture current approach to monitoring and enforcing access rights and potential future changes required to accommodate new access choices.

Report finalised and due to be published on the CFF website.

2. Small users:

- develop and assess the options to improve the clarity and choice of access options for small users
- Which access choices should be available for small users and which should they be protected from?

Access sub-group been assessing options to improve clarity and choice of access options for small users, as well as potential adaptations to protect consumers.

3. Assessing the impact: To what extent do options support the efficient use and development of network capacity?

Hosted network planner meeting to understand impact of proposals on the development of an efficient network. Intend to circulate survey to better understand impact of flexible connections on efficient use and development of network capacity.

4. Meeting users needs: To what extent do options reflect the user's needs?

Intend to circulate survey to DNO connection teams to better understand users' interest in "flexible connections". Ofgem reviewing data collected on user interest in access right options and meeting LUG members.

5. How could these access choices be reflected in charging?

CEPA and TNEI submitted final specifications in late October and a proposal for the next phase of input to Ofgem and DCUSA

6. Distribution-connected users' access to the transmission network: Identify and assess options for how distribution-connected users access to the transmission network could be defined

Draft report identifying current distribution-connected users access to the transmission network and assessing potential high-level options for change.

7. The respective roles of sharing and trading access

Draft report identifying the roles of sharing and trading access.

Area of work

1. Network planning: working with the DNOs to better understand the factors they take into account when planning network investment and the impact that future behavioural changes, in response to forward charges, might have on these factors. We will also take into consideration network planning standards and the current review.

2. Network monitoring: although our current preliminary view is that network monitoring may not be sufficient to support dynamic pricing options, we are still undertaking further work to identify planned improvements in the granularity of network monitoring.

3. Literature review: we are continuing to build on our current review of academic literature and case studies from other countries to understand the existing evidence regarding the behavioural impact of the different charging design options and any implementation challenges.

4. Stakeholder engagement: we are grateful for the input to date. As we continue developing our assessment of the options, we will engage further with different stakeholders on the costs and benefits and to challenge our assessment.

How have we taken this work forward and our current thinking

We held a workshop with the DNOs, which identified a number of areas we are considering in more detail, including:

- how forecasts take into account larger users (with contracts) and smaller users (where reliance is on observed behaviour) and how charges should be structured to reflect differences in cost drivers.
- Whether charges should be peak focused or there are other significant drivers of network costs

- Following on from discussion with the DNOs about the need for evidence to support decisions based on the level of network data, we will shortly issue an information request to DNOs asking them for information regarding their available data, planned future investment and the time and cost to close the gap down to LV.
- We have also engaged with our RIIO-ED2 and flexibility colleagues

- We have started a more detailed assessment of the reports, case studies and academic literature we have to ensure we have captured all relevant information.
- We have also developed an approach to identifying behavioural impacts, in conjunction with our IA consultants.

We have reached out to the large user group to engage further with them on the challenges and opportunities the basic charging options present for demand users

Area of work

1. Locational cost model quantitative analysis: sub-group developing model to assess options outlined in the working paper.

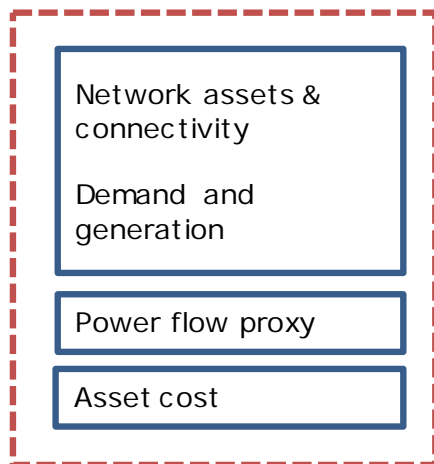
2. Additional evidence: as described in charge design update, the network planning, network monitoring, literature review and stakeholder engagement will support the quantitative analysis in the shortlisting process.

How have we taken this work forward and our current thinking

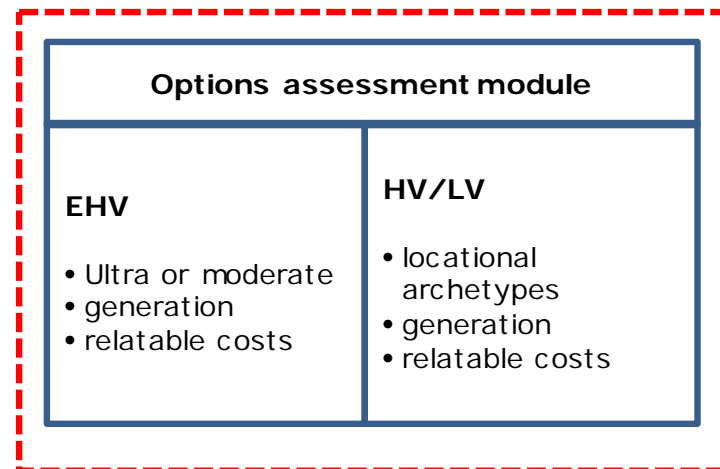
CEPA & TNEI are working with the sub-group to finalised the build of the model over November. A draft version was handed over mid-October, and data will be finalised mid/late November. Results expected early December. Sub-group is developing slide pack to detail thinking on policy.

1st Network planning session provided useful evidence on reinforcement rules and treatment of generation. Network monitoring assessment has been launched, result expected in January. Reinforcement from DG evidence being collected. Literature review expected by early December.

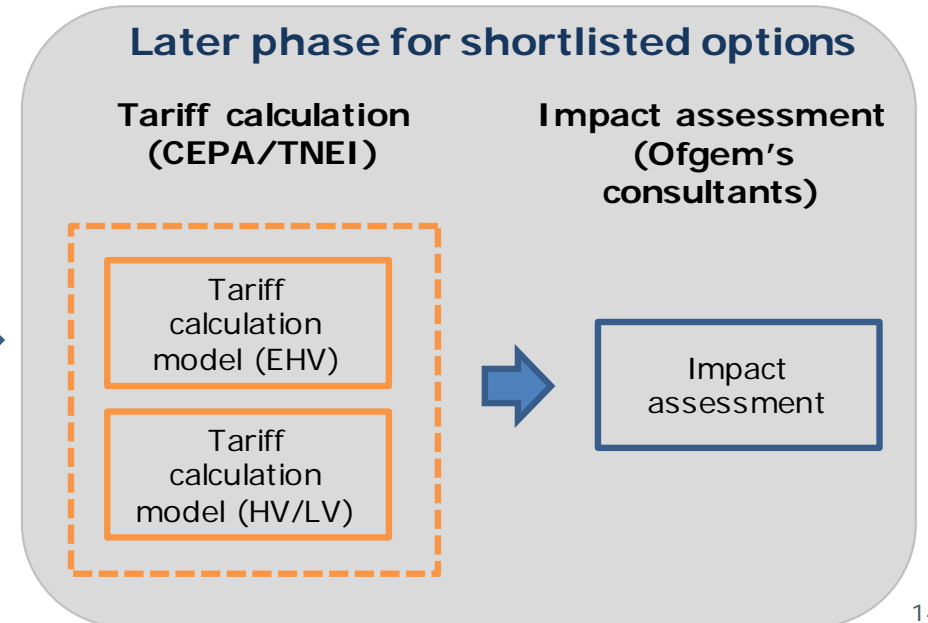
Reference network model (sub-group)



Options assessment (sub-group – CEPA/TNEI)



Later phase for shortlisted options



Focused transmission network charging reforms

Focused review with ESO and DG / CG engagement, aligned with other Access work streams, supported by consultancy

Half hourly customers face Triad demand, which may bring costs

- **Triad difficult for users to predict**, with network cost savings not well evidenced
- We will assess if alternatives present any benefits

Smaller DG face inverse demand

- DG charging signal is different from the signal faced by larger generators due to use of **inverse demand, floor-at-zero, and different charging zones**. Is this proportionate and sufficiently cost-reflective?
- **To what extent is floor-at-zero distorting the locational signals? Is change desirable / proportionate?**

Revenue collected from different users

- Adjustment currently needed to bring average charges into legal limits
- Potential for different approaches to model to alter this

Our work on demand charges in the first working paper

- **Potential to reform triad**, such as a version where periods known in advance, or following red-amber-green approach, **or replace**.
- Is regional variation in the timing or number of periods desirable or acceptable?
- Would an **agreed capacity alternative** give more certainty and better reflect network costs?

DG charges

- Closely linked to the above, we aim to establish if DG and TG arrangements need to be better aligned.
- **More cost-reflective charges, if desirable, may increase charges for certain generators, including renewables.**

Proportions of revenue from different users (the “reference node” issue)

- Changes to the model could potentially alter of revenue recovered from generation and demand, which may help with EU compliance and competition – **We will assess whether this should be prioritised.**

Local Circuit Charges

- We aim to reach a position on how **DG use of local transmission assets** should be accounted for.

Objectives

- Work split into phases with support from consultants and ESO
- Phase 1 running up to 2nd working paper, Phase 2 taking us to Ofgem decision process.

Outline (subject to change)

Phase 1

Qualitative work on Demand and DG charging

- Initial Options review
- Initial Local Circuit charging and Transport model review

Industry Call or Webinar and stakeholder feedback

Working Paper – intention to publish by end of the year.

Phase 2

Further work on Demand and DG charging

- Quantitative analysis identification
- Further shortlisting and additional detail and high-level IA

Work with NG and industry engagement

- Quantitative working including ESO engagement
- Potential for further informal industry engagement on top of DGs and CGs e.g. more webinars or calls

Ofgem internal work and decision making

SCR Conclusions – Summer 2020

- We aim to hold a webinar to discuss initial work in next few weeks to share initial views and allow for stakeholder feedback in advance of the second working paper.
- We will publicise these using the DG / CG distribution lists and through the Ofgem website.

Connection boundary

- This session is to provide an update to the CG on the connection boundary work stream. We will cover:
 - Update from the last CG
 - Recap of the problem statement
 - Summary of our evidence gathering so far
 - Summary of the sub group's assessment of possible options for change
 - Our preliminary views
- We are keen to hear the CG's views and will be using Menti to gather feedback on a number of topics.
 - What are your views of the evidence so far? Are you aware of more evidence sources that could help our assessment, and if so, what are they?
 - What are your views on the sub group's assessment and our emerging view? Are there any specific areas you think we have missed or should consider further?
 - What are your views on the case for transitional arrangements?

Area of work

1. Evidence base: understanding what evidence exists to test the hypotheses that the current arrangements create a barrier to entry and or the differences between T and D create a distortion.

2. Sub group report: working with network companies to develop possible options for change. This includes an assessment of an option's desirability and feasibility.

3. Network planning: working with the DNOs to better understand the factors they take into account when planning network investment and the impact that changing the connection boundary might have. We will also take into consideration network planning standards and the current review.

4. Literature review: building on our current review of academic literature and case studies from other countries to understand the existing evidence regarding the impact of different connection charging arrangements and any implementation challenges.

5. Stakeholder engagement: we are grateful for the input to date. As we continue developing our assessment of the options, we will engage further with different stakeholders on the costs and benefits and to challenge our assessment.

How have we taken this work forward and our current thinking

We issued a call for evidence to stakeholders to better understand potential barriers to entry. We are continuing to review responses with initial results in subsequent slides. The ENA are examining different scenarios to test the existence (or not) of distortions between T and D.

The sub group's report will be published soon. This will help inform our second working paper. Highlights from both documents are provided in subsequent slides.

We held a workshop with the DNOs, which identified a number of areas we are considering in more detail, including:

- How effective a more shallow boundary would be at unlocking benefits for system development
- Whether the benefits of moving more shallow are larger at higher voltages

We have started a more detailed assessment of the reports, case studies and academic literature we have to ensure we have captured all relevant information.

We have reached out to a range of stakeholders as part of our call for evidence (CG, large users, Home Builders' Federation, EV charging providers, etc). We met with the charge design group to update on our work and identify links. The sub group has reviewed the CG's previous comments and reflected this in the final report where appropriate.

- We currently have different arrangements for connection charging at distribution and transmission. We are reviewing whether this continues to be in consumers' best interests.

Transmission

- Shallow connection boundary
- Connecting users only pay for new connecting assets.
- 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
- Connecting users pay for new connecting assets and a share of any necessary reinforcement of the upstream network
- Can lead to expensive connections and reduces incentives for DNOs to invest strategically, **but** provides a valuable locational signal where there isn't one currently
- Protects wider consumers from the risk of stranded or under used infrastructure

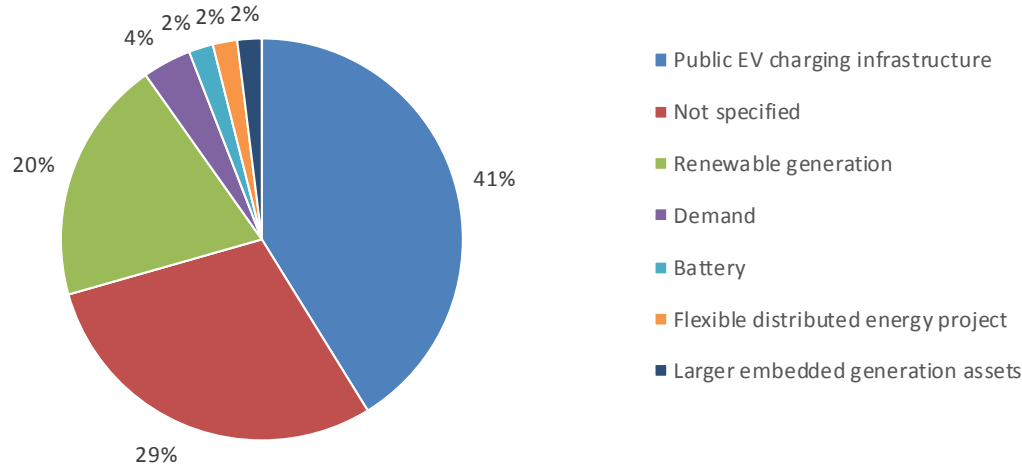


Potential problems with these arrangements

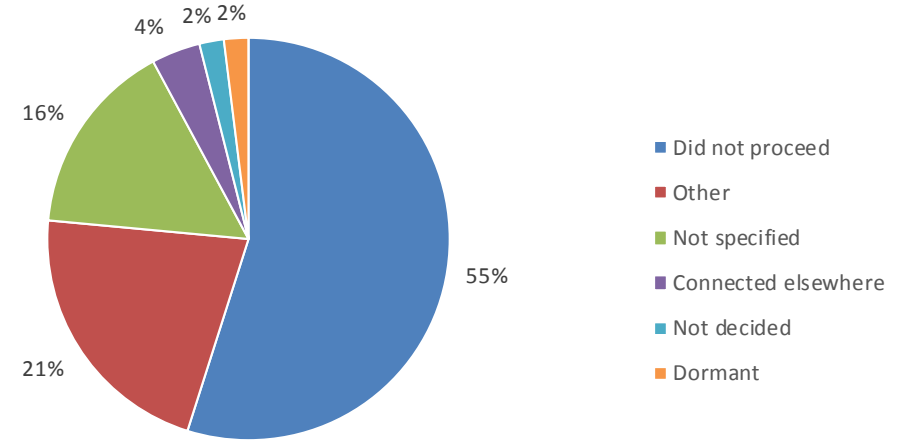
- The difference between the Transmission and Distribution arrangements could be causing material distortions in decisions on where to connect.
- The connection arrangements could be creating barriers to entry for some users (eg, upfront cost) and slow down connections of new technologies like distributed generation and public EV charging infrastructure.

Evidence gathering – stakeholders highlighted upfront cost and time to connect as key barriers

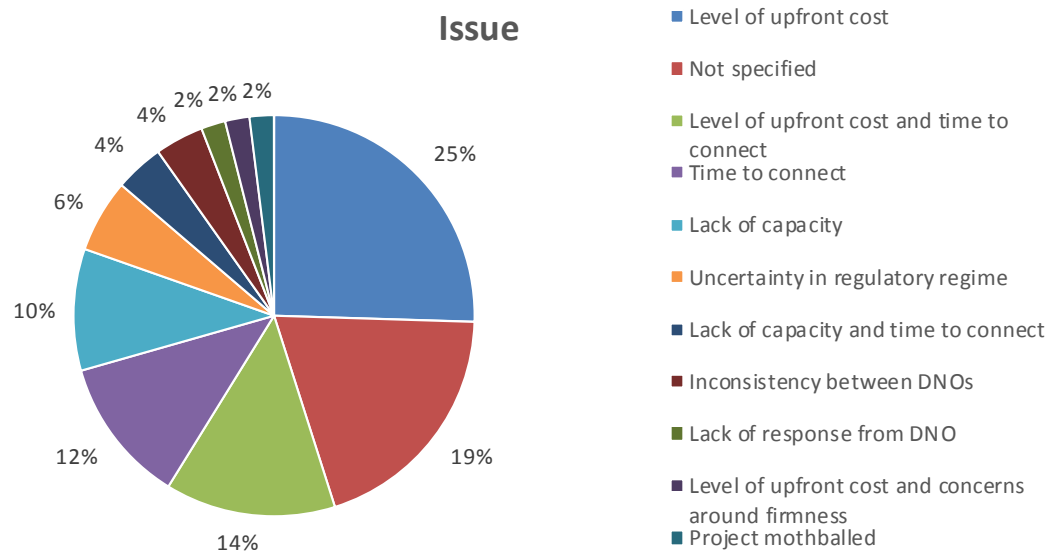
Project by type



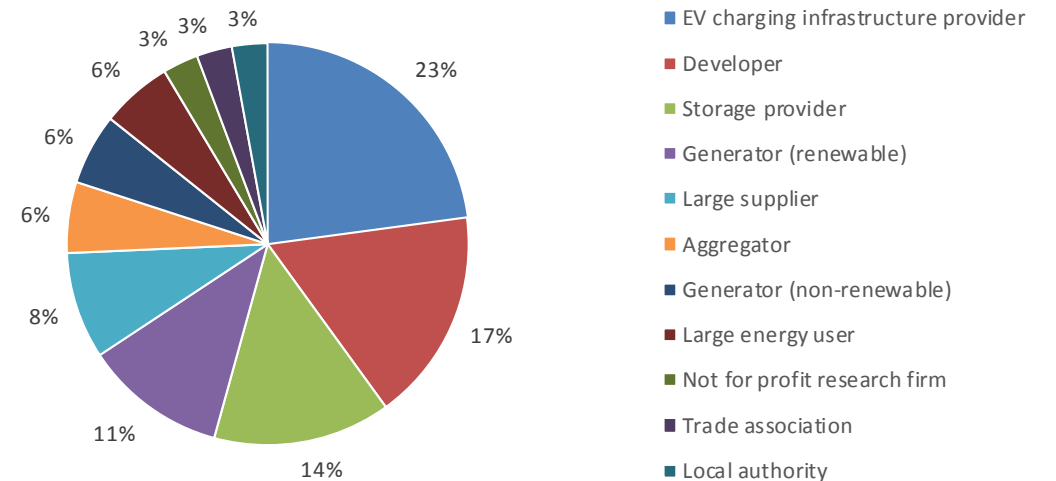
Outcome



Issue



Respondent type (some provided multiple answers)



Evidence gathering – customer funded reinforcement is a relatively small proportion of total cost

- Submissions by the DNOs as part of the RIIO price control regime provide an illustration of the size of the connections market.

Year	Reinforcement costs (apportioned)		Extension asset costs (paid by connecting user)		
	Customer funded (£m)	DUoS funded (£m)	Sole use demand (£m)	Sole use DG (£m)	Sole use unmetered (£m)
2018	33.9	111.0	431.1	133.9	27.3
2019	32.9	97.1	442.8	75.8	23.3

- Moving to a more shallow connection boundary will result in more reinforcement that is currently funded by the connecting customer being recovered through distribution charges.
- However the exact amounts would depend on the behavioural response to a more shallow boundary (eg, would this encourage more connections to go ahead that would otherwise be prohibitively expensive).
- Extension assets would continue to be paid in full by the connecting user in most of the options considered.

- The ENA is taking forward a piece of work looking at four scenarios where a user has choice of connecting to the distribution or transmission network.
 - Comparison of a 30MW generator connecting at 33kV and 132kV
 - Comparison of a 10MW generator connecting at 11kV and 33kV
 - Comparison of a 50MW demand user connecting at 33kV, 132kV and 275kV
 - Comparison of a 50MW storage connection at 33kV, 132kV and 275kV
- The study will consider the “lifetime” charges faced by a user. That is, the connection and enduring network charges.
- The purpose of the scenario analysis is to challenge the hypothesis that the current charging arrangements contain:
 - potential barriers to entry (e.g., high upfront costs); and/or
 - potential distortions or decisions caused by differences in transmission and distribution
- We plan to summarise the findings of this work in our second working paper.

Distribution connection boundary – this is a simplified version of the sub group’s assessment

Boundary depth	Illustrative approach	Efficiency of signals to users (eg, locational and or capacity requested)	Opportunity to support more efficient network development	Opportunity to remove barriers (eg, upfront cost) and or distortions between T and D where they exist	Feasibility
Shallow-ish	<ul style="list-style-type: none"> Status quo Possible alternative payment methods 	<ul style="list-style-type: none"> Provides strong locational signal (for new connectees)only 	<ul style="list-style-type: none"> Reduced incentive for DNOs to invest strategically 	<ul style="list-style-type: none"> Slow/expensive in congested areas Payment over time might improve users’ cash flow 	<ul style="list-style-type: none"> Payment over time could require new processes and introduce potential bad debt risk
Shallower	<ul style="list-style-type: none"> Amending the apportionment rules so more reinforcement costs are recovered through DUoS Capping absolute charges 	<ul style="list-style-type: none"> Weaker locational signal Possible incentive (or reduced disincentive) for users to oversize capacity requests 	<ul style="list-style-type: none"> Increasing amounts of reinforcement being funded through DUoS might give DNOs more flexibility to innovate and or invest more strategically (but more work needed to understand what is possible) 	<ul style="list-style-type: none"> If upfront cost is as a barrier, there is scope for increasing benefit as move more shallow – If there is evidence of a distortion between T and D, and depending on the final solution, closer alignment between T and D might remove this (work ongoing to determine the extent to which these exist) 	<ul style="list-style-type: none"> Some options could be challenging to implement User commitment may be required to mitigate stranding/ bad debt risk (but shouldn’t introduce new barriers in itself)
Shallow	<ul style="list-style-type: none"> Closer alignment with Transmission Standard connection charges 	<ul style="list-style-type: none"> Much weaker locational signal for new connections 	<ul style="list-style-type: none"> But some options may make flexible connections less attractive to new connectees. 		<ul style="list-style-type: none"> Aligning with T would be a new approach for some parties to understand Challenges around identifying past connectees and user commitment

- A key focus within our work is on understanding the potential benefits for efficient network development and whether the current arrangements are distorting behaviours. At the moment the analysis suggests that there are likely to be trade-offs across the different options.
 - Connection charges currently give a strong signal about locating in different areas of the network. **Moving to a more shallow connection boundary reduces the signals on spare capacity faced by users.**
 - **Recovering more of the cost of reinforcement from network charges might give DNOs an opportunity to be more strategic in considering their approach to reinforcement.** More work is needed to explore what this would look like in practice.
- We will need to consider the impact on users' incentives alongside the scope for more locational DUoS and charge design. This could lead to some form of user segmentation. Further consideration also needs to be given to scenarios where the connecting user and party responsible for enduring network charges are different.
- **Some of the options such as an absolute cap or standard charges could actually go beyond a shallow boundary.** We will need to consider whether this creates new distortions with transmission and how these could be determined in a way that is not (at least in part) arbitrary.

- The risk of inefficient investment (for example, if a project does not go ahead) moves from the connecting party to all users as options become increasingly shallow.
- The current arrangements offer some protection against this as the connecting user is responsible for contributing to the cost of reinforcement and paying in advance of the connection being made. We think this **could be an argument for some form of liability or security mechanism** – but any solution needs to be practical and proportionate.
- A counter argument to this may be that the level of upfront cost associated with extension assets (paid in advance of energisation) already reduces the risk of speculative requests.
- We think **the extent to which more locational DUoS can be achieved could be a good proxy for user segmentation**. We will consider this as part of our wider assessment to understand how the different options could be combined with the options from other work streams. We will also consider whether this could be done by other means, such as user type.
- We do not yet have a view on the need for any transitional arrangements, or particular treatment of past users. **We would need strong evidence for this** and will need to balance the complexity of any transitional arrangements with the number of customers impacted.

Lunch

Small users

September Challenge Group feedback

We have shared and discussed CG feedback with the subgroup and they are considering it within their assessment.

How have we taken this work forward and our current thinking

1. Consumer needs and factors to consider: Small users may include categories that require wider policy considerations. Essential usage level is variable and future technological changes should be taken into account, eg EVs and automation in households.

We are considering wider policy considerations as part of the potential regulatory approach.

2. Role of suppliers: what could be the products that suppliers or TPIs could offer (flat charges VS more innovative products that handle the different complexities)

We have engaged with suppliers through interviews and surveys and we aim to keep engaging with them.

3. Vulnerability and Priority Service Register (PSR): PSR could be a starting point to identify vulnerability, but questions were raised about quality of the data, eligibility process and the efficacy of this approach in targeting vulnerable consumers.

We are engaging with other Ofgem teams to discuss vulnerability and potential different approaches. We have also shared and discussed this feedback with the subgroup for consideration within their assessment.

4. Design: questions around treatment for those without smart meters and non HH. Risk that tariffs become overly complex in the future, turning off engagement.

We will consider treatment for non HH customers and the complexity of the potential arrangements for small users.

5. Consumer characteristics: consider ability/willingness to respond to signals. Specific considerations for small businesses and houses with PV.

We have incorporated this feedback in the consumer characteristics that the subgroup is working on as the basis for their assessment.

6. Consideration of options and principles: access options could be challenging at domestic level. Think about proportionately and user commitment.

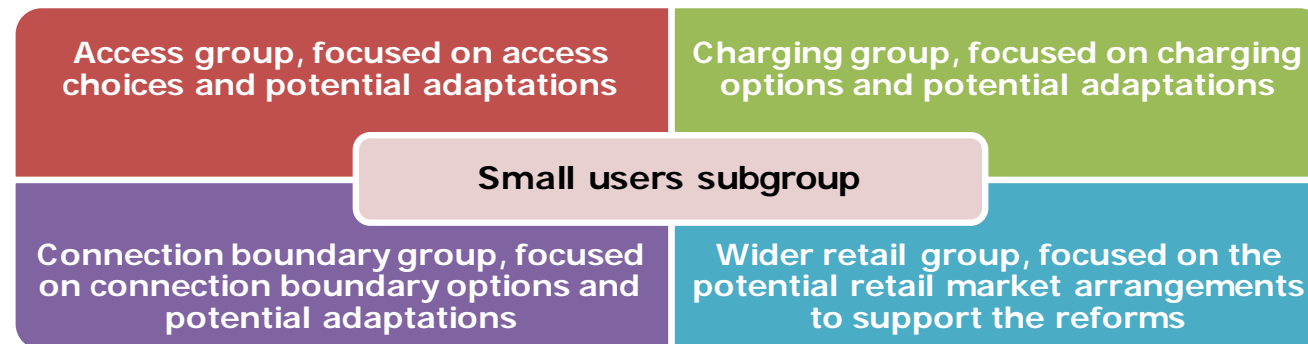
This feedback will be considered within the subgroup working on specific options.

We are considering small users separately from larger users to make sure arrangements are suitable for them or whether protections or adaptations to arrangements may be needed to protect domestic and small business consumers in the transition to a smarter, more flexible and low carbon energy system. We want to understand where they may be at risk of undue detriment, and what options may exist to ensure consumers overall can benefit from the reforms.

The focus of the second working paper on small users will explore:

- Key considerations to ensure small users can benefit from access and charging reforms
- Vulnerability considerations and potential risks and opportunities
- Preliminary views on the potential access, charging options, along with considerations of retail-focused options to protect consumers' interest
- Initial discussion of suitability merits of different protection approaches for different types of risk or option

The small users subgroup is assessing the range of access and charging options identified for larger users to understand whether these are suitable and should be applied directly for small users, in particular vulnerable consumers.



The assessments which follow are initial, developing views from the subgroup members, for initial testing and feedback and will be subject to further development and review ahead of finalisation. They are intended to inform our working paper and we are engaging closely with the subgroup workstreams.

A reminder of the key characteristics Citizens Advice has identified for consideration in the subgroup's assessment:

For domestic consumers:

- Vulnerable consumers. As vulnerability is very broad and can affect all user types, the assessment should consider the level of literacy (understanding contracts and how to participate), the level of energy dependency (eg for health reasons), carers and people with mental health problems;
- Low/High income and high consumption users
- Homes off the gas grid
- Impact on disengaged consumers and highly engaged consumers
- Consumers with Pre-payment meters
- Homes with EV/Battery/solar (behind the meter) solutions
- People experiencing life changes, for example when someone moves home, or changes to the electricity consumption due to life event (eg baby, cohabiting, divorce, bereavement)

For small non-domestic consumers:

- Micro-businesses with multiple sites
- Change of use or user type with different energy needs in a property

Drawing this together: approaches and potential option combinations

We have identified **several potential types of consumer risks** which could apply under our reforms:

<p>Non-financial risks, eg</p> <ul style="list-style-type: none"> • Users turning off appliances needed to meet basic needs at peak times • Users choosing an inadequate access level/type 	<p>Financial risks</p> <ul style="list-style-type: none"> • Unexpected high charges resulting in bill shock, through signing up to an inappropriate access option, or • Users choosing an inadequate access level/type with potential financial consequences (eg charges) 	<p>Affordability and highly locational ongoing charges differences</p> <ul style="list-style-type: none"> • Granular temporal or locational signals may mean charges could be higher for some consumers based on usage patterns they are unable to readily change, or location eg in constrained parts of the network
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We are considering where 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:

Rely on Principles-based approach

We will consider whether the existing framework is sufficient or there is a need for new or updated obligations. Further considerations could be needed for non-regulated parties

Introduce more specific requirements

We could include more specific or prescriptive requirements on tariff offers or design for certain consumer groups. This could include standardisation of tariff features, eg limits for access or dynamic options

Make explicit changes within the network access and charging options, for example:

- Options with less sharp time/locational signals or without requiring users to make access right choices
- Thresholds for usage (usage below this would have blunted time/locational signals) or minimum access levels (default minimums which all householders could not go under)

The following updates from the four workstreams explore these options in more detail, based on the subgroups' developing assessment.

Nb these are draft assessments. We will consider also whether wider policies, such as WHD, ECO or other approaches may have a role in addition to general consumer protection legislation or sectoral voluntary codes.

Small user subgroup:

Workstream groups output

(more detailed assessment provided in Annex 1)

Options/adaptations

B1 – Defining a level of access
A2 – Lower limit on access
A3 – Core access level or levels
A9 – Access rights not further defined
A10 – Opt-in arrangements for access

B2 – Level of firmness

B3 – Time-profiled access

B4 – Shared access

B5 – Standardisation of options
(Cross-cutting)
A4 – Standardised access levels/bands

Summary of findings – initial views

- Access options will have to be considered in the wider context of future arrangements – how they will influence customer bills through charge design etc.
- If consumers are directly exposed to Access options, education will be hugely important to avoid undue risks from inappropriate options being selected
- One promising adaptation is an “opt-in” approach – either users opting in when they see value in better defining their access or network companies choosing to offer Access options selectively where they best offer benefit to consumers through reduced costs
- Firmness of Access is likely to be the highest risk option from a consumer perspective if not adopted with full awareness of implications

Options/adaptations

1. B1 Charge design - Volumetric ToU

2. B2 - Charge design - Actual capacity

3. B3 - Charge design - Agreed capacity

4. B4 - Charge design - Dynamic charging

5. B5 - Charge design - Critical peak rebates

6. B6 - Cost model - Locational granularity for LV connected users

7. B7 - Cost model – temporal granularity

8. A1 - Cost model - basic charging tier limiting locational or temporal granularity

9. A2 - Cost model - Averaging signal or cut-off on degree of locational granularity

10. A3 - Cost model - Limiting level of temporal granularity / signal dynamism

11. A4 - Charge design – limit on certain types of charge offered

12. A5 - Charge design – minimum required notice period

13. A6 - Charge design – exceedance conditions for agreed capacity

Summary of findings – initial views

- All options are potentially viable but come with different degrees of complexity and costs to implement and associated risks.
- The key risks from a small user consumer perspective will be the volatility in the predictability of network charges.
- It's important not to forget the role of retailers in optimising consumer behaviour and mitigating risk on behalf of consumers.
- Measures to reduce or mitigate cost differences between different customers are possible, and may be desirable from a political perspective, but will dilute cost signals for individual customers and lessen the value that they provide regarding network usage.
- Consideration should be given to what is best achieved by network charges compared to flexibility solutions (e.g. charges could provide a predictable signal to avoid peaks or not to exceed a specified limit whilst flexibility could be used to provide an alternative to localised reinforcement costs).
- Understanding of local network usage and associated costs is not currently widespread which will hamper quick moves to very granular and temporal network charges. Over time this situation may change but is dependent upon other factors (e.g. smart meter deployment).

Options/adaptations

1. Shallow connection boundary – small user's status quo

2. Shallow connection boundary with user commitment/securitisation

3. Shallowish connection boundary

4. Shallowish connection boundary with amended voltage rule

5. Change the proportion of new capacity the customer pays for

6. Simplification/standardisation/averaging of connection charge calculation

7. Limits on shallowish charge

8. Alternative payment options

Some Key Considerations/Summary of emerging findings

- Risk with base assumption is that users are provided with more capacity than require and doesn't encourage appropriate use.
- If all users did maximise use of their capacity, network would not be capable of providing it.
- Some options will introduce risk that customers could request more capacity than they require leading to inefficient network design
- Potential for unequal policy relating to retrofit compared to new build, e.g. current system states that DNOs socialise reinforcement costs to provide a 100A supply as retrofit, however cost of reinforcement for new builds to have 100A supply is not
- Options do not readily assess small users' needs or requirements
- Overall, options will provide an incentive, and potentially encourage, greater connection but with risk to increased socialised costs therefore wealth transfer between consumer groups should not be overlooked

Some Key Considerations/Summary of emerging findings

- Where a menu of options are offered, needs to be clear consideration to users understanding and implications of choice
- Driver to increase uptake of LCT for users, must be key factor in options
- Options must not complicate process for customer choice which could lead to additional confusion
- Options should encourage appropriate behaviour such that DNOs have greater certainty on where they can commit to reinforcement projects
- Customers should be encouraged, through appropriate option, to request connections according to needs and drive towards energy efficiency/uptake of LCT
- Risk of higher socialisation of costs means that those not benefiting will still have to pay
- Overall options seen as being more positive

Opportunities: To encourage greater uptake of LCT and for users to use capacity more wisely and energy efficiently, resulting in flexible usage. DNOs could have greater certainty of where they can commit to investment.

Risks: Base assumption of 100A could provide users with more capacity than required leading to inefficient use and higher socialisation of costs. Some options may complicate the connection process causing confusion. Users may utilise their full capacity leading to network issues if diversity and flexible use is not encouraged or incentivised.

Application of security/liability arrangements to small users and option of annual charges is not considered as practical. Likewise application of CAF rules to small users would be seen as extremely complicated for DNOs to apply

Options/adaptations

A2 Approach to customer engagement & communication

To aid understanding and tariff suitability, advance warning and notification, manage complaints, support tariff comparison and facilitate change of supplier (esp. where equipment is involved)

A3 Tailoring offers to consumers' needs and capabilities, including identifying and protecting vulnerable consumers

Customer characteristics, appropriate safeguards, PPM principles, recognition of needs and capabilities (inc. technology)

A4 Tariff design features

Cooling off periods, financial guarantees, override options and clear conditions around decommissioning

A5 Standardisation around aspects of good practice

Standard features of ToU, default options, notification, tariff comparison, coordinated multi-party roles

A6 Wider Protections

Aid affordability and energy usage (Warm Home Discount, ECO)

A1 Principles-based approach

Codes of conducts, aid consumer choice & analogous approaches for third parties (DNOs, non-licensed parties and intermediaries)

Summary of findings – initial views

- Opportunities: to improve understanding, increase engagement and continually adapt to customers situation
- Risks: excessive and confusing communications, inappropriate products, mis-understood requirements/obligations, technology lock-in/out, dis-coordination across parties
- These options are not exclusive and compliment each other but there are clear trade-offs between tailoring and standardisation, complexity and ease of engagement etc.
- We considered that vulnerable may require more support and guidance but not to require restrictions or have products ruled out – and that communications and product offerings must recognise that not all vulnerable customers will self-identify or ask for help.

- Generally, we expect **relying on retail measures** (such as Principles based obligations) could mitigate many of the potential risks of undue detriment for small users (or groups of them), such as lack of understanding of choices and miss-selling risks. The principles-based approach aims to protect a broad range of consumers from inappropriate choices, by enabling them to make an informed choice and understand conditions and any risks of a given tariff. However in this context, non-regulated intermediaries (such as price comparison websites) could pose additional risks and require further considerations.
 - Introducing more **prescriptive requirements** could involve communication and information provisions which can help consumers to understand and compare suitability of options, tailoring offers to consumers' needs and capabilities or standardisation of tariffs features (eg 'default' options) to help consumers more readily understand and compare tariffs. However, there are similar considerations as above for non-regulated parties.
 - Relying on **changes to the access and charging options** could be a suitable approach to mitigate specific concerns with some options. For example, the risk of users choosing an inadequate access level could be mitigated by creating a minimum level of access that every household has and that they could not go under, or limiting the number of choices for small users. However, there may be a trade-off on the extent to which this approach would reduce scope for flexibility and potential savings for small users but could also reduce benefits to the network. Targeting these changes to specific consumer groups may be challenging meaning options may be limited for all consumers or none.
- **Based on the access, charging or retail options you have seen before and subgroup's initial views, which ones would be best suited to addressing the different types of consumer risks identified?**
 - **How far will existing principles apply, and can you identify any areas where there may be scope for additional provisions? Any additional considerations for non-regulated parties?**

Non-SCR update

Next steps

- We intend to publish our second working paper by mid-December.
- The next Charging Futures Forum (18 December) will focus on the contents of the second working paper. The next Challenge Group will be in the new year.
- 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.
- To keep up to date with all our work on Future Charging and Access – make sure you are added to the Charging Futures distribution list at:
<http://www.chargingfutures.com/sign-up/sign-up-and-future-events/>

Annex 1 – Detailed small users group assessment of options

Options/adaptations

Update on the draft assessment, initial views

B1 – Defining a level of access
A2 – Lower limit on access
A3 – Core access level or levels
A9 – Access rights not further defined
A10 – Opt-in arrangements for access

- To a large extent will be a trade-off between customer engagement and ability to reduce costs
- Mitigations will help achieve a balance between these factors
- Perhaps a more optimal solution is a version of A10 “opt-in” where access is optionally defined in areas where there will be network benefit i.e. behind specific constraints

B2 – Level of firmness

- Probably the most high risk option for small users due to risk of gap between customer expectation and reality
- Point above potentially exacerbated by perception of “mis-selling”
- This has strong links to the balance to be struck with monitoring and enforcement
- Quite strong links to flexibility markets – i.e. potentially achieving same outcome through different approaches

B3 – Time-profiled access

- This option has the highest potential of matching customer requirements to network benefits (therefore lower consumer costs)
- Strong links to B5 – Standardisation
- Will potentially require enablers for monitoring and enforcement unless relying on contractual approach

B4 – Shared access

- This will depend on the approach taken to sharing:
 - Static – single level of access allocated to customers on a static basis
 - Dynamic – group of customers share a single level of access in real-time
- Dynamic is in some respects similar to a very local version of non-firm access therefore has similar risks to non-firm access
- Shared access is a strong contender for enabling community energy schemes

**B5 – Standardisation of options
(Cross-cutting)**
A4 – Standardised access levels/bands

- This will largely be a trade-off between benefits and practicality
- However there is a synergy between customer and network benefits on this option (subject to point on practicality and therefore potentially cost overriding benefit)
- Standardisation has the potential to reduce the need for education on power use etc. behind access choices

Options/adaptations

B6 – Monitoring and enforcement approach (Cross-cutting)

A5 – Exceedance conditions for access limit

A6 – Automatic increases

A7 – Curtailment override

A8 – Other limits on nature of enforcement

A1 – Limits on access choice

Update on the draft assessment, initial views

- To a large extent will be a trade-off between customer experience and ability to reduce costs
 - Mitigations will help achieve a balance between these factors
 - Perhaps a more optimal solution is a version of A6 automatic increases as this will essentially see customers paying for the level of access they use based on evidence of usage
 - All mitigations will have a similar practicality with the exception of no monitoring/enforcement (i.e. absence of B6 altogether)
-
- Restricting access choice options will benefit disengaged customers and limit their risk at the same time as being more practical to implement
 - However, restricting access choices will also restrict the ability for engaged users to take advantage of the “stronger” access options which may have the greatest opportunity to realise benefits
 - Restricting access options may also limit the potential to reduce cost to customers

Options/adaptations

Update on the draft assessment, initial views

1. B1 Charge design - Volumetric ToU

- Recognised that this is the way things are already heading with RAG DUoS.
- A knowledge of usage profile (from past behaviour) would be required – careful thought about making this data available securely to price comparison engines is important
- Noted that suppliers do not have to pass on the full ToU signal; ToU rates may be easier for customers to understand than say access (kW) choices. They may need automation to help them respond optimally. Static signals may increase the risk of customers responding in unison.

2. B2 - Charge design - Actual capacity

Relatively simple to bill. Capacity is more closely aligned with actual costs and risks than kWh. Possible customer acceptance and understanding issue. Doesn't encourage coordination/cooperation.

3. B3 - Charge design - Agreed capacity

As B2; an equal or a bigger customer acceptance and understanding issue. Does facilitate customer choice. Not clear what the distinction is between this and financially enforced access. Some concerns about transferring actual capacity contracts during home move.

4. B4 - Charge design - Dynamic charging

Theoretically perhaps the best way to maximise network utilisation and adapt to network and user behaviour changes over time. Works best if DNOs know local network live loading (may not by 2023, reducing initial effectiveness). Harder for consumers/suppliers to be able to forecast a consumer's bill. Suppliers would likely need to play a similar risk aggregation/management role that they do for wholesale

5. B5 - Charge design - Critical peak rebates

This form of (probably dynamic) time of day pricing could encourage customers to engage with the options through smart meters. Gives well-targeted signals. Necessary for Suppliers to communicate to customers when critical rebate is in force – and establish a baseline for each customer

Options/adaptations

Update on the draft assessment, initial views

6. B6 - Cost model - Locational granularity for LV connected users

DNOs would need to calculate the tariffs, probably (initially) unable to do so below primary substation level due to lack of network state monitoring. Super-granular pricing is then feasible for large and small suppliers; customers enter their postcode already

7. B7 - Cost model – temporal granularity

Calculation of costs = feasible, but issue of estimating response to peak pricing & ensuring DNOs recover allowed revenue

8. A1 - Cost model - basic charging tier limiting locational or temporal granularity

For suppliers, no need to limit locational; temporally, once have gone beyond 2-rate tariffs in terms of the consumer offering, there is a big step change in offering 3-rate, but not much harder for the Supplier for >3. Some challenges in identifying who would be in basic charging tier and maintaining the list of basic tier customers.

9. A2 - Cost model - Averaging signal or cut-off on degree of locational granularity

Purely a policy decision. Suppliers can easily accept the DUoS price signal including in-built curtailment of rural extremes in a locationally-granular model (or accept less granularity); the real task is for DNOs to construct such price curtailments whilst ensuring they still recover their allowed revenue. Clearly there is some loss of cost-reflectivity from this sub-option. Averaging signals may remove flexibility revenue available to domestic customers

10. A3 - Cost model - Limiting level of temporal granularity / signal dynamism

Temporally, once have gone beyond 2-rate tariffs in terms of the end consumer offering, there is a big step change in offering 3-rate, but beyond that, not much harder for the Supplier for >3 time bands – if some consumers want more.

11. A4 - Charge design – limit on certain types of charge offered

Predicting and understanding the number of customers in different categories could make the models even more complicated. Potentially allows for a different more tailored approach for small business customers compared to residential. Capacity and ToU tariffs problematic for NHH due to smoothed profile.

Options/adaptations

12. A5 - Charge design – minimum required notice period

13. A6 - Charge design – exceedance conditions for agreed capacity

Update on the draft assessment, initial views

Not sure if this is a specific category or just a process that would be applied in scenarios where there are charging options based upon some form of customer characteristic criteria. WRT to dynamic charging, could be difficult for customers to keep track of if changing too quickly (eg every HH)

Requires MPAN specific monitoring which moves away from the principle of aggregate small user billing of suppliers by DNO. Risks for consumers that unexpectedly change capacity requirements and for growing businesses. Likelihood of disputes around capacity bookings and usage.

Options/adaptations

Update on the draft assessment, initial views

1. Shallow connection boundary – small user's status quo

By socialising the cost (and any required reinforcement) of the upgrade for existing users for 100A single phase encourages the uptake of low carbon technologies (LCT) such as electric vehicles. Whilst this doesn't give any price signals, small users are unlikely to be able to respond to price signals by moving location, though they may take up other flexible access or charging options, they won't move to a better electrical location and would otherwise go ahead or cancel. This may therefore better support a societal benefit of Net Zero.

2. Shallow connection boundary with user commitment/securitisation

The requirement of a user commitment or deposit is liable to discourage domestic customers (especially financially constrained small users) upgrading their connection and as such does not support a Net Zero strategy. It is also not clear that DNOs could cope with the additional administration of keeping track of 000s of deposits

3. Shallowish connection boundary

Applying the same rules to small users as for large users could discourage uptake of LCT due to potentially significant reinforcement costs landing on one individual and therefore does not support a Net Zero strategy.

4. Shallowish connection boundary with amended voltage rule

Reinforcement costs at the LV level will be lower than in Option 3, but could still be discouraging for domestic customers (especially financially constrained small users) to install LCT

5. Change the proportion of new capacity the customer pays for

Even with a limitation on the proportion of new capacity a small user has to pay for, this will act as a discouragement to LCT uptake (especially for financially constrained users)

6. Simplification/standardisation/averaging of connection charge calculation

This option does tackle the perception of a postcode lottery. Small users are unlikely to respond to locational price signals (unlikely to move house in order to have a cheaper connection). But standardisation becomes very similar to a shallow connection boundary i.e. full socialisation across everyone installing LCT rather than all customers

7. Limits on shallowish charge

Similar to Option 5

8. Alternative payment options

Will help some small users who cannot afford an upfront cost but will still discourage some from taking LCTs. DNOs will struggle to deal with the potential for bad debt.

Assumptions & Considerations of Assessments

- Existing small users entitled to a defined level of minimum supply of 100A single phase supply ($\approx 18\text{kW}$)
- For retrofit work, the cost to upgrade small users to a 100A supply should be socialised
- For new builds it was recommended that we define a “small user” as a single property (with a single supply). This means that anybody developing two or more properties would be classes as a developer and as such would not come under the non-small user charging rules
- Whilst no agreement reached on what a new build small users connection boundary terms would be, working assumption that the customer would pay for the sole use connections assets but not any reinforcement required to give them a 100A single phase supply. Alternative scenarios will need to be considered further.
- For developers; less support to socialising the costs. But acknowledged that if we put too much reinforcement costs on the developers that it would prevent house building/LCT enablement so need a pragmatic approach to reinforcement apportionment. Initial views that the 2 voltage rule with CAF could fulfil this requirement
- Where a small user requests a supply greater than the minimum size, general acceptance that one of the other principles should apply.
- Acknowledgment that small housing developers/ sites with more than one supply could get caught out by the new rules - no clear agreement on how to avoid this. Interaction between developer and house occupant under the options needs further consideration.

Options/adaptations

A2 Approach to customer engagement & communication

To aid understanding and tariff suitability, advance warning and notification, manage complaints, support tariff comparison and facilitate change of supplier (esp. where equipment is involved)

A3 Tailoring offers to consumers' needs and capabilities, including identifying and protecting vulnerable consumers

Customer characteristics, appropriate safeguards, PPM principles, recognition of needs and capabilities (inc. technology)

A4 Tariff design features

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A5 Standardisation around aspects of good practice

Standard features of ToU, default options, notification, tariff comparison, coordinated multi-party roles

A6 Wider Protections

Aid affordability and energy usage (Warm Home Discount, ECO)

A1 Principles-based approach

Codes of conducts, aid consumer choice & analogous approaches for third parties (DNOs, non-licenced parties and intermediaries)

Update on the draft assessment, initial views

New options need greater understanding and standard metrics - could infer from historic choice, data exchange with DNO and/or use HH data for more than billing (issues with perception?). Vulnerable customers may not give increasing detail or ask for help. Engagement around events (e.g. a house moves to reveal opportunities). Options open to all although to aid customer experience supplier should be allowed to make some recommendations of most suitable tariff based on conversation with customer.

Additive (not restrictive) choices for vulnerable. Requires data sharing inc. historic usage. Tailoring may be more engaging. Classification may restrict if too simple – focus on transparency. Comparison via principles not rules – greater use of common language. Changing circumstances may make offers no longer suitable (needs ongoing monitoring)

Advocacy, guidance and health warnings. Clear identification of risk with the 'more engaged' needing less protections. Information presented/structured to give timely advice and aid decisions. Prevent lock-in or lock out of future opportunities. Trade-offs between tariff design and simplicity.

Common language and calculation methodologies across suppliers and brokers. Standard metrics for risk and required level of participation e.g. ability and willingness to participate in flexibility. Clear roles and responsibilities across multiple parties (esp. emergencies). Could be restrictive or stifle innovation but could aid interoperability and reduce costs. Industry consensus could be hard?!

Could be tailored depending on characteristics – better engaged customers will benefit more. Not all suppliers (presently) offer WHD. Protection may only address cost not ability to offer flexibility. Avoid inappropriate up-selling

As above. Small businesses are not protected to the same extent as domestic consumers, unless they are on a domestic tariff. A principles-based approach may not help businesses compare tariffs.