ofgem Making a positive difference for energy consumers

Delivery Group – 21 Nov 19

Ofgem

Delivery Group meeting agenda

Objective of todays' 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 • 2nd working paper • Work next year • Impact assessment • Access, charge design and cost model workstreams • Network data and monitoring RFI	10:10 - 11:30
Transmission network charging - update	11:30 – 11:45
Connection boundary – overview of 2nd working paper	11:45 - 13:00
Lunch	13:00 - 13:45
Small users – overview of 2nd working paper	13:45 - 15:00
Non-SCR update	15:00 – 15:10
Next steps	15:10 - 15:15

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

Background to the SCR

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

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

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

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

Scope of 2nd working paper

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

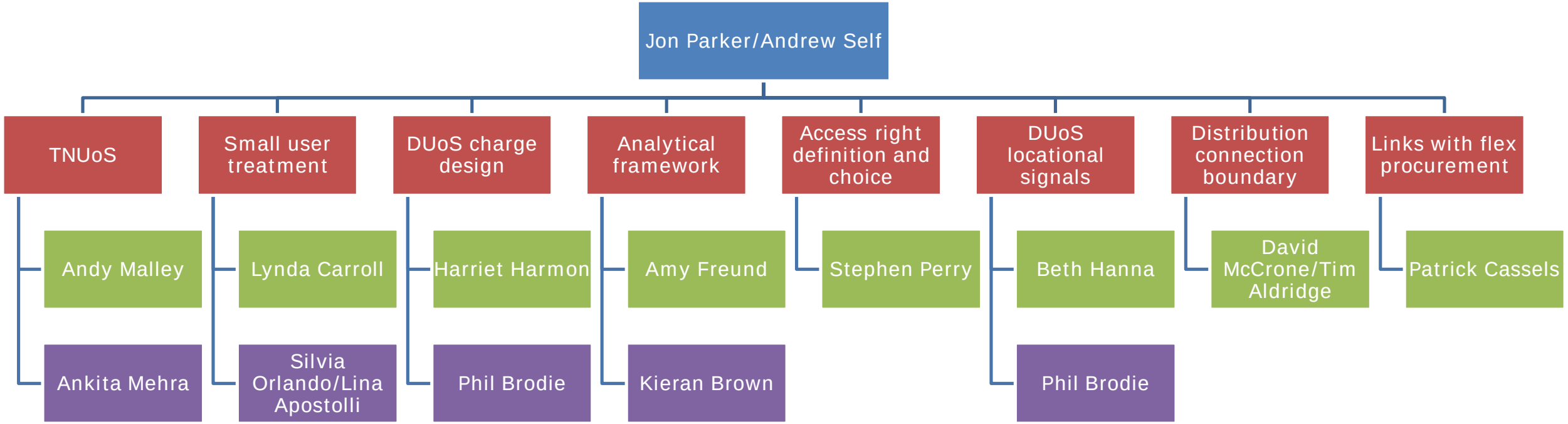
- An initial overview and assessment of options for access rights, better locational distribution network charging signals and charge design.
- The links between access, charging and procurement of flexibility.

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

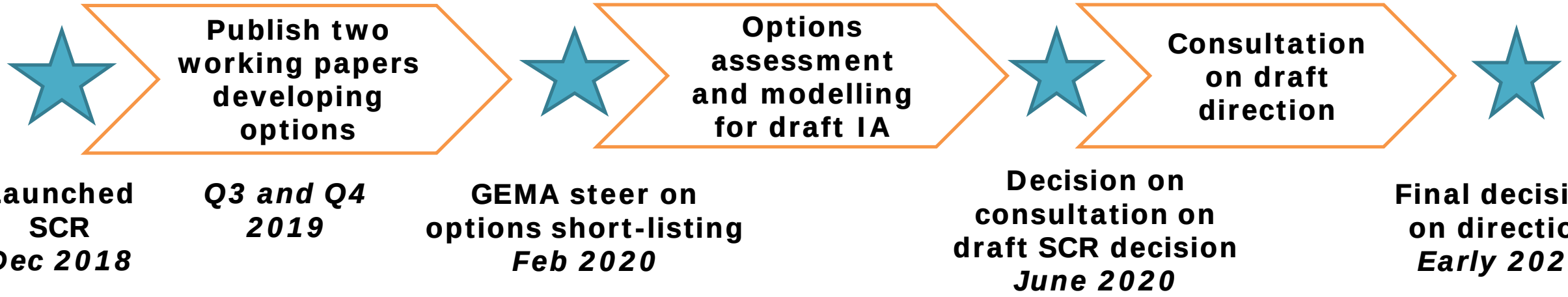
Changes to workstream leads

As a result of resourcing changes, we are amending the Ofgem leads for several workstreams.



Timescales for next year

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. We are also expecting the existing sub-groups to continue. These will be useful inputs in shaping our options assessment and modelling for draft IA.

Impact Assessment

Area of work	How have we taken this work forward and our current thinking	
	Distribution	***Transmission***
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	• NG ESO to provide modelling based on their existing Transport model • Discussions initiated
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. We intend to circulate our key conclusions.	

Impact assessment

- 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)

Access subgroup update

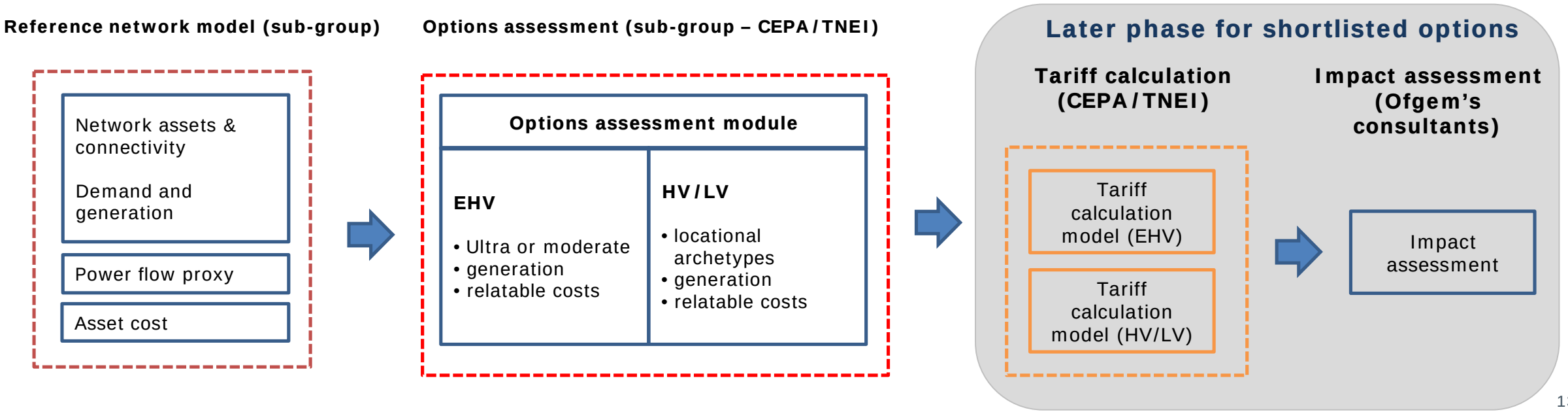
Area of work	Update
1. Monitoring and enforcement note: capture current approach to monitoring and enforcing access rights and potential future changes required to accommodate new access choices.	Report finalised and due to be published on the CFF website.
2. Small users: • develop and assess the options 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.

DUoS charge design update

Area of work	Update
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.	We held a workshop with the DNOs, which identified a number of areas we are considering in more detail, including: • how forecasts differ in how they take into account larger users (with agreed capacity 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
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.	• 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
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.	• 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.
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.	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

Distribution locational cost models design update

Area of work	How have we taken this work forward and our current thinking
1. Locational cost model quantitative analysis: sub-group developing model to assess options outlined in the working paper.	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.
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.	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.



Network data and monitoring evidence

- We have previously discussed ‘incremental’ vs ‘allocative’ cost models and our view that, where possible, an **incremental approach** should result in more efficient network usage.
- We have also set out our view that more efficient signals could be sent through more **locationally granular charges** that reflect local network conditions.
- The Cost Models subgroup has identified several areas, which would require significantly more granular data to enable them to be applied at lower voltages on a cost reflective basis:
  1. Power flow analysis
  2. Generation connectivity
  3. Spare capacity indicators
- As previously flagged at the Delivery Group and the Network Planning workshop, in order to make decisions regarding the cost model and supporting policy issues, we need to understand the level of network data that would be required to fully implement or answer them.
- We can then make decisions regarding the benefits case and what is proportionate.

Network data and monitoring evidence

Incremental cost models and granularity

- The current view of the Cost Models subgroup is that it is not possible to apply an incremental approach below EHV. However, given the greater network efficiency that could be achieved under an incremental cost model, we want to gather evidence regarding why this is the case.
- Therefore, we will shortly be issuing an RFI that builds on the information already provided to us and seeks evidence regarding what would be required to extend an incremental approach to the HV network. Specifically:
  - What level of data do you already have that would support an incremental approach being applied at HV?
  - What level of data do you expect to have within the SCR timeframe?
  - What would be the amount of additional work (time and cost) required to enable the incremental cost model to be applied to HV?
- When preparing your response to this, you may wish to consider the effort required to extend the current EDCM, which is an incremental cost model, to the HV network.

Network data and monitoring evidence

Power flow analysis and generation connectivity

- In addition to the data to support an incremental cost model and more locational charges, we have some specific questions with regards to the data required to support assessment of policy issues that will influence the Cost Model subgroup's work.

Power flow analysis:

- What was the upfront and ongoing cost of implementing the EDCM (FCP or LRIC) power flow modelling at EHV?
- What would be needed (in terms of modelling and monitoring) to implement this at HV?
- How much would it cost (upfront and ongoing) to implement the EDCM approach at HV? How long would this take to implement?
- How much would it cost (upfront and ongoing) to implement the EDCM approach (based on DC load flow modelling) at HV? How long would this take to implement?

Generation connectivity:

- What is known about individual generators connected at HV level and at LV level?
  - Location
  - Electrical connectivity
  - HH generation (actual or deemed)
- What proportion of generation does this cover at each voltage level?
- What is needed to collect or infer this information for the generation not already covered?

Network data and monitoring evidence

Spare capacity indicators

- We are also seeking to understand how to measure spare capacity on the network so it can be signalled to new and existing users and have identified the following questions:
  - What are the ways in which spare capacity can be measured / identified on the network?
  - What data is required to do this?
  - Is this data available at each voltage level?
  - What would be required to obtain this data at each voltage level?
- We recognise the potential complexity with developing a **spare capacity indicator** and would like to test this will the DG today. We have proposed the example below to aid discussion.

Illustrative spare capacity methodology

1. Get the utilisation (max. demand/capacity in %) for the primary sub and all secondary subs below
2. Do a weighted average of these (weighting based on capacity of the sub) as your average utilisation for the network
3. Convert that to peak demand, and use the HH demand profile at the primary sub to determined season of peak
4. Use 'incremental' approach to calculate a notional years to reinforce

Network data and monitoring evidence

Cost model at LV

- In our launch statement we identified the transformation our energy system is undergoing, including at LV, through the penetration of solar PV, electric vehicles and heat pumps. We discussed the potential savings that could be achieved through the use of flexible technologies but and that we did not think the current charging arrangements would achieve them.
- As part of achieving these savings we identified that we should consider improvements to signals about differences in network costs between locations. This would send signals to customers about the impact of their behaviour on the network.
- An incremental cost model could enable the DNOs to send cost reflective signals to LV connected customers. However, the DNOs have indicated that there are significant challenges with achieving this.
- We are therefore asking you to clearly set out:
  - The barriers to implementing changes necessary to apply an incremental cost model at LV.
  - Whether an incremental cost model would be consistent with your approach to operating and planning your networks at LV.
  - How you plan to address the issues that are expected to arise at LV, as more EV and heat pumps are introduced. For example, how will you know when and where local network assets are becoming constrained due to penetration of EV?

Focused transmission network charging reforms

Review of forward-looking transmission charges

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

Further TNUoS project engagement ahead of Working Paper

- 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

Distribution connection boundary – problem statement

- 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

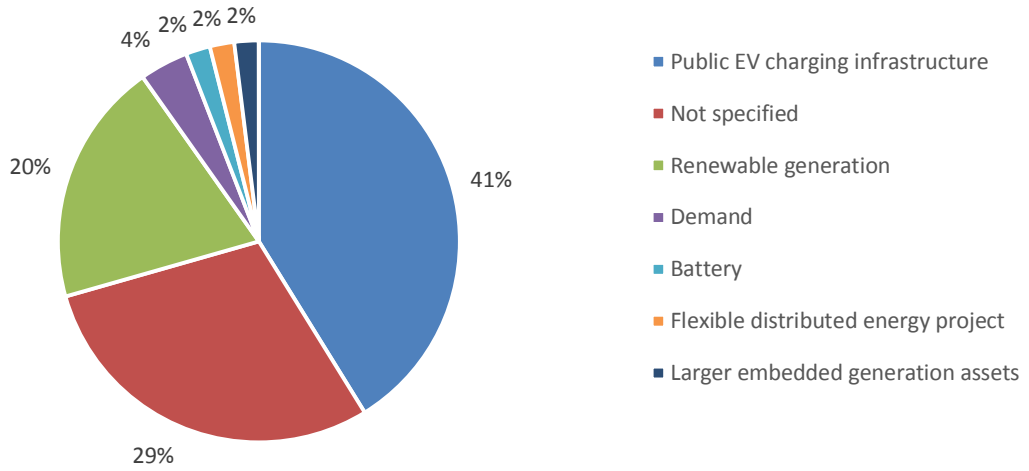
- Shallow-ish connection boundary
- Connecting users pay for new connecting assets and a share of any necessary reinforcement of the upstream network
- Can lead to expensive connections and reduces incentives for DNOs to invest strategically, **but** provides a valuable locational signal where there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

Potential problems with these arrangements

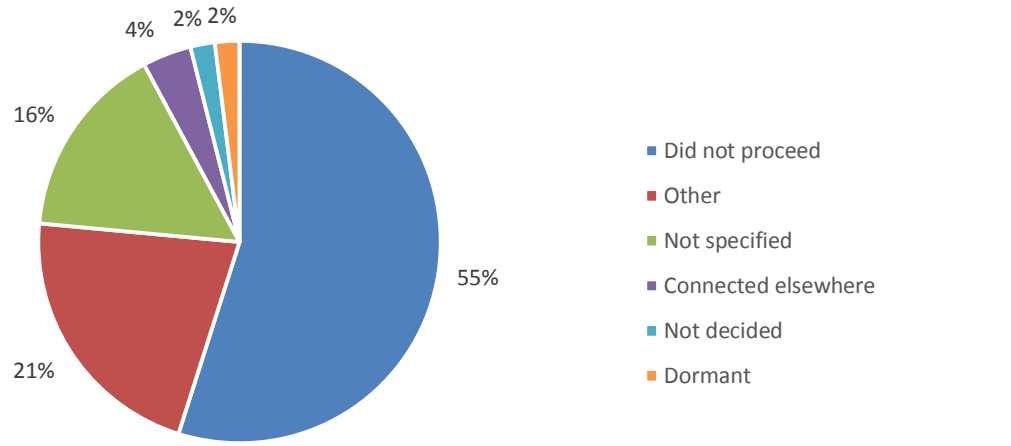
- The difference between the Transmission and Distribution arrangements could be causing material distortions in decisions on where to connect.
- The connection arrangements could be creating barriers to entry for some users (eg, upfront cost) and slow down connections of new technologies like distributed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

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

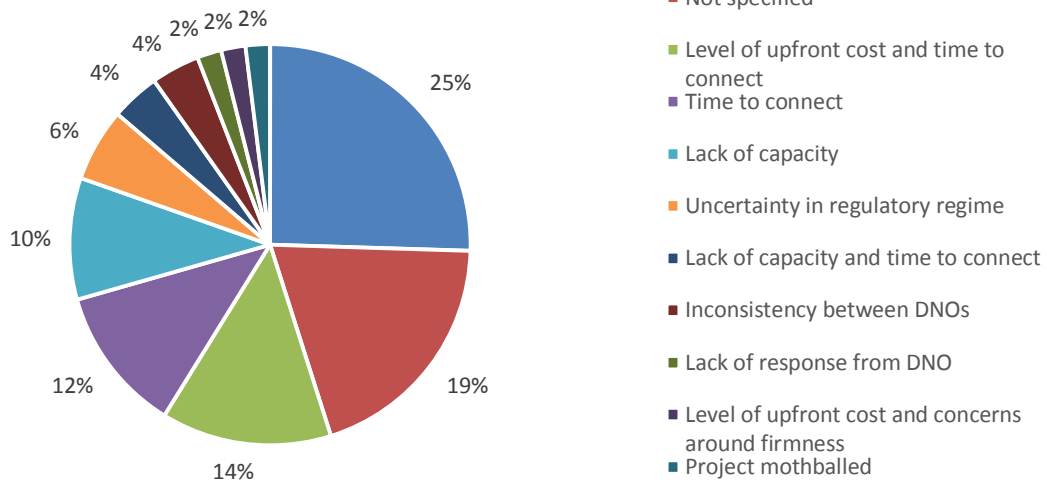
Project by type



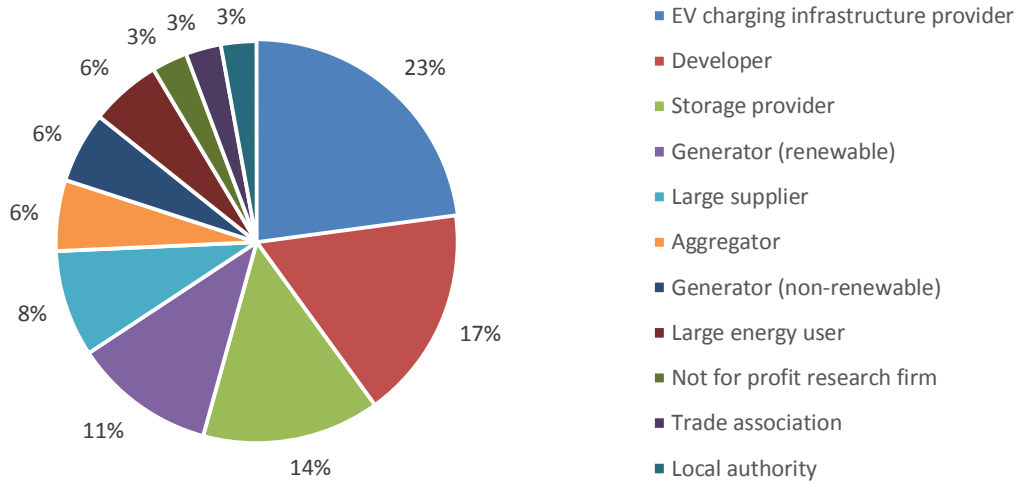
Outcome



Issue



Respondent type (some provided multiple answers)



ofgem Making a positive difference for energy consumers

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.

	Reinforcement costs (apportioned)		Extension asset costs (paid by connecting user)		
Year	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.

Evidence gathering – charging scenarios

- 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	• Status quo • Possible alternative payment methods	• Provides strong locational signal (for new connectees)only	• Reduced incentive for DNOs to invest strategically	• Slow/expensive in congested areas • Payment over time might improve users' cash flow	• Payment over time could require new processes and introduce potential bad debt risk
Shallower	• Amending the apportionment rules so more reinforcement costs are recovered through DUoS • Capping absolute charges	• Weaker locational signal • Possible incentive (or reduced disincentive) for users to oversize capacity requests	• 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). • Some options may make flexible connections less attractive to new connectees.	• 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)	• 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	• Closer alignment with Transmission • Standard connection charges	• Much weaker locational signal for new connections			• Aligning with T would be a new approach for some parties to understand • Challenges around identifying past connectees and user commitment

Distribution connection boundary – our current views

- 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.

Distribution connection boundary – our current views

- 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 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 combine 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

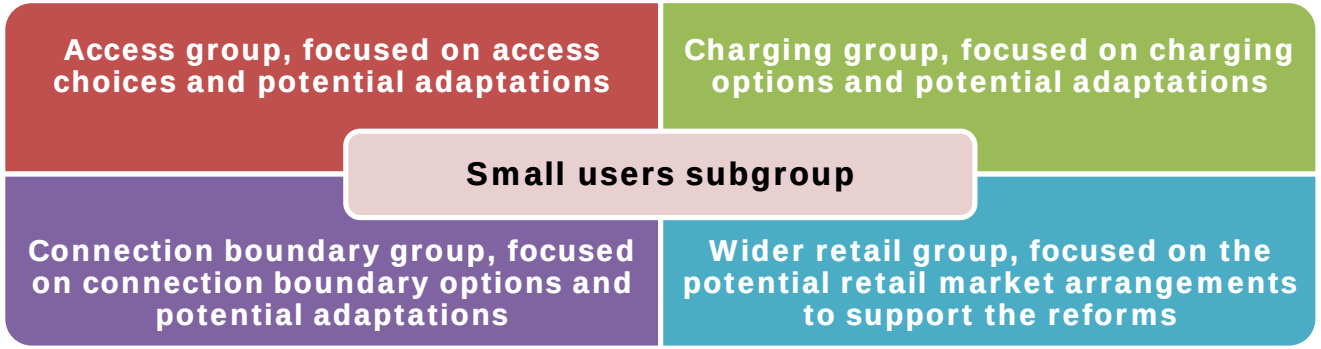
The small users work

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.

Consumer Characteristics

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:

Non-financial risks, eg	Financial risks	Affordability and highly locational ongoing charges differences
• Users turning off appliances needed to meet basic needs at peak times • Users choosing an inadequate access level/type	• 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)	• 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

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)

Access group update – subgroup output

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

Charging group update – subgroup output

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 ad 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-licenced 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.

Emerging findings and discussion

- 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

The Voice of the Networks

Energy Networks Association

Non-SCR Industry-led Update

Paul McGimpsey
November 2019

Non-SCR Industry-led Access

Trading of Non-firm DG curtailment obligations / Exchange of access rights between users

Principles and Rules

PRINCIPLE 1: Transparent information sharing

Sufficient information must be made available to enable users to undertake the exchange of rights.

PRINCIPLE 2: Ability to maintain network continuity

Exchange of capacities must not undermine the ability of the network operator to maintain the continuity of its network.

PRINCIPLE 3: Visibility of other potential trading parties

Those users which have 'opted in' to exchanging capacity must be aware of other potential parties with whom they can exchange.

PRINCIPLE 4: Transparent trading arrangements

The parameters within which exchanges can take place must be well-defined and available to all parties.

Non-SCR Industry-led Access

Trading of Non-firm DG curtailment obligations / Exchange of access rights between users

Findings from Market Simulation:

Equivalence of trades
- Need information on current level of curtailment for each trading party
- Need to consider the different load factors
- Trades could be by MW block, to limit the effects on non-participating customers in stack
- Could consider trade in carbon terms – to avoid giving an advantage to diesel over renewables

Fairness
- Customers who don't opt in should not be negatively impacted
- Real risk that parties could 'corner the market' if market is illiquid
- Needs oversight (a central role?!) to avoid the potential for gaming
- Ofgem was seen as the ultimate arbiter should disputes with licensed parties not be resolved

Customer Insight
- Giving the DNO sight of the values of trades could reveal a requirement/support the case for additional network capacity – i.e. if the sum of trades is more expensive than reinforcement, then reinforcing could lead to a more efficient system

Dynamics
- For the unindoctrinated, LIFO stack was not an immediately understood concept
- Ambiguity over price, value, costs and trade-offs led to cautious trades (and/or heroic assumptions)
- The duty to confirm acceptable performance/capability should sit with the seller
- Responsibility to coordinate services and/or revenue stacks should sit with the seller
- DNOs (and others) should confirm if they consider different services to be exclusive or complimentary

Process
- Approvals need to allow sufficient time to update ANM systems etc
- The requirement for technical assessment of network, could be a condition of the contract – this may lead to limits on the number of exchanges agreed during a period
- Need to specify window ahead of closure, data exchanges and visibility of technical viability
- Rules to deal with delivery need to be clear about the acceptable technical requirements and performance characteristics
- Non-performance should not be penalised if it is caused by the buyer (in this case it was a DNO outage that was considered but there could be some read across to the behaviour of parties in a LIFO stack changing their behaviour to the disadvantage of the trading party)

Non-SCR Industry-led Access

Trading of Non-firm DG curtailment obligations / Exchange of access rights between users

Next Steps (by end-2019)

- Webinar with Charging Futures / Challenge Group
  - Testing the appetite
- Report to Open Networks Steering Group
- Handover to Open Networks WS1A

Next Steps (2020)

- Proposed new Open Networks product
- Identify potential trial scenarios where DSOs can demonstrate neutral facilitation of these new markets

Non-SCR Industry-led Access

Application Interactivity and Connection Queue Management

- Open Networks Consultation – 19 responses received

Application Interactivity

- Broad support for policy proposals - some detailed comments on related topics

Connection Queue Management

- Support for the principle of queue management and proposal to promote flexibility - some concerns raised on the detail of the policy

Next steps (by end-2019)

- Production of guides
- Implementation timetables
- Prepare a process to apply the 'conditional' interactivity approach to connections across network boundaries
- QM: Engage with individual respondents on issues raised

Non-SCR Industry-led Access

DCP348: The development of a common methodology for the recovery of costs associated with flexible connection schemes

- DCUSA Consultation – 6 responses received
- Agreement that change proposal better facilitates DCUSA objectives
- Only minor points of clarification /amendment received
- Working Group to change implementation date (subject to Authority Approval) to 1 April 2020

Next steps

Next steps

- We have the next CG session on 25 November. We are keen to increase network and system operator's presence at the CG.
- 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 Delivery Group will be in early January.
- 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

ofgem Making a positive difference for energy consumers

Annex 1 – Access group update

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

Annex 1 – Access group update

Options / adaptations	Update on the draft assessment, initial views
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**	• 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)
A1 – Limits on access choice	• 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

ofgem Making a positive difference for energy consumers

Annex 1 – Charging group update

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

ofgem Making a positive difference for energy consumers

Annex 1 – Charging group update

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.

Annex 1 – Charging group update

Options / adaptations	Update on the draft assessment, initial views
12. A5 - Charge design – minimum required notice period	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)
13. A6 - Charge design – exceedance conditions for agreed capacity	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.

Annex 1 – Connection boundary group update

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.

Annex 1 – Connection boundary group update

Assumptions & Considerations of Assessments

- Existing small users entitled to a defined level of minimum supply of 100A single phase supply (≈18kW)
- 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.

ofgem Making a positive difference for energy consumers

Annex 1 – Wider retail group update

Options / adaptations	Update on the draft assessment, initial views
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)	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.
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)	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)
A4 Tariff design features Cooling off periods, financial guarantees, override options and clear conditions around decommissioning	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.
A5 Standardisation around aspects of good practice Standard features of ToU, default options, notification, tariff comparison, coordinated multi-party roles	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?!
A6 Wider Protections Aid affordability and energy usage (Warm Home Discount, ECO)	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
A1 Principles-based approach Codes of conducts, aid consumer choice & analogous approaches for third parties (DNOs, non-licenced parties and intermediaries)	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.