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Delivery Group – 26 July 19

Ofgem

Delivery Group meeting agenda

Agenda topic	Time
Welcome and introductions	10:00 – 10:05
Actions update	10:05 – 10:15
Project update • Working paper update • Subgroup updates	10:15 – 10:45
Feedback on the 1st working paper • Intro Chapter • Our approach • Case studies • Access rights • Procurement of flex links • Cost models • DUoS and TNUoS charge design	10:45 – 12:15
Lunch	12:15 - 13:00
Future project plan (each policy lead) • Analytical framework • Evidence needed	13:00 - 14:45
Non SCR update – ENA update	14:45 – 14:55
AOB	14:55 – 15:00

Actions update

Project update

Purpose of the day

The purpose of today is to:

- Enable you to provide feedback on the our draft working paper. We are keen to hear your views.
- Discuss with you our current thinking on our proposed future workplan.

Project update – Working paper

- Draft 1st working paper circulated to Delivery Group and Challenge Group this week.
- We will make changes to the 1st working following the feedback provided. We intend to publish the 1st working paper this summer. The Charging Futures Forum in September (19 Sept) will be focused on the 1st working paper.
- We will publish a second working paper at the end of the year that will focus on:
    1. **Small user consumer protections**
    2. **Distribution connection charging**
    3. **Focused transmissions reforms**
- We intend to publish our minded-to decision in 2020 and final decision in 2021. We currently envisage that any changes will be implemented by April 2023.
- We will continue to engage with the Delivery Group, Challenge Group and wider stakeholders to help inform our thinking.

Subgroup update – Access

Products	Where we are now	Steps to finalise
Whether alternative access choices would restrict the ability of users to **participate in wider markets**	• Final draft (excel spreadsheet) is ready to be sent to CG and DG.	• Update draft in response to comments.
The **feasibility** of the ESO/DNOs offering the new access choices identified.	• The subgroup are making final updates to the workbook (excel spreadsheet). Ready to be sent to DG. • Sub-group producing subsidiary note on challenges of introducing financially firm access.	• Update workbook in response to comments. • Note on financially firm access to be finalised.
The **benefits to network companies and system operators** of improved definition or choice of access rights.	• Subgroup produced qualitative assessment of benefits (PowerPoint presentation). • Developing approach for quantitative assessment of benefits (eg reviewing existing data)	• We intend to circulate this document to DG for comment. Further discussion and development needed on approach for quantitative assessment.
Whether changes are required to the **monitoring and enforcement** of access rights to accommodate new access choices.	• Subgroup produced note on this and intend to circulate this to DG when ready.	• Update workbook in response to comments when circulated.

Subgroup update – Cost models

Subgroup update – connection boundary

Products	Where we are now	Next steps
Develop and assess options for **amending the distribution connection charging boundary**	• First draft of current arrangement circulated • Longlist of options identified. • Sub-group completed initial assessment of feasibility and desirability (10 Jul).	• Respond to comments and finalise current arrangements description. • Agree and prepare assessment as interim output for September DG and CG (Excel).
Develop and assess the options for introducing some form of **user commitment**	• High level options identified.	• Develop detailed proposals, including feasibility and potential barriers.
Assessing the value of the options identified for changing the distribution connection charging boundary		• Develop method for assessing value to users (possible CG survey).
Treatment of existing users	• Started legal analysis.	• Analysis of historical data (from RIGs and may require DNO input). • Continuing legal analysis.
Legislative change	• Started legal analysis.	• Continuing legal analysis.

Feedback on Summer Working Paper

Feedback – Intro and "Our Approach" Chapters

Introduction chapter - explains the range of reforms underway on network access and charging to support the transition to a smarter, more flexible and low carbon energy system. We also outline the structure of this working paper.

"Our approach" - provides an overview of the approach we have taken to date and intend to take in the future to develop reforms for network access and forward-looking charging arrangements through the SCR process.

Question:

- Do you have any comments on these chapters?

Feedback – Case Studies

Case studies chapter:

- We outlined four case studies:
  1. Distribution-connected generator
  2. Community energy project
  3. Large demand user
  4. Vehicle fleet operator

We use these case studies to outline the desired outcomes of this project and how the proposed options for reform could impact each of these users.

Questions

- Are there types of customers that are not represented by these case studies (excluding small users)?
- Do you agree with the desired outcomes for each case studies?
- Do you have any other comments on the case studies chapter?

Feedback – Procurement of Flexibility links

Procurement of flexibility links chapter:

- Chapter discusses how charging, access and flexibility procurement can work together to efficiently value flexibility on the network
- We assess these flexibility instruments qualitatively against a set of relevant criteria
- We discuss some issues relating to how these signals may fit together

Questions

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- Have we missed anything relating to the issues we cover in this chapter?
- What sources of evidence should we be reviewing to develop our assessment further?

Feedback – Access Rights

Access rights chapter:

- Outlines our preliminary considerations on each of the options which can make up an access right.
- Discusses our preliminary considerations on cross-cutting policy considerations.

Questions

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- Have we missed anything relating to the issues we cover in this chapter?

Feedback – DUoS Cost Models

DUoS cost models chapter:

- We set out the options for reform of how locational charging signals are calculated. This includes our preliminary views on two key areas:
  1. Network cost models: this includes the options we have identified to improve the methodologies used to estimate future network costs
  2. Locational granularity: this includes the options we have identified to improve the extent to which distribution charges vary by location.

Questions

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- What are your views on which cost modelling approach should be used and why?
- If charges are based on costs at primary substation, how workable is this and how would it be reflected at lower voltages?
- What are your plans to improve network connectivity modelling in the future?

Feedback – DUoS Charging Design

Charging Design chapter:

- Provides an initial assessment of our five basic options, including advantages and disadvantages of each option.
- Discusses a number of cross-cutting issues and sets out preliminary views on several of them, which are summarised at the end of the chapter.

Questions

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- Do you have any suggestions for additional evidence to enable us to firm up our initial assessment of our basic options?

Feedback – TNUoS

TNUoS chapter:

- Set out our initial assessment of the basic charging options and how they could be applied to TNUoS **demand** charges.
- We also included our high level consideration of cross-cutting issues, such as feasibility of applying across DUoS and TNUoS.

Questions

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- Have we missed anything relating to the issues we cover in this chapter?

Lunch

Future project plan

Purpose of session

- We have been developing detailed project plans, with an initial focus on identifying the work required to produce a shortlist of options for GEMA in February. We have identified:
  - Policy questions we consider need to be answered
  - Potential source of the evidence to answer the question
  - Guiding principle(s) that we will assess the evidence against
  - Dates when we believe the question needs to be answered by (some of these are influenced by timing of the second working paper and internal governance dates)
- Although this is still a work in progress and we will be undertaking further work to refine the questions we wanted to present our current thinking to you in order to obtain your input. We will circulate the detailed plans, once they are finalised.

Questions

- Are there any questions that you think are missing and which we will need to consider in order to determine a shortlist of options?
- Are there any questions that you think it will be particularly difficult to obtain evidence to answer and, if so, why?
- What is the most effective way of gathering this evidence?

Guiding Principles

- Following are our updated Guiding Principles and our current thinking on the considerations which underpin each of them.
- We have identified in our policy question tables which Guiding Principles the evidence will help to answer.

Principle 1: Arrangements support efficient use and development of system capacity

- Access arrangements support network capacity in allocation to users' needs and value to network usage
- Signals reflect costs and benefits of using network at different times and places
- Signals support efficient use of capacity
- Signals ensure no undue cross-subsidisation between users
- Effective signals for justified new network capacity
- Reduce barriers to entry
- Enable new business models

Principle 2: Arrangements reflect the needs of consumers as appropriate for an essential service.

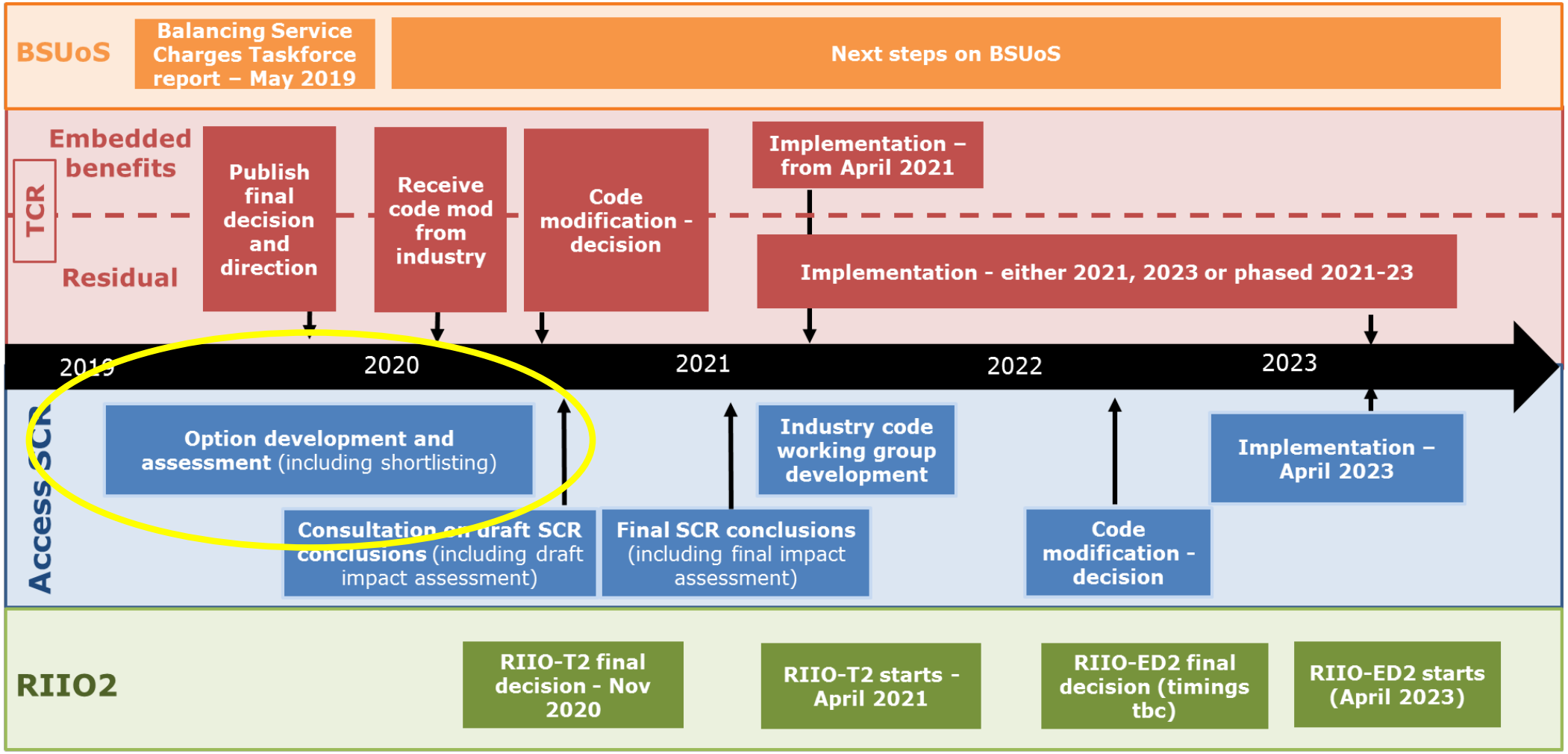
- Avoid inappropriate outcomes or unacceptable impacts for small users
- Users are able to understand arrangements
- Users have sufficient information to predict their future access and charges

Principle 3: Any changes are practical and proportionate.

- Impact on existing data collection, processing and analysis requirements
- Impact on existing systems, assets and equipment, potential requirement for new IT/operational systems (eg billing systems)
- Modifications to charge calculation and settlement methodologies
- Adaptions to engineering or planning standards
- Impact on customer engagement or commercial agreements
- Ease of implementation

Charging & Access timelines

- We are currently working with the Delivery and Challenge Groups to develop the options and undertake an assessment to enable us to identify a shortlist for our Impact Assessment



Key Access SCR milestones

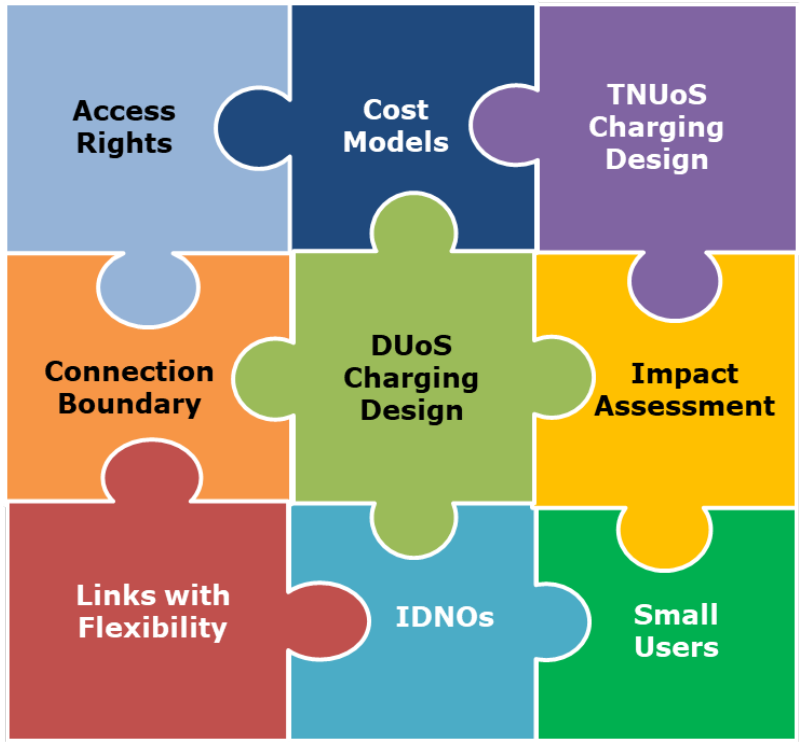
- We are working towards the following milestones over the next seven months. Key dates are:
  - **October** – GEMA to cover off on small user and connection boundary issues
  - **November** – publication of second working paper, focused on small users, connection boundary and TNUoS generation charging
  - **December** – Delivery and Challenge Groups, focused on potential shortlist of options
  - **February** – GEMA to sign off on shortlist of options for modelling in the Impact Assessment

			Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20
Programme	Publications			1st working paper	Industry engagement		2nd working paper	Industry engagement		
	Ofgem governance / decisions on access reform	GEMA	31-Jul			30-Oct				Feb-20
		Other				Academic panel - Oct 2019				
	External engagement	Delivery Group	26-Jul		03-Sep	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20
		Challenge Group	24-Jul		25-Sep			Dec 2019?		
		CFF	04-Jul		CFF- 19 Sept			CFF - Dec 20?		

Workstreams

We are delivering the SCR through seven workstreams:

1. **Connection Boundary** – considering whether there is merit in moving to a shallow connection boundary
2. **Access Rights** – reviewing the definition and choice of distribution and transmission access rights
3. **Cost Models** – examining what costs should be in the forward looking signal, how costs vary by location and how they can be signalled to users
4. **DUoS Charging Design** – assessing changes to how charges are designed to improve cost reflectivity and signals to users
5. **TNUoS Charging Design** – assessing changes to the charge design for demand TNUoS and whether distribution users should face TNUoS charges
6. **Small Users** – assessing whether the options can be applied to small users or amendments are required
7. **Impact Assessment** – undertaking modelling to feed into the distributional, systems and behavioural impact of options



We are also considering several other specific issues alongside the overarching workstreams:

- **IDNOs** – we will undertake a sprint in the autumn to consider any specific impacts of our options on IDNOs before arriving at our shortlist for impact assessment
- **Links with Flexibility** – we will continue to work with colleagues and industry to identify links, including engaging on the DSO transition

Analytical Framework

- The analytical framework sits across all of the workstreams within the SCR. Together the evidence gathered will inform our draft and final impact assessments in 2020.

The Analytical Framework encompasses:

- Qualitative assessment of the options longlist against the guiding principles (and further assessment of the shortlist)

Supported by quantitative assessment of the impact of options and options packages including:

- Development of Reference Network Models at Distribution to determine the impact of increased locational granularity in the definition and application of forward-looking costs, and at Transmission to determine impact of proposed options (such as changes to the reference node)

Which feeds into:

- Modelling of the impact on DUoS tariffs through changes to cost models and to Distribution charging methodologies based on alternative connection boundary, charge design and access rights options; and the impact of changes to TNUoS charge design

Which feeds into:

- The distributional, behavioural and systems analyses

Analytical Framework: Key Evidence and Progress

Requirement	Source of Evidence	Date	Update
Completed qualitative assessment of longlist options	• Subgroup products • Working papers • Literature and academic reviews	Jan 2019	• Ongoing through subgroups, Ofgem analysis and working papers
Agreed options shortlist	• Ofgem assessment and decision	Feb 2020	• To be agreed
Reference Network Modelling (Dx and Tx)	• ENA/DNOs for Dn (under discussion) • NG ESO for Tn	End Oct 2019 for Dx End Nov 2019 for Tx	• Discussions with ENA on scope / potential to use WSP models • Tx approach to be defined once Ofgem resource in place
Modelling of impact on DUoS tariffs and Dn charging methodologies under DCUSA contract	• DCUSA contract suppliers (CEPA & TNEI) • Reference Network Modelling	End Dec 2019	• Phase 1 scoping approved by DCUSA panel • Kicked off w/c 15th July
Modelling impact of TNUoS changes on transmission charge methodologies	• NG ESO	End Dec 2019	• To be defined
Consultants in place for distributional, behavioural and systems analyses	• Ofgem decision	End-October 2019	• Procurement process to be launched early August
Distributional, behavioural and systems analyses structure / models in place	• Consultants • Industry stakeholder (DG/CG input)	End-Jan 2020	• Not started
Modelling completed	• Consultants • Industry stakeholder (DG/CG input)	May 2020	• Not started
Draft Impact Assessment completed	• Ofgem developed based on evidence	June 2020	• Not started

Policy questions – Connection Boundary

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Existing users	If moving to a shallow boundary, how should we treat existing users?	Ofgem assessment, existing user product	2, 3	Nov 2019 (for 2nd WP)
User segmentation	Should any proposed change apply across all users?	Ofgem assessment, connection boundary product	2, 3	Feb 2020 (for GEMA shortlist)
Overarching	Is there a case for moving to a shallow boundary?	Connection boundary and value products	1	Feb 2020 (for GEMA shortlist)
Overarching	How feasible/desirable are the options for moving the distribution connection charging boundary?	Connection boundary and value assessment products, output from locational DUoS sub group	1, 3	Nov 2019 (for 2nd WP)
Value	Do the longlisted options have value to 1. network/system operators 2. users?	Value assessment product	1	Nov 2019 (for 2nd WP)
User commitment	If moving to a shallow boundary, should we introduce some form of user commitment?	User commitment product	1, 2, 3	Nov 2019 (for 2nd WP)
Overarching	How feasible/desirable is making other changes to the connection charging arrangements (eg, delayed payment)?	Connection boundary product	1, 3	Feb 2020 (for GEMA shortlist)
Overarching	Would any of these options have wider/unintended consequences (eg, at transmission, on competition in connections etc)?	Connection boundary product	1	Nov 2019 (for 2nd WP)

Policy questions – Access Rights

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Small users	Which of these access choices should be available for small users and which should they be protected from?	Small users subgroup	2	Oct 19 (for 2nd working paper)
Overarching	To what extent do options support efficient use and development of network capacity (including compared to procurement of flexibility).	Access subgroup	1	Feb 2020 (for GEMA shortlist)
Overarching	To what extent do options reflect the needs of consumers (including behavioural response).	Ofgem engagement with consumers.	2	Feb 2020 (for GEMA shortlist)
Overarching	How could these access choices be reflected in charging?	TNEI/CEPA	3	Oct 19
TNUoS	How should distribution-connected users' access to the transmission be defined?	Access subgroup/TNUoS work	1, 3	Oct 19 (for 2nd working paper)
Overarching	How standardised should access choices be?	Access subgroup	1, 3	Oct 19
Overarching	Should options be available at transmission and distribution?	Access subgroup	1, 3	Feb 2020 (for GEMA shortlist)
Overarching	How feasible are each of the access choices?	Access subgroup (in progress)	3	August 19
Overarching	Would any alternative access choices restrict the ability of users to operate in wider markets?	Access subgroup (in progress)	1, 2	August 19
Overarching	Are changes required to the monitoring and enforcing access rights to implement alternative access rights?	Access subgroup (in progress)	1, 2, 3	August 19
Sharing	What is the respective roles of sharing and trading access?	Access subgroup and Non-SCR working group	1	Nov 19

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Policy questions – Cost Models

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Extent of costs to be charged for	Which costs should be included in the network charge? (e.g. replacement, reinforcement, maintenance, other opex, business rates, call centres, pensions etc.)	Evidence of relative magnitude of cost drivers and proposed treatment under different models.	1, 3	Oct 2019 (modelling & GEMA s/l)
Spare capacity treatment	Should LRMC DUoS charges be 'moderate' LRMC (profiled according to spare capacity availability and load growth), or 'ultra' LRMC (not profiled by spare capacity).	Gather and assess evidence for value of spare capacity in different approaches and which should be further considered.	1, 3	Oct 2019 (modelling & GEMA s/l)
Locationally granular HV/LV signals	How should users be segmented/grouped below the primary substation level and to what level of granularity to improve accuracy of charges?	Identify options for granular segmentation based on available data to inform archetypical models dev.	1, (2), 3	Sept 2019 (draft view, 2nd working paper)
SRMC vs LRMC	Should DUoS charges be based on the LRMC (Long Run Marginal Cost) or the SRMC (Short Run Marginal Cost) of the network?	Provide high level feasibility assessment of SRMC for distribution charges.	3	August 2019 (modelling & GEMA s/l)
Credits and charges vs charges-only	Should DUoS charges continue to be credits and charges (upstream only, relative signal, credits funded by residual), or is there a case to move to charges only (upstream and downstream, absolute signal, residual is truly residual).	Assessment of potential conflicts between charging options and understanding of cost reflectivity, and identify impact on other flexibility tools	1, 3	Sept 2019 (modelling & GEMA s/l)
Layering of EHV charges	Should the locational (nodal) signal for impact on the EHV network be passed on to HV/LV users?	Evidence of the impact this is likely to have on charges.	1, (2), 3	Sept 2019 (modelling & GEMA s/l)

Policy questions – Cost Models

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Cross-cutting	Which access options are not feasible based on ability to adapt the charging methodology to accurately discount network charges based on certain access choices?	Will be based on granularity and ability accurately 'discount' bespoke charges	3	Oct 2019
Cross-cutting	Is a charging approach that pays both charges and credits (mandatory, LRMC, relative cost) compatible with flexibility procurement (opt-in, could be SRMC, absolute cost), and what does this mean for the role of charges vs flexibility?	Assessment of logic behind a relative charges based regime	1, 3	Oct 2019
Allocative vs assumed vs forecast model	Should accurate charging signals be reliant on accurate forecasts/assumptions about demand growth and future network developments ('forward-looking' e.g. FCP/LRIC) or should they not account for demand growth and future network developments at all ('allocative' e.g. Transport model).	Evidence on historical performance of the models (which use different approaches). View on the strengths and weaknesses of different models.	1, 3.	Oct 2019
Extend transport model down (EHV)	If an 'ultra' approach is chose - which methodology should be used? For EHV? For HV/LV? (e.g. Transport/asset-based/other).	Evidence for the detailed options that should be considered for shortlisting.	1, 3	Dec 2019
Improve and extend EDCM	If a 'moderate' approach is chosen - which methodology should be used? For EHV only - hypothesis is moderate will not be feasible for HV/LV due to lack of information availability.	Evidence for the detailed options that should be considered for shortlisting.	1, 3	Dec 2019

Policy questions – DUoS Charging Design

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Overarching	Are there reasons to introduce separate charging arrangements for small users and what might they look like?	Small user subgroup assessment of shortlist options	2	Oct 19 (for 2nd working paper)
Overarching	Should TNUoS demand charges and DUoS charges be the same design?	Outcomes of DUoS and TNUoS modelling Ofgem assessment	1, 3	Feb 2020 (for GEMA shortlist)
Real time pricing	Is it feasible to implement granularity of modelling required to introduce real time pricing?	Cost Models subgroup	1, 3	Feb 2020 (for GEMA shortlist)
CPP	What voltage can CPP be implemented for, based on the granularity of modelling that is possible?	Cost models subgroup Delivery Group Ofgem assessment	1, 3	Feb 2020 (for GEMA shortlist)
Overarching	*[Subject to the degree of locational granularity]* should more granular TOD be introduced?	Delivery Group	1, 2	Feb 2020 (for GEMA shortlist)
Overarching	Should seasonality be applied to DUoS charges? Should it be applied below DNO region level?	Delivery Group Small users subgroup	1, 2	Feb 2020 (for GEMA shortlist)
Agreed capacity	Is it possible to have defined access rights without agreed capacity charging?	Access rights subgroup CEPA / TNEI	1	October 19
Overarching	When considering issues such as seasonality, is electrical connectivity to primaries a reasonable proxy for impact at lower voltage levels?	Cost models subgroup Delivery Group	1	October 19

Policy questions – DUoS Charging Design

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Agreed capacity	Does DNO network planning support the use of agreed capacity charges, as being representative of how network costs are actually incurred?	Access rights subgroup Delivery Group	1	September 19
Overarching	On what basis should primary substation costs be batched up to create charges that best reflect seasonal and TOD differences and differences in underlying costs?	Local Granularity subgroup Delivery Group	1, 2, 3	November 19
Agreed capacity / Volumetric	Would applying a mix of capacity and volumetric charges improve likelihood of behaviour change or result in two weaker signals?	CEPA / TNEI Academic input	1	November 19
Overarching	What type of behavioural response do we expect to see under each charging option?	Ofgem assessment	1, 2	October 19
Actual capacity	Are there benefits to an actual capacity charging arrangement that do not also apply to volumetric TOU?	Academic input International case studies	1	November 2019

Policy questions – TNUoS demand

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Reference node	Could there be merit in moving the reference node, which means we need to do further analysis?	Initial ESO modelling	1	Oct 19 (for 2nd working paper)
Reference node	What is the impact of moving the reference node?	Further ESO analysis	1	November 19
Overarching	Do we need to make changes to TNUoS to address differences between types of generation / flex? If so, what changes?	Outcomes of TNUoS charging design work	1	Feb 2020 (for GEMA shortlist)
Overarching	Are there any changes we need to make to the transmission arrangements beyond the SCR?	Ofgem assessment	1	Feb 2020 (for GEMA shortlist)
TNUoS generation	Is there sufficient evidence that distributed generation drives costs on transmission networks?	Delivery Group	1, 3	Oct 19 (for 2nd working paper)
Triad	What is the impact of separate and combined Triad reform options?	ESO modelling	1, 2	November 19
Overarching	Should TNUoS demand charges and DUoS charges be the same design?	Outcomes of DUoS and TNUoS modelling Ofgem assessment	1, 3	Feb 2020 (for GEMA shortlist)
Overarching	Do we need to introduce any protection for small users (given the ESO bills suppliers at the GSP group level)?	Small Users subgroup	2	Oct 19 (for 2nd working paper)

Policy questions – Small Users

Option	Policy question	Source of Evidence	Guiding Principle Alignment	Date
Overarching	Clarify our interpretation and application of our second guiding principle.	Ofgem assessment	2	Sep 19 (for 2nd working paper)
Overarching	What is the scope of consumer risks and impacts for which we should seek to apply protections? How far should any protections come through the access and charging framework, vs wider policy?	Ofgem assessment	2	Sep 19 (for 2nd working paper)
Overarching	Which access and charging options should apply for small users, including any adaptations or protections? To include assessment on: • level of signal granularity for small users, and any need to blunt signals to supplier • extent to which principles-based or other retail market protections or enablers have a role • degree of access choices and which have value / any not suitable • whether and how to define explicit access rights for small users • appropriate connection boundary arrangements for small users.	Outcomes from Access Rights, Cost Models and Charge Design workstreams	2	Feb 2020 (for GEMA shortlist)
Overarching	Confirm clear scope of how small users are defined, and what relevant subcategories exist within this. Confirm where the small user workstream needs to focus and are any users not included?	Ofgem assessment Small users subgroup	2	Sep 19 (for 2nd working paper)

Non-SCR update

Any other business

Next steps

Future meetings:

- **Delivery Group -** 3 September (ENA offices) – this will focus on the 2nd working paper
- **Challenge Group -** 30 September (ENA offices) – this will focus on the 2nd working paper
- **Charging Futures Forum** - 19 September (etc venues, County Hall, London) - this will focus on 1st working paper.

Webinars

- We have planned a Webinar on Wednesday 31st July targeted at suppliers not involved in the Challenge Group. The webinar will provide the background on the project and will be followed by a short online survey to better understand the extent to which suppliers' approach to retail tariff design for small energy consumers would be affected by reforms.
- Once we have published the 1st working paper we intend to host a webinar – to provide an overview of the document.

Annex – working paper policy chapter summaries

Purpose of this session: get your views on the case studies

In our working paper we provide four case studies to illustrate the potential impact of options we are considering. The case studies are purely illustrative and are intended to represent a range of large users. Our second working paper will include small user case studies.

These illustrative case studies are intended to help explain:

- the expected outcomes that we want to achieve,
- the potential impacts of the proposed options for reform on different types of network user, and
- how potential reforms could impact users' access to, and use of, the network.

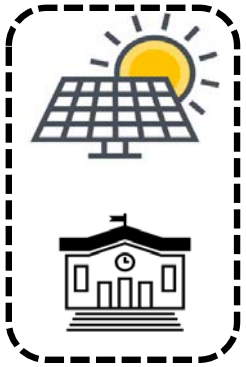
Case study 1 - distribution connected generator

Case study: a wind generator is seeking connection to the distribution network in a generation-dominated area with network constraints. Due to the volume of distributed generation connected to the local network, the DNO has to curtail distribution generation output at certain times and the distribution network frequently exports power onto the transmission network.

Desired outcomes:

- Incentivise users to install and manage their generation in a way which **takes into account network costs** (eg deciding where to locate generation and what technology to install).
- **We do not want arbitrary differences** in network access and charging arrangements across voltage boundaries to influence generator decisions.
- We want the generator to be able to **gain access to meet their needs, as efficiently and quickly as possible.**
- We want arrangements to **provide high quality information to network and system operators** about where and when generators, need or value new network capacity.

Case study 2 – Local energy user



Case study: A community energy project is seeking to connect a new 'solar farm' and large, new community centre at separate sites. Both of these connections are to the low voltage (LV) electricity distribution network. This party is seeking to be self-sufficient, by matching generation and demand locally.

The local network is generation-constrained. New sources of demand are beneficial in alleviating the generation constraint, but new generation can trigger the need for expensive network reinforcement.

Desired outcomes:

- We want all users to be able to **choose the type of network access that most suits their needs**.
- We want to ensure that **arrangements reflect where local energy can bring benefits to network management.** For example, incentivising users to match generation and demand locally to avoid need for expensive reinforcement.
- We want charging and access arrangements to **influence the development of community energy projects,** so that the projects are designed to take into account network charges (eg deciding where to develop community energy projects).

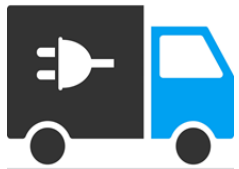
Case study 3 – large demand user

Case study: a large demand user with the ability to participate in demand-side response, is seeking connection to the extra high voltage (EHV) distribution network. It also has an onsite generator, which can meet some of its demand.

Desired outcomes:

- We want this demand user to be able to **gain access to meet their needs**, as efficiently as possible.
- We want the user to **face cost reflective forward-looking charges** that reflect the cost or benefit they confer on the system. This should allow all users to compete on a level-playing field.
- We want to ensure **flexibility provision is rewarded** for the value it can bring to the flexible energy system

Case study 4 - Business with fleet of vehicles



Case study: a delivery company is looking to invest in a fleet of electric delivery vans. The delivery company is located in a demand constrained area and is considering increasing its maximum import capacity to connect several rapid electric vehicle (EV) chargers for its fleet of delivery vans.

Desired outcomes:

- We want arrangements to **facilitate the decarbonisation of transport** at least total cost, taking into account the costs for networks as well.
- We also want the delivery company to be able to **obtain access to the network that reflects their needs.**
- We want **forward-looking charging arrangements to incentivise users, like this delivery company, to charge EVs in ways that are cheaper for the network**. This might include influencing decisions on where to charge the fleet and how (eg potentially using some self-generation), and on whether to discharge electricity back to the grid during peak times (vehicle-to-grid arrangements).

Linkages with flexibility - overview

Charging, access and flexibility procurement can work together to provide efficient signals for flexibility – each instrument has its own role to play

In this session we intend to:

- Provide an overview of the flexibility links of the 1st working paper
- Discuss anything that you disagree with or anything that you think is missing

Different flexibility instruments

Energy and generation capacity		Wholesale market (including Peer to Peer and price arbitrage)
		Capacity market revenues
		Balancing revenues
Network management	**Network price signal flexibility**	Access rights and forward-looking network charges/cred
		Embedded benefits
		Residual charge avoidance
	Contracted flexibility	Trading of access rights/curtailment
		Procurement of shorter term network management services
		Procurement of longer term network reinforcement services

Access and charging choices influence flexibility

	No access right choice	Significant access right choice
Agreed capacity based charges	**Flexibility is mainly valued through flexibility procurement**. This is effectively the current approach for transmission generators (via the Balancing Mechanism). Exceedance charge methodology could also be used to value flex.	Users are able to indicate they are **willing to offer flexibility in their choice of access right, in exchange for a lower capacity charge**. Additional flexibility procurement may be needed.
Time-dependent charges	**Flexibility is valued through time of use charging**, though additional flexibility procurement may be needed to the extent that charges to do not reflect value in a particular location at different times	As left and above, **flexibility may also be valued through access right choice**. However, users may have limited incentive to choose more flexible access rights if charges are solely time of use based.

Criteria for assessing flexibility instruments

Ability to signal local and real time conditions

Competitive price discovery leading to more efficient solutions

Ease of engaging with wide range of users and user experience

Certainty of response

Expense of implementation and operation

Ability to signal local real time conditions

	Merits	Barriers
Access	• Non-firm access rights have the potential for DNOs to instruct users to turn down when there are local constraints.	• n/a
Charging	• Critical Peak Pricing could provide an increase in the efficiency of the flexibility signal, as the constraints are signalled just a day (or more) ahead, and so can more accurately reflect the time of network constraints.	• For highly localised constraints, it may not be feasible to calculate a network charge that can accurately signal the constraint. • Averaging the charges both flattens the signal for flexibility, and incentivises flexibility where there are no constraints.
Procurement	• DNOs and the ESO are able to procure flexibility where it is needed, and define their tenders or requests to reflect the value of flexibility at that location	• n/a

Competitive price discovery leading to more efficient solutions

	Merits	Barriers
Access	• Curtailment obligations trading would introduce a market mechanism for valuing flexibility. The price that users are willing to pay others to avoid being curtailed will be revealed through a competitive market.	• Access rights generally will not have market mechanisms to reveal the efficient price of access.
Charging	• Charging is not reliant on there being adequate competition, and so could be more suited to areas where there are market power concerns, or where flexibility markets are in their infancy.	• Charges are set by the ESO and DNOs through an administrative price setting process and based on pre-agreed common methodologies.
Procurement	• Where there is adequate competition, this should reveal the efficient price for delivery of flexibility services.	• In areas where there are market power concerns – this could also lead to higher prices and inefficient outcomes. • There is a risk that those users causing constraints end up being paid to fix them, with the cost of this being socialised across a wider consumer base.

Ease of engaging with wide range of users and user experience

	Merits	Barriers
Access	• May help users have a more direct choice of the extent to which they offer flexibility • Rights could also be used as a form of hedging against volatile charges	• It might be difficult for small users to understand and engage with access rights • Users may be wary of committing to being flexible at the time of agreeing to an access right.
Charging	• A signal can be sent to all users of the network. This means that network charges are able potentially to drive a shift in the baseline	• Dynamic pricing is inherently more volatile and this could increase the risk exposure • Volatility could raise the risk premium, which might flow into the prices they charge their customers
Procurement	• A role here for aggregators o engage with users	• Flexibility procurement relies on network users being more proactive in their engagement.

Certainty of response

	Merits	Barriers
Access	• A significant degree of certainty in the response if implemented via active network management (ANM).	• There are other options for enforcement (such as exceedance charges) which would result in a lower level of certainty of response.
Charging	• n/a	• Users have the choice to respond to the price signal or continue using the network and pay the associated price. • DNOs will need to estimate the level of response for planning purposes.
Procurement	• Providers will be contracted to provide response to the system or network company.	• Less than the level of certainty provided through non-firm access rights currently employed through flexible connections, which involve the installation of control equipment giving the DNOs' certainty that they will get a response.

Ease of implementation and operation

	Merits	Barriers
Access	• There are already flexible access rights being used through the implementation of flexible connections.	• Monitoring and enforcing the access right choices would entail technology and systems costs. • Feasibility challenges due to the impact on network planning standards.
Charging	• The current charging framework already has some elements of time-of-use and seasonal pricing already.	• More dynamic and localised charging could require significant investment in systems and technology. • The practical challenges of implementing dynamic charging increase as you go down the voltage levels
Procurement	• Network monitoring equipment for ESO/DNO procurement can be rolled out on a targeted, strategic basis	• Flexibility procurement markets are not yet mature • There are institutional developments and technological solutions that need to be implemented to deliver the full benefits.

Ensuring access rights, network charges and flexibility procurement work effectively together

Should the cost of flexibility procurement be reflected in the network charging cost model?

- Marginal cost of flexibility procurement could be include in the basis of the charging signal.
- However, no clear record of flexibility procurement deferring the need for network investment.
- May be a case for reviewing in future.

Is there any case for a distribution-level Balancing Service Use of System charge?

- Having an additional distribution-level Balancing Services type charge sending a forward-looking signal could amount to double-charging.

Is it OK for users to be exposed to contradictory signals?

- There is a need to ensure the signals worked together to drive an efficient outcomes
- Users could value stack their access benefits and participation in flexibility markets
- If signals accurately reflect the different value that a user can provide to different parts of the system then this shouldn't inherently be an issue in supporting an efficient overall system

Access rights - overview

Network access rights define the nature of users' access to the network and the capacity they can use – how much they can import or export, when and for how long, and whether their access is to be interrupted and what happens if it is.

In this session we intend to:

- Provide an overview of the access chapter of the 1st working paper
- Discuss anything that you disagree with or anything that you think is missing

Access rights - firmness

Level of firmness	Description
Access could be defined by physical drivers	The firmness of a user's access could be defined by the physical assets that connect them to the wider system and the design of the network at the point they are connected.
Access could be defined by consumer experience	Firmness could also be defined by measuring the customer's experiences of curtailment.
Eligible for compensation	**Description**
Non financially firm access	Would allow users to be curtailed, within specified parameters (eg specific time-periods), without financial compensation at the time of curtailment. However, users would be compensated in other ways.
Financially firm access	Would require users to be financially reimbursed when their access to the system is limited or unavailable.

- "Physical drivers" may be less meaningful for users than consumer outcomes, but could be easier for network/system operators to provide.
- We consider that financially firm access could be valuable to users and could help improve transmission/distribution consistency.
- However, we are concerned that there may be insufficient time to develop and implement the necessary planning and security standards for financially firm access, in time for SCR implementation.

Access rights – time-profiled

Level of firmness	Description
Static time-profiled	The firmness of a user's access could be defined by the physical assets that connect them to the wider system and the design of the network at the point they are connected.
Dynamic time-profiled	Access limits vary over time depending on specific conditions (eg when the wind exceeds a threshold level or when the wholesale price exceeds a specific amount).

- Time-profiled access could support more efficient use of the network and appear feasible to offer.
- Stakeholders consider that time-profiled access would be valuable – intend to develop further.
- However, network/system operators have concerns that dynamic time-profiled could be challenging to deliver.

Access rights – shared and other

Shared access rights would involve multiple users across multiple sites in the same broad area obtain access to the network, up to a jointly agreed level, with the ability to coordinate between themselves how they share the access. We have differentiated between:

- **Local shared access** - where some users within the same specific location share access.
- **Wider shared access** - where multiple users within a broader location share access.

Preliminary views:

- Some practical issues to resolve (eg monitoring and enforcement), but could lead to more efficient use of the network.
- Sharing access over wider area presents additional challenges (eg if access not equivalent).
- There are similarities between trading and sharing access, we need to consider respective roles.

Short-term access (eg fixed duration access of less than a year)

- Stakeholders consider that this will offer limited benefit, suiting only specific circumstances.

New conditions of access (eg Use-it-or-lose it) – wider reforms (eg charging and trading) should incentivise users to release unused capacity. We will consider need once we have refined wider reforms.

Access Rights – crossing cutting considerations

- **Standardisation of access rights:**
  - There is a trade-off between efficiency and complexity limitations. Standardised options may be easily understood, but inefficient and potentially ill-suited to individual users. Bespoke access may achieve efficient network utilisation, but may be difficult to administer. Hybrid options may offer the benefits of both.
  - Additionally, access rights need to be cost-reflectively charged. With a shallow connection boundary it may be challenging to reflect the value of bespoke access rights in UoS charges.
- **Transmission access rights:**
  - Currently access rights differ at transmission and distribution. Alternative access options are unlikely to be popular at transmission if the charges are equivalent to those for firm access.
  - We will consider the applicability of these reforms to the transmission charging arrangements.
- **Monitoring and enforcement:**
  - Consequences of exceeding access rights should be visible, understandable and proportionate to the impact of overrunning access rights. Current approaches may require modification with the development of new access rights.
  - The approach to enforcing access rights may be another area where we can introduce greater choice of access rights (eg introducing physical limitations on ability to exceed access rights, if this resulted in a cheaper connection).
- **Links with other markets:**
  - Some users' access will impact their ability to sell services in different markets. This can influence their access choices. For example, providing blackstart services to NG ESO requires 24/7 access.
  - We intend to work with government, NG ESO, the ENA and any new markets to remove undue barriers for users with alternative access choices in these markets.

On each of your tables, we want to know:

- As there aspects of the chapter that you do not agree with? If so, what changes would you suggest?
- Have we missed anything relating to the issues we cover in this chapter?

Distribution locational cost models - overview

Distribution locational cost models covers the options for reform of how locational charging signals are calculated.

1) Network cost models
Options for how forward-looking network costs are estimated.

2) Locational granularity
Options for how distribution network charges vary by location.

In this session we intend to:

- Provide an overview of this chapter of the 1st working paper
- Discuss anything that you disagree with or anything that you think is missing

1) Network cost models – Short Run Marginal Cost (SRMC)

We identified two options how an SRMC-based network charge could be set:

- **SRMC charge set ex-ante**

  This would involve attempting to forecast network conditions and the marginal cost of resolving any constraints ahead of time. This forecast would be used to set the charge ahead of each period.

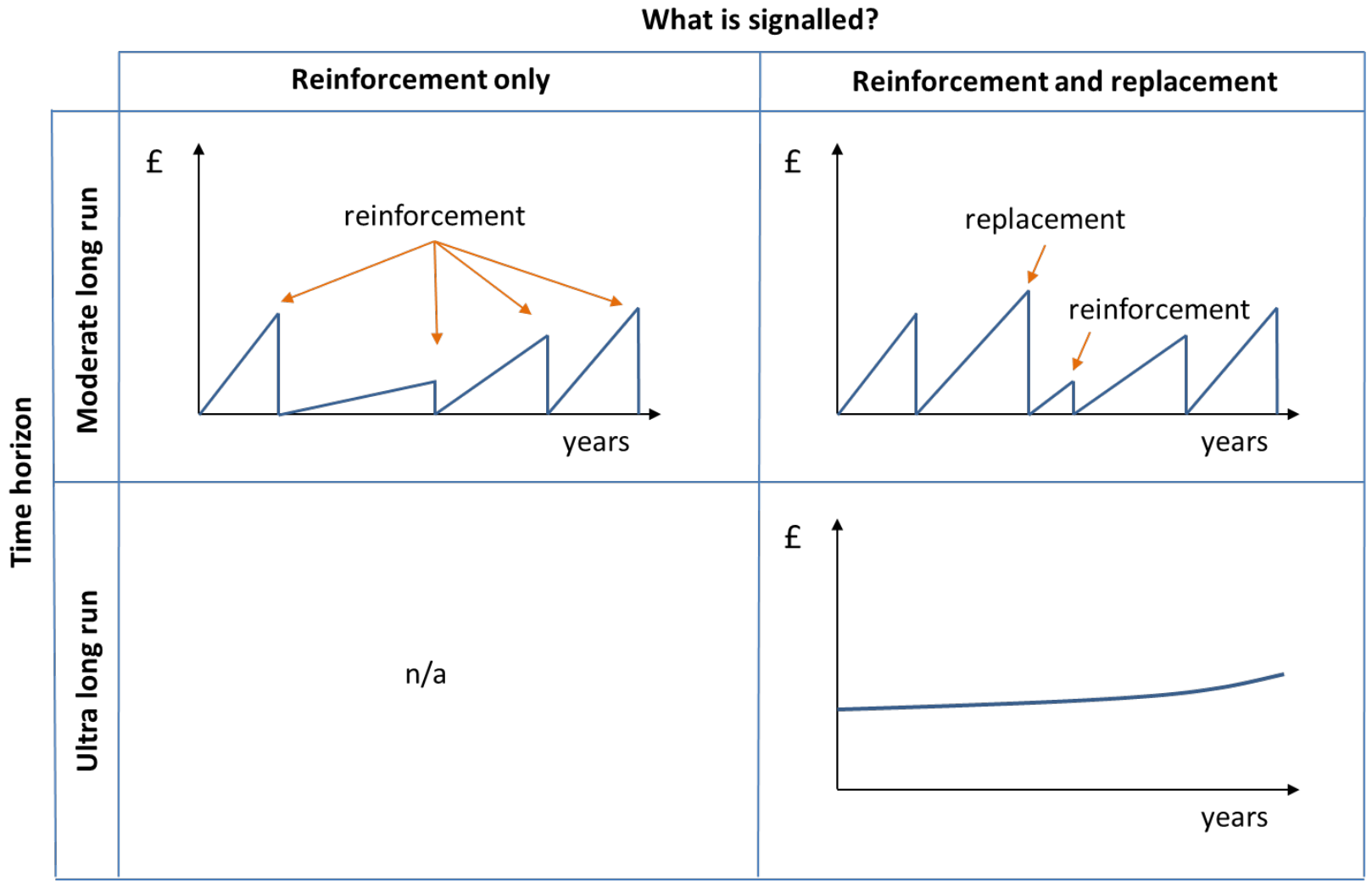
- **SRMC charge set ex-post**

  This would involve attempting to calculate the SRMC of each time period after it had finished, based on the constraints that occurred and any curtailment actions that the DNO needed to implement.

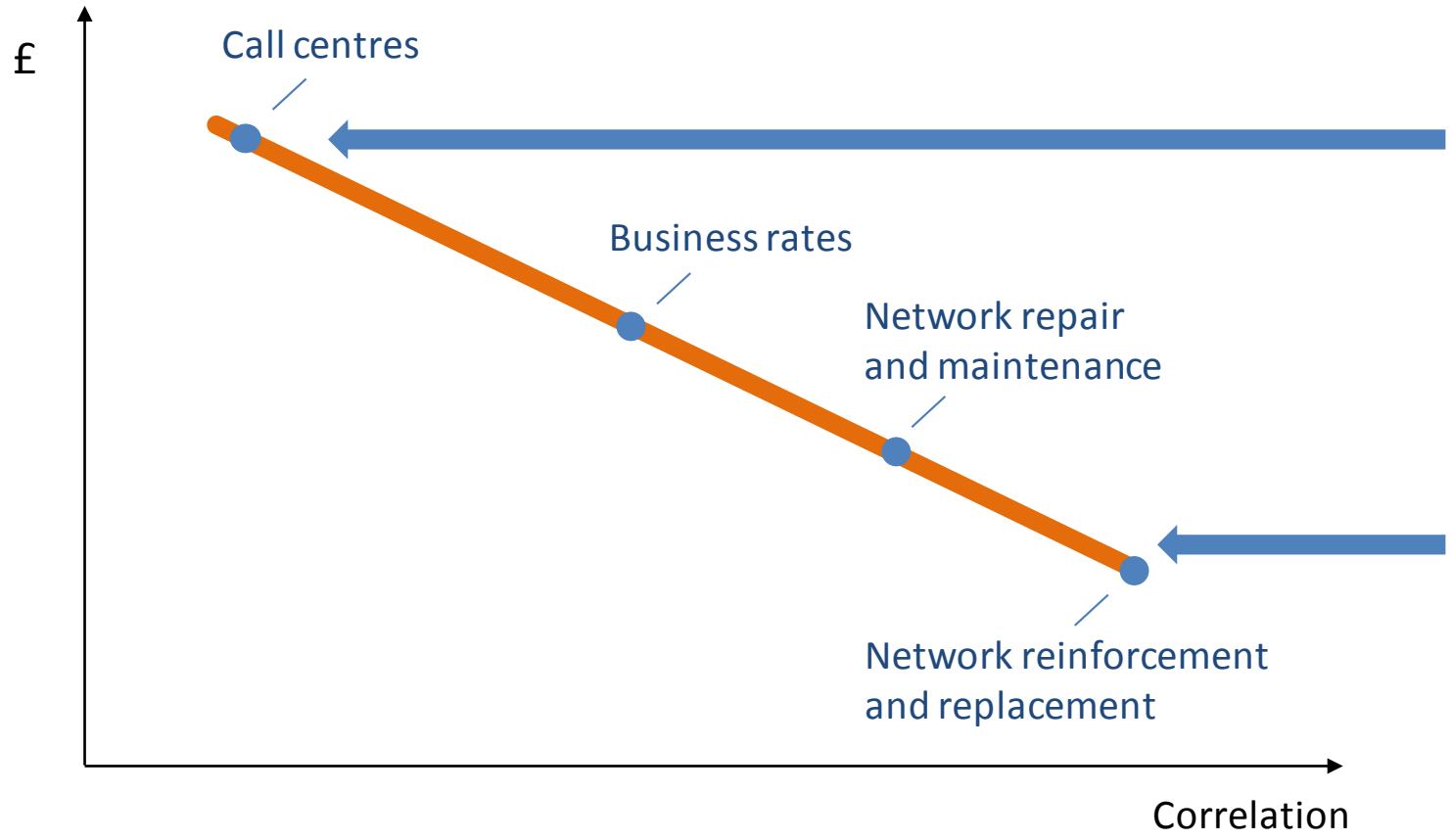
Summary of preliminary view:

Administratively set pricing would not be the correct approach to SRMC implementation. This would be better delivered through market-based price discovery. however we do not believe this is feasible at distribution and continue to consider it out of SCR scope.

Which costs should be modelled?



What is the extent of costs to be charged for?

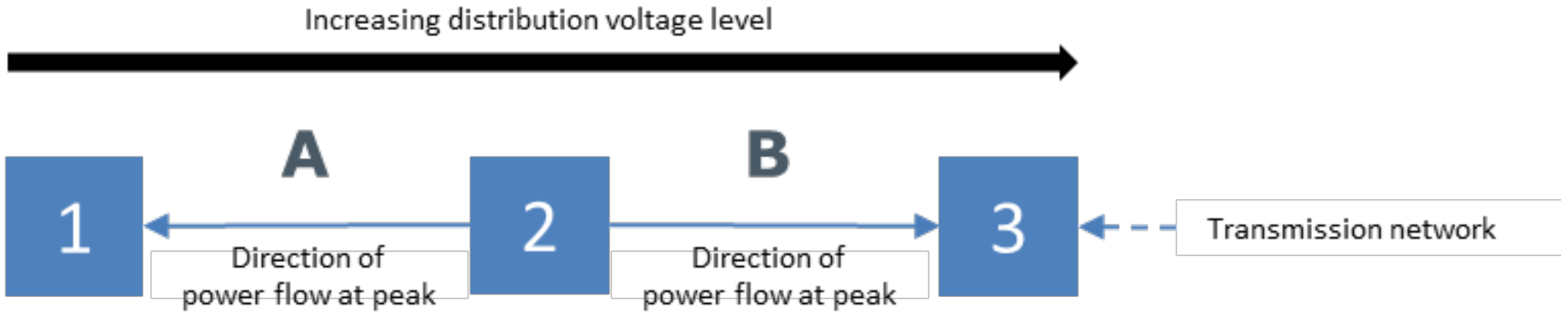


Inclusion of costs that are only loosely correlated to cost of developing network capacity would increase forward looking charge, but may not be an accurate way of allocating all costs.

Only including costs directly related to network capacity may lead to too low a forward-looking charge as it would miss other costs that are closely correlated to demand for network capacity.

1) Network cost models – Long Run Marginal Cost

Who should receive the charge?

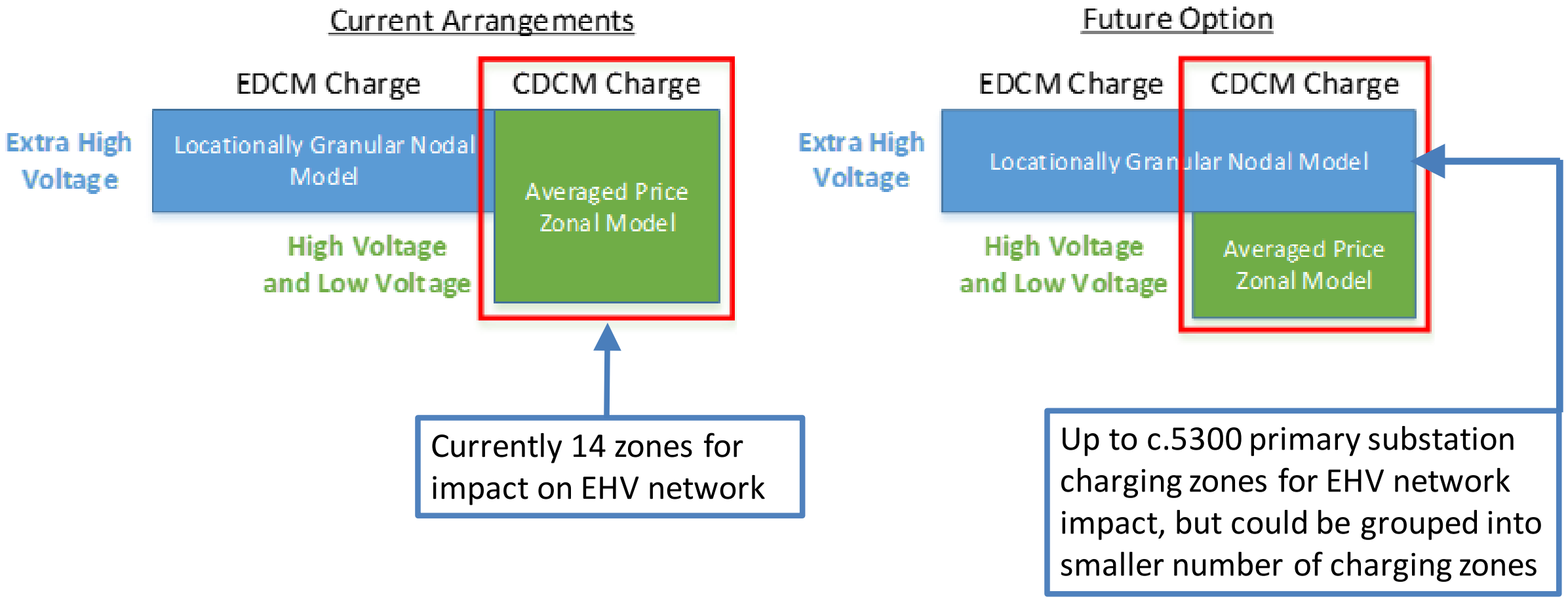


Under status quo arrangements:

Description	Circuit	Additional Increment	Node 1	Node 2	Node 3
- Upstream only - Both charges and credits - Demand assumed to drive costs	A	Demand	charge	-	-
		Generation	credit	-	-
	B	Demand	charge	charge	-
		Generation	credit	credit	-

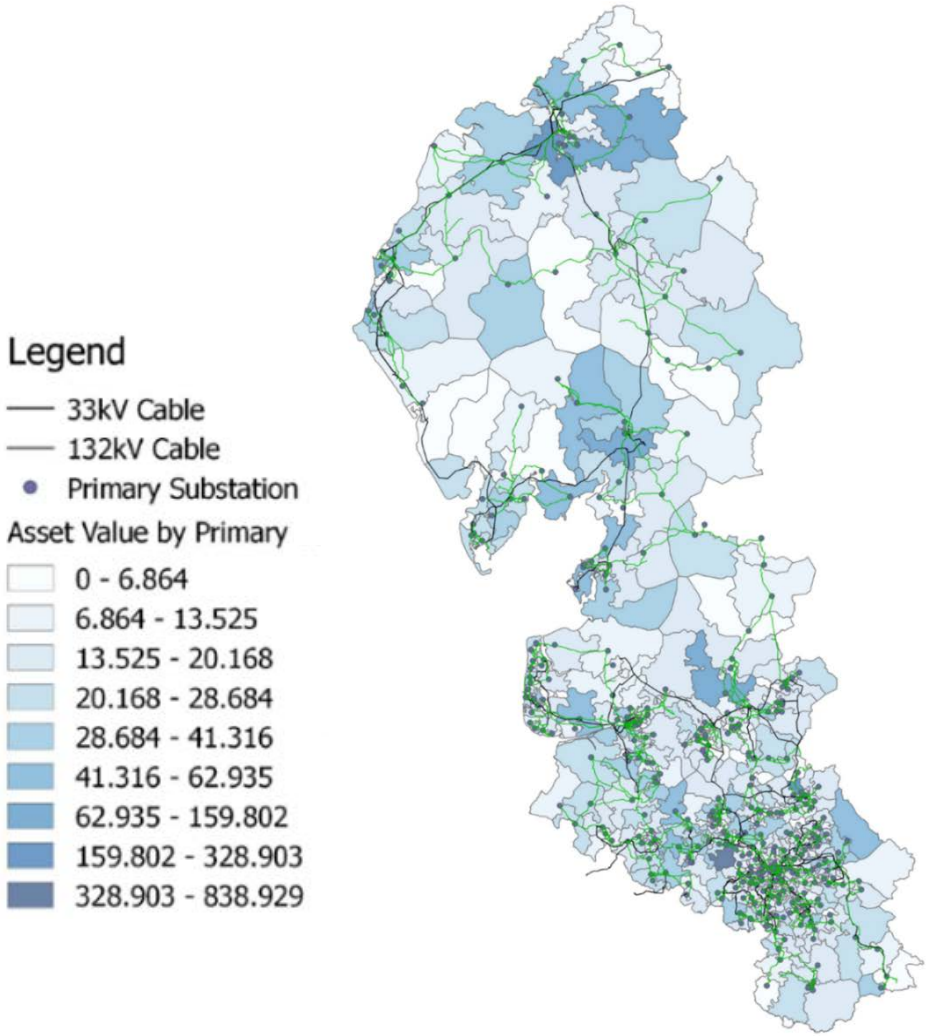
2) Locational granularity – integrating across voltages

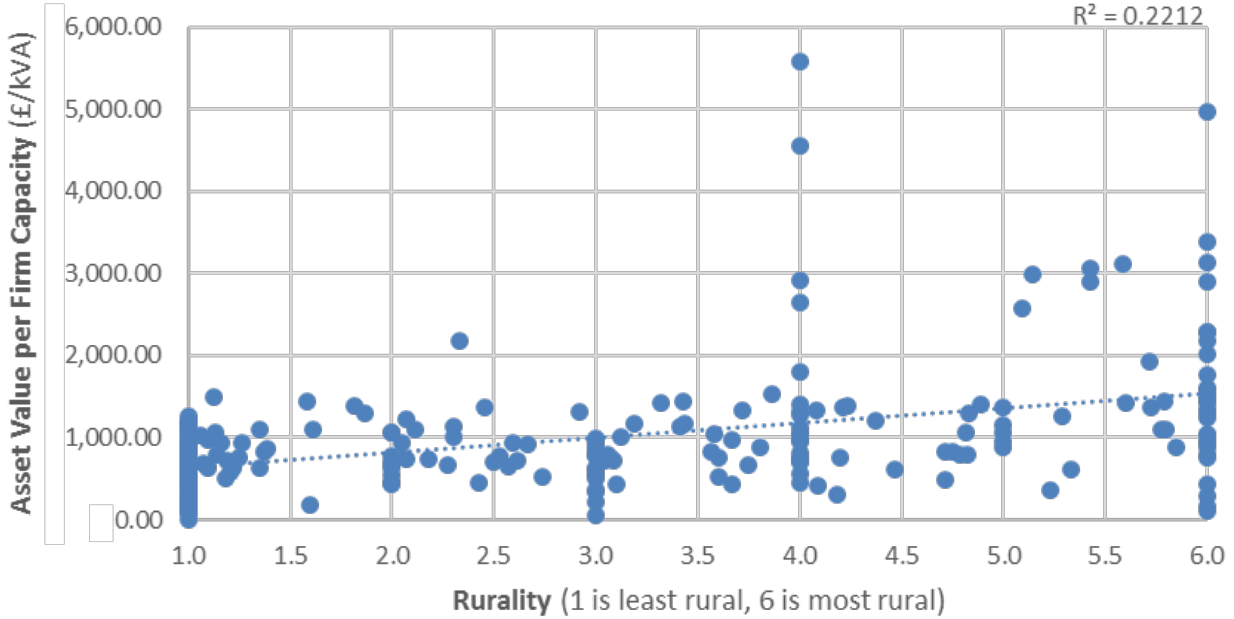
Exposing HV/LV connected users to locational impacts at EHV



2) Locational granularity – more granular charging

Extent to which greater locational granularity can be achieved





Source: Electricity North West Ltd network data and Ofgem cost data

Summary of preliminary views

- Our preliminary view is that distribution charges should continue to be based on LRMC based approaches. SRMC approaches may be possible in the future, but we do not believe that an administratively set charge would be the correct approach and there are significant feasibility challenges to distribution level implementation.
- We are continuing to investigate the merits of different options for the estimation of LRMC. We think there is a reasonable case for including replacement costs and possibly other network costs that are closely correlated with network development in the charging signals.
- We note that there are presently inconsistencies in how costs are treated at different voltage levels, which could be treated more consistently.
- We are continuing to assess the different ways in which the network could be grouped, particularly at HV/LV, to reflect differences in network costs by primary substation (or averaged charges across similar primaries).

DUoS / TNUoS charge design - overview

Suppliers incur **distribution use of system (DUoS)** charges and **transmission network use of system (TNUoS)** charges, reflecting their customers' use of the distribution and transmission networks to access or export electricity

In this session we intend to:

- Provide an overview of the DUoS and TNUoS chapters of the 1st working paper
- Discuss anything that you disagree with or anything that you think is missing

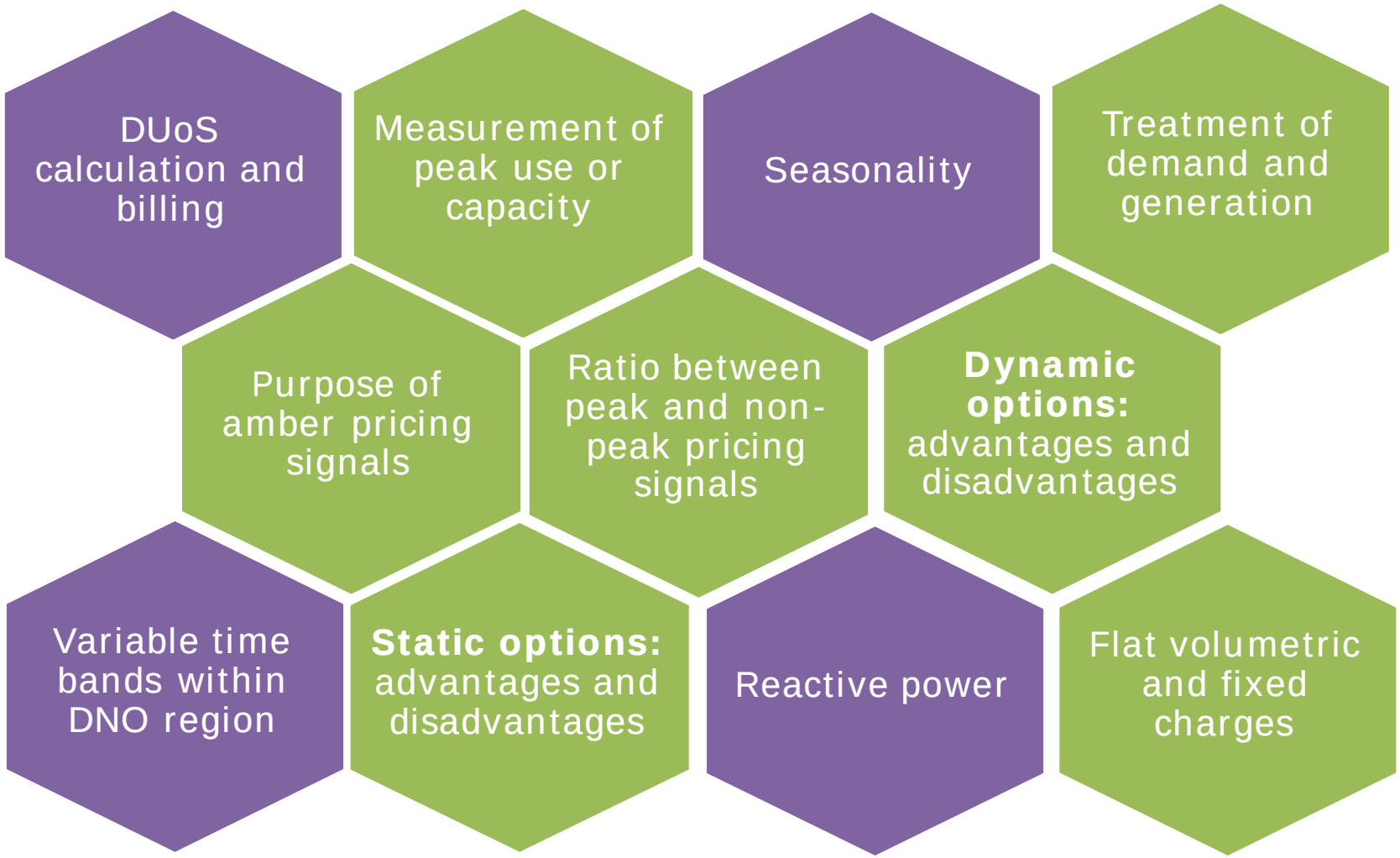
DUoS - preliminary assessment of static charging options

Option	Description	Preliminary assessment
Volumetric time-of-use	• Different unit rates are assigned to different periods of the day, which vary according to the probability that the network will be congested during that period • Customers are charged for their actual consumption during the different time bands	• Not a key driver of costs so may not be the most cost reflective • There may still be reasons to continue applying some form (e.g familiar to small users) • We will consider benefits of introducing seasonality and more locational granularity
Actual capacity	• Customers are charged for their actual maximum capacity measured ex-post • Charges may only apply during a specific peak period, or customers could face different rates based on time bands	• May be more cost reflective, as costs are driven by peak usage, rather than consumption • We will need to consider if there are additional network benefits to using capacity to those applicable for volumetric ToU
Agreed capacity	• Customers are charged, based on maximum capacity they have agreed with their DNO (this could have a time-of-use element)	• May be more cost reflective, as costs are driven by peak usage, rather than consumption • Need to consider the administrative burden to agree and maintain capacities with millions of domestic customers • Consider whether deemed capacities would be appropriate

DUoS - preliminary assessment of dynamic charging options

Option	Description	Preliminary assessment
Dynamic charging	• **Real time pricing** - Customers are notified in advance of the price for every hour (or half hour), which reflects short term network conditions • **Critical Peak Pricing** – Customers are notified in advance that there is going to be a critical peak period, during which high charges will be applied to consumption	• Real time pricing may not be feasible by 2023, due to the changes required to support it (same issues as with SRMC) • It may also not be feasible to introduce Critical Peak Pricing by 2023. However, we will need to do further work to better understand if a form of it would be possible and the associated benefits
Critical Peak Rebates	• Similar to Critical Peak Pricing, except that the customer receives a rebate for actions taken during the critical peak period	• A baseline level of usage would need to be agreed with customers, in order to determine whether they have reduced it in response to a signal • As above for Critical Peak Pricing, we will need to consider whether there is a form that could be possible and the benefits

DUoS - preliminary consideration of issues



In addition to the discussion on the identified issues, we have formed preliminary views on several issues:

- It is likely to be more cost reflective to introduce a seasonal element
- If the locational granularity work permits, it may be more cost reflective to have more than one set of time bands within a DNO region
- We have not identified any evidence to suggest DNOs should not continue to charge for excess reactive power
- There is no compelling reason to move to individual billing for small users

TNUoS - options and initial views (1)

- We have considered how our five basic options could apply to transmission use of system charges (TNUoS) for **demand** customers and set out our initial views

Option	Description	Initial views	Suitability for different users	Feasibility between Tx and Dx
Dynamic charging	Reform current Triad approach • Ex-ante charging • Local network peaks • Additional critical peak periods	• The reforms could address the disadvantages with the current Triad approach • Reforming Triad could be more valuable than moving to a static charging option	• May be more difficult for small users, but we recognise the role suppliers could play	• More advanced ability to monitor and forecast at transmission • May be feasible for TNUoS, but less clear if so for DUoS in SCR timeframes
Critical peak rebates	Customers would receive a credit for reducing usage during a critical peak period	• We will not proceed with this option, as the current critical peak charging approach has been successful in eliciting a response	N/A	N/A

TNUoS - options and initial views (2)

Option	Description	Initial views	Suitability for different users	Feasibility between Tx and Dx
Agreed capacity	Under this static charging option, customers would pay charges, based on their agreed capacity	• If agreed capacity is chosen for DUoS, apply to TNUoS could improve consistency	• For larger generation, there is an adjustment for tech and ALF. May be difficult to apply to all generation • Unclear how this would work in an approach with charges and credits	• Unlikely to be feasible for ESO to agree capacities with distribution connected customers direct • Depends on whether an agreed capacity approach is chosen for DUoS, as same capacity could apply
Static options: • Volumetric time-of-use • Actual capacity	Customers would be charged for volumes consumed (or actual capacity) during different time periods	• May be easier for small users to understand • If a volumetric ToU is chosen for DUoS, there may be a case for adopting same approach for TNUoS for consistency	• Potentially a simpler framework for small users to engage with	• Both options are feasible for transmission and distribution

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