Charging Futures
Reforming electricity charging together

Forward Looking Charges Task Force

Joint Access and FLC Task Forces meeting

4th Task Force meeting

20 February 2018

Introduction

Introduction

Agenda

Task	Timing
Welcome, agenda and actions	10:00 - 10:10
Update – TF report, Baringa, CFF	10:10 - 10:15
ENA plan to deliver future milestones – presentation and discussion	10:15 – 10:45
Linking the options together - presentation on scenarios	10:45 – 11:20
Discussion on scenarios	11:20 – 12:35
Lunch	12:35 - 13:15
How the scenarios relate to domestic users – presentation and discussion	13:15 – 13:50
Cross-cutting building block 1 - User segmentation – presentation and discussion	13:50 - 14:20
Breakout	14:20 – 14:40
Cross- cutting building block 2 - Connection boundary – presentation and discussion	14:40 – 15:20
Other cross-cutting building blocks – presentation and discussion	15:20 – 15:50
Review actions and meeting wrap up	15:50 - 16:00

Actions from the last meeting

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Update

- First TF report
- Charging Futures Forum and Access Workshop
- Glasgow Access Workshop
- Baringa update

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ENA plan to deliver future milestones

Timeline and Outputs

Date	Task
December 2017/January 2018	**Produce a document identifying the initial options agreed for further assessment.** **Identify a set of criteria for assessing the advantages and disadvantages, as well as the risks and opportunities, of each detailed option.** The TF criteria will take into account the CFF criteria for prioritising changes. This will be informed by Ofgem's working paper published in Autumn 2017.
February/March 2018	**Produce a document assessing each of the detailed options, based on the agreed assessment criteria.** The analysis should include a reasonable qualitative and, to the extent possible, quantitative assessment of the impact of each option.
End of April 2018	**Produce a report outlining the TF's conclusions on what changes should be taken forward.** The TF Members should try to find consensus on the drafting of the report. Where consensus is not possible, then the report should highlight any points where TF Members have conflicting views.

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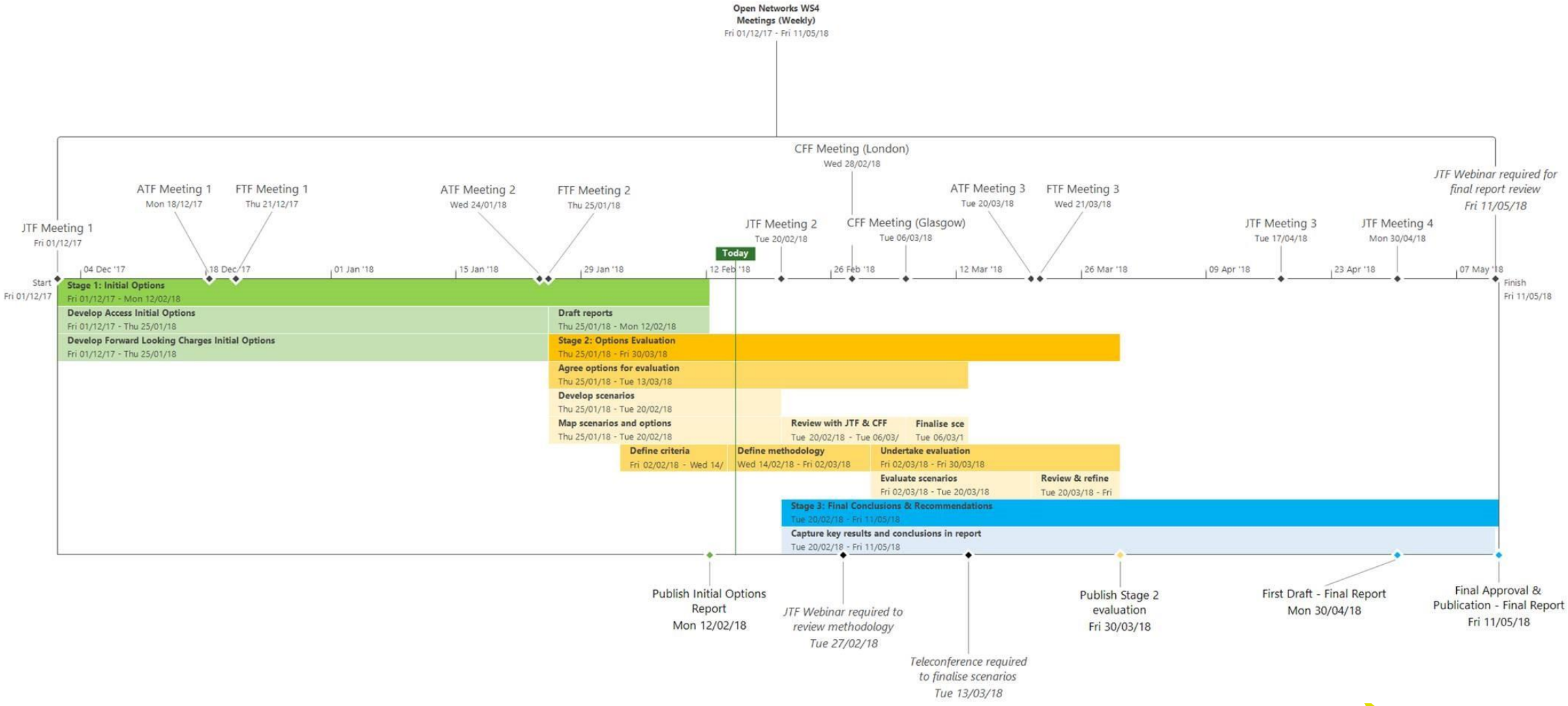

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Tasks & Actions

TASK	ACTION
Agree options for evaluation	Get feedback from TFs at JTF meeting. (20 Feb) Analyse feedback and refine scenarios for CFF meeting (23 Feb) – Telecon F2F to discuss CFF feedback and finalise scenarios (asap after 06 Mar) Map options and scenarios to show link (now – 2nd week of Mar)
Define assessment criteria	Completed
Define assessment methodology	Produce methodology (can begin now) Request volunteers and setup subgroup (can start now) Subgroup to develop methodology (now - 27 Feb) Review and finalise with JTF (webinar + form asap after 27 Feb)
Undertake evaluation	Create subgroup with above 2 teams Review initial (Stage 2) evaluation with ATF and FLTF (20 Mar & 21 Mar)

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Linking the options together - scenarios

Potential scenarios for larger users

These are indicative high-level groupings of options to creat 3 scenarios– within each of these there would be a number of important sub-choices plus some decisions (eg level of locational granularity and depth of connection charges) could sit across all packages.

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	**Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Capacity charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.**	**Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.**

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Agreed Assessment Criteria

Arrangements should have these desirable features:

- efficiently meet the ***essential service requirements*** of network users
- ***optimise capacity*** allocation
- ensure that price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users
- provide a ***level playing field for all network users***
- provide effective network user price signals, i.e. ***price signals*** which can be ***reasonably anticipated by a user*** with sufficient confidence to allow them to take action
- ***appropriately allocate risk*** between individual network users and the wider body of users
- ***support efficient network development***
- ***be practical***
- ***be proportionate***

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Cross cutting building blocks

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
User Segmentation		
Connection boundary		
Unused capacity		
Range of access products		
	Method of initial allocation	
Re-allocation of access rights		
Operational costs		
These issues could also cut across auctions, depending on the need for charging models (e.g. reserve price)	**Capacity vs Volumetric**	
	Temporal signals	
	Locational signals	
	Charging model	

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Scenario 1: High emphasis on auctions/trading

Chris Allanson

Date - Scenario review 20 January 2018

Scenario 1 characteristics

High emphasis on auctions/trading

Access products are well-defined (including being financially firm)..

.. and purchased via auctions, with scope for re-sale.

Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.

High emphasis on access right choices

Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity.

Stronger focus on capacity charges. Charges reflect impact of different choices on network costs.

Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.

High emphasis on better usage charges

Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks.

Could include more locational charging for constraint costs.

Scenario 1: emphasis on auctions

	Key design parameters	Key sub-choices
Access choices	• Clearly defined products. • **Potentially less choice of products**	• Options about type and range of products (depth, ToU, firmness). • Standardise products or not?
Allocation & re-allocation	• **Auctions** rather than FCFS for initial allocation.	• Form of auctions. • Scope of auctions (eg entry and exit, size of user, voltage level). • Conditions of access options (Eg treatment of ununsed capacity). • Option for reallocation (exchange rates).
Structure of charges **Locational and temporal signals**	• There is a connection charge (options around depth). Network reinforcement costs recovered via auction. • Value driven by auctions.	• Which costs captured by auctions. • **Potential for reserve price driven by charging model.** This includes many sub-options. • Reserve prices would need to reflect differential value of different access products • Options on connection depth

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Cross cutting issues

Cross-cutting issue	Interaction with this scenario
User segmentation	Assuming capacity auctions take place in the context of a constrained network (no constraint means no need for an auction) . Segmentation could be simply by import/export users.
Connection boundary	Connection boundary could be shallow assets and local reinforcement charges as now. Deeper reinforcement could be funded by the auction. Auction winners would get immediate access up to current availability, auction losers could have no access or limited immediate access (depending on products) and may get more access on completion of the reinforcement.
Near-real-time management of constraints	Yes. Capacity allocated in products /packages up to current capacity.
Access choices for users	Yes, through different .products/packages. Assuming limited access or no access is an acceptable choice for a particular customers losing in the auction.
Tariff design/Charging model	Would still need to be a feature, but reinforcement costs may have been funded by auction.
Temporal and locational signals	Yes. Auctions in locations with constraints. Products and packages could be temporal.
Inter-network operator rights	Not sure – needs more thinking, including on DO/TO interface. Needs consistency for DNOs and IDNO.
First come, first served (plus)	No. Auction decides access . Date of original connection is not a driver.
Unused capacity options	Unused capacity would remain available for other network users as no Access Rights are defined, cost of the inefficiency of unused capacity shared across all customers
Recovery of operational costs (DSO)	Required via DUOS. Subject to separate charges for recovering costs for localised Active Network Management schemes

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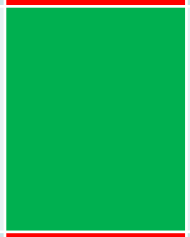
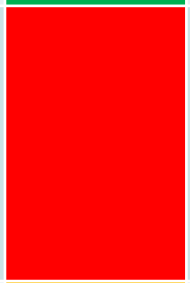
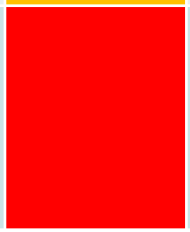
Scenario against agreed assessment criteria

Assessment criteria	Rating	Advantages	Disadvantages
Efficiently meets the **essential service requirements** of network users		Raw economics: Allocates capacity to those who value it the most.	Auction losers may have essential service needs e.g. hospitals, industry, utilities (gas and water pumping) streetlighting.
Optimise capacity allocation		Allocates capacity behind a constraint to those who value it the most and therefore most likely to utilise it. Unused won capacity likely to be traded.	
Price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users		Auction income may fund the next reinforcement investment	Auction outcome reflects value of capacity to users not future network costs.
Level playing field for all network users		Provides an economic level playing.	Users with less financial resources may feel disadvantaged.
Price signals which can be **reasonably anticipated by a user** with sufficient confidence to allow them to take action			Pricing determined through auction is inherently unpredictable.

Scenario against agreed assessment criteria

Assessment criteria	Rating	Advantages	Disadvantages
Appropriately allocate risk between individual network users and the wider body of users		All customers face the same risk in an auction.	Customers with less financial resources and essential service requirements may feel more risk
Support efficient network development		Should support efficient network development if an auction delivers sufficient income for investment in addressing the constraint e.g. in reinforcement, capacity management tools or constraint payments	Auction may deliver insufficient income to improve the constraint
Practical		May be easier to implement for DG/DER than for demand customers with essential service e.g. hospitals. Could be tested with localised auctions in DG constrained areas e.g. for new customers in a connections queue.	Existing user's rights are likely to an issue for implementation.
Proportionate		Could be proportionate for enabling new DG to connect. Particularly if an auction could fund the addressing of a constraint.	May not proportionate for demand customers with essential service requirements or for smaller/less identifiable individual end users.

Auction discussion points

- Detailed auction design would be depend on the outcomes sought.
- Generation connection in a demand rich area (city centres) means no constraint
- DG seeking ‘firm access’ or ‘firmer access’ in an export rich area underneath a constraint may trigger an auction
- If there is enough income from the action to fund reinforcement should reinforcement take place to remove all or part of the constraint?
- Does an auction involve all existing connectees or also prospective connectees in the connection queue?
- If there is not enough money from the auction to fund reinforcement does the bidding list create a new pecking order for the current firm capacity - can new connectees displace existing customer’s access

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Essential needs Vs flexibility

Customer	Core access needs	Non-core/ switchable?	Flexibility services /DSO
Domestic	Lighting, cooking, refrigeration, electric heating and washing machines	Dishwashers, tumbler driers, EVs and smart appliances	EV2G, electric heating turn down.
Manufacturing	Continuous process	Shift patterns to avoid peak demand	Demand turndown of non-essential loads, on site storage to suppress peak demand.
Food production and storage	E.g. Dairies and Bakeries, cold storage (food safety)	Office air conditioning.	Freezer store temporary demand turn down.
Farming	Heating, lighting, ventilation (animal welfare) milk production	On-site cold storage turn down.	Greenhouse lighting turn down. On-site cold storage turn down.

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Capacity Auction issues (general)

Some general issue for discussion:

- Can auctions work for core requirements or limit them to only ‘non-core’ demands seeking firm access?
- Are new developments non-core and subject to auctions in constrained areas?
- Should new customers be required to identify core and non-core switchable demand/DG/storage/EVs in their applications?
- Should non-core switchable demand be exempt from any capacity charges if data checks see a demand dip when called upon?
- Is it appropriate to trade core or non-core access for demand?

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Scenario 2 characteristics

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Stronger focus on capacity charges. Charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.	Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.

Scenario 2 characteristics

Building block	How scenario addresses this (transmission and distribution)
Access right choices	
Depth	Users choose less than or across whole network – Less than whole network may preclude direct access to wholesale market if access does not reach the National Balancing Point
Lifespan	Users choose from a standard range, then agreed in connection agreement – e.g. 5 years, 20 years, evergreen
Firmness	Users choose financially firm, physically non-firm access or financially firm, physically firm access
Time of Use	Users choose from a standard range, then agreed in connection agreement – e.g. non-peak, seasonal
Allocation and re-allocation	
Initial allocation – Improved first come, first served	Improvements could include - users moved ahead in the queue where choice of off-the-shelf access products re lifespan, firmness, ToU confers a system benefit, better defined project milestones and others
Initial allocation – Shared/matched	Users agree bilaterally or through offer by network operator to share access where their respective product's profiles match to create a system benefit
Near to short-term re-allocation	If user chooses financially firm, physically non-firm - Extended Balancing Mechanism and bilateral trading of constraint obligations to manage constraints
Medium- to long-term re-allocation	All users may conduct explicit bilateral trades within or across zonal boundaries – with exchange factor determined by network operator. Users agree bilaterally or through offer by network operator to share access where their profiles match to create a system benefit Users may elect to return capacity to network operator for commensurate compensation

Scenario 2 characteristics

Building block	Structure and impact on network charges	Signal provided
Access right choices		
Depth	£/kW x TEC/MEC/MIC – Reduced charge if less than whole network	Zonal/nodal
Lifespan	£/kW x TEC/MEC/MIC x yr– Reduced charge if shorter lifespan	Zonal/nodal
Firmness	Shallow connection - Financially firm, physically non-firm Deep connection – Financially firm, physically firm	Locational re sole use asset Zonal
Time of Use	£/kW x TEC/MEC/MIC – Reduced charge if modelled as a benefit to zone/node	Zonal/nodal and temporal
User commitments	Financially firm, physically firm – Annuitised liability for connection Financially firm, non-physically firm – Up-front payment	-
Allocation and re-allocation		
Initial allocation – Improved first come, first served	Queue management – Moved ahead in queue if modelled as a benefit to zone/node Further options to also be explored	Zonal/nodal and temporal
Initial allocation – Shared/matched	Shared/matched capacity – Reduced access rights/moved ahead in queue if modelled as a benefit to zone/node	Zonal/nodal and temporal
Near to short-term re-allocation	Extended BM and bilateral trading of constraint obligations Interactions between two mechanisms require further investigation	Zonal/nodal and temporal
Medium- to long-	Bilateral trading – Reduced £/kW charge	Zonal/nodal

Cross-cutting issues

User segmentation – Generation, storage and demand

- Scenario effectively assumes inflexible loads choose either physically firm connections or put in very high bids into the BM – the latter may require an intermediary in some cases of demand
- Scenario assumes demand for limited lifespan products – this may not be the case for demand users

User segmentation – Domestic consumers

- Physically non-firm access, contracted restrictions on time of use and shared/matched access may not be possible for users who cannot invest in smart technologies – such users may either have to choose full, financially and physically firm connections or rely upon an intermediary

T/D harmonisation

- Harmonised connection boundary, user commitments and queue management
- Near-term and longer-term re-allocation of access standard across voltages

Inter-network access rights

- This scenario allows for either defined or undefined capacity allocation between network operators

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Scenario 2 against agreed assessment criteria

Assessment criteria	Rating	Advantages	Disadvantages
Efficiently meets the **essential service requirements** of network users		Range of standardised products giving greater choice than currently	Requires some active participation from all users or their intermediaries where full connection cannot be bought
Optimise capacity allocation		Range of standardised products greater than currently Emphasis on mechanisms for access re-allocation reveals SRMC and LRMC	First come, first served largely remains No or very limited mechanism by which to reveal the relative value placed on access by different users?
Price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users		Short to long-term re-allocation mechanisms reveal LRMC and SRMC	As above
		Unresolved Choice of ex post v. ex ante determines existing users' ongoing liability for network costs	
Level playing field for all network users		Greater harmonisation across T/D Greater consistency between generation, demand and storage	Requires some active participation from all users or their intermediaries if full connection not bought
Price signals which can be **reasonably anticipated by a user** with sufficient confidence to allow them to take action		Unresolved If ex ante £/kW, more predictable If zonal, less volatile	Unresolved If ex post £/kW, less predictable If nodal, more volatile

Scenario 2 against agreed assessment criteria

Assessment criteria	Rating	Advantages	Disadvantages
Appropriately allocate risk between individual network users and the wider body of users		Risk of stranded assets held by users paying for deep connection Risk of exceeding safe simultaneous maximum demand limits held by users through connection agreement terms	
		Unresolved Choice of ex post v. ex ante determines existing users' ongoing liability for network costs and so stranded assets?	
Support efficient network development		Short to long-term re-allocation mechanisms reveal LRMC and SRMC	First come, first served largely remains
Practical		Effectively extension of current Transmission arrangements to lower voltages May be easier to implement than other options such as auctions	Current technical limitations with extending BM to all voltage levels? Strong dependence on intermediaries for more passive users Assumes too much demand for less than evergreen access right lifespans? Queue becomes too unpredictable?
Proportionate		Some improvement in efficiency of capacity allocation	Requires some active participation from all users or their intermediaries if full connection not bought

Scenario 3 characteristics

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Stronger focus on capacity charges. Charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.	Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.

Scenario 3 characteristics

	Key design parameters	Key sub-choices
Access choices	• No change in access definitions • Differences in access choices at tx and dx need consideration	• Is access/capacity defined ex-ante (TEC/MIC/MEC), ex-post (measured usage) or combination?
Allocation and re-allocation	• First come first served plus for new connections (with improvements where possible) • No change to re-allocation, focus on conditions of access (e.g. use it or loose it) and behaviour driven by stronger capacity charges	• Options for the conditions of access
Structure of charge	• Stronger focus on capacity charges	• Options to amend timing of payment and degree of user commitment Options to ensure that whole-system charging addressed
Locational & temporal signals	• Stronger focus on charges sending locational and temporal signals (e.g. sharper ToU signals) • Locational charging of constraint costs	• Options of how to implement more locational charging of constraint costs • Options of how to send locational signals (e.g. connection depth) • Options of how to send more temporal signals

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Scenario 3 Cross-cutting issues

Cross-cutting issue	Interaction with this scenario
User segmentation	If a usage charge approach is adopted for all customers, no need to define boundaries between customer groups. High level of control over charges allows granularity in reflecting customer impact across groups
Connection boundary	This remains a consideration in a scenario with high emphasis on usage charges. New and legacy connection charging arrangements will need to be accounted for in UoS charges
Near-real-time management of constraints	No inherent management of constraints beyond signalling of congested areas of network, potentially in near-real-time. Having an emphasis on UoS provides a mechanism for charging constraint management charges
Access choices for users	Although no explicit definition of Access Rights, ex-ante signalling of capacity charges would allow users highly granular choice of capacity, time of use etc. unrestricted by product definitions.
Tariff design/Charging model	Largest consideration for a scenario with high emphasis on usage charges. There are various options for structuring tariffs with no inherent market-forces to determine prices
Temporal and locational signals	Although not directly determined by market based approach, system modelling and observed user behaviour can be used to set strong temporal and locational signals
Inter-network operator rights	Various options for approach to this issue: • Each network levies their own charges • Network charges are passed on through network which user is connected to (customer sees one charge)
First come, first served (plus)	New capacity is not inherently dealt with under this scenario however there is potential that usage charges are used to fund reinforcement removing “capital hurdle”, still a timing issue.
Unused capacity options	Unused capacity would remain available for other network users as no Access Rights are defined, cost of the inefficiency of unused capacity shared across all customers
Recovery of operational costs (DSO)	These costs can be reflected in charges where such solutions are viable

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Scenario 3 against agreed assessment criteria

Assessment criteria	Effectiveness	Comments
efficiently meet the essential service requirements of network users		Users needs are met and charges are reflective of impact but some efficiencies and synergies may be missed
optimise capacity allocation		No inherent allocation method although charges may be a factor in take-up of capacity
ensure that price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users		As long as charges are set effectively, this criteria will be met
provide a level playing field for all network users		This scenario can be achieved with low levels of engagement and will apply equally to all customers
provide effective network user price signals, i.e. price signals which can be reasonably anticipated by a user with sufficient confidence to allow them to take action		As long as charges are set effectively, this criteria will be met
appropriately allocate risk between individual network users and the wider body of users		By setting an appropriate connection charging boundary, this condition can be met under this scenario
support efficient network development		Setting charges will only provide limited feedback for reinforcement requirements
be practical		Cost reflective charges are a practical solution and can be designed to be proportionate to customer groups
be proportionate		

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Scenarios against agreed assessment criteria

Assessment criteria	Scenario 1	Scenario 2	Scenario 3
efficiently meet the essential service requirements of network users			
optimise capacity allocation			
ensure that price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users			
provide a level playing field for all network users			
provide effective network user price signals, i.e. price signals which can be reasonably anticipated by a user with sufficient confidence to allow them to take action			
appropriately allocate risk between individual network users and the wider body of users			
support efficient network development			
be practical			
be proportionate			

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Breakout session

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	**Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Capacity charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.**	**Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.**

Questions

- Are there alternative approaches to linking these options together that we have not considered?
- Are there key design parameters, key sub-choices or cross-cutting building blocks that we have not identified?
- What is you initial assessment of these scenarios against the agreed assessment criteria?

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Lunch

How do the scenarios relate to domestic users?

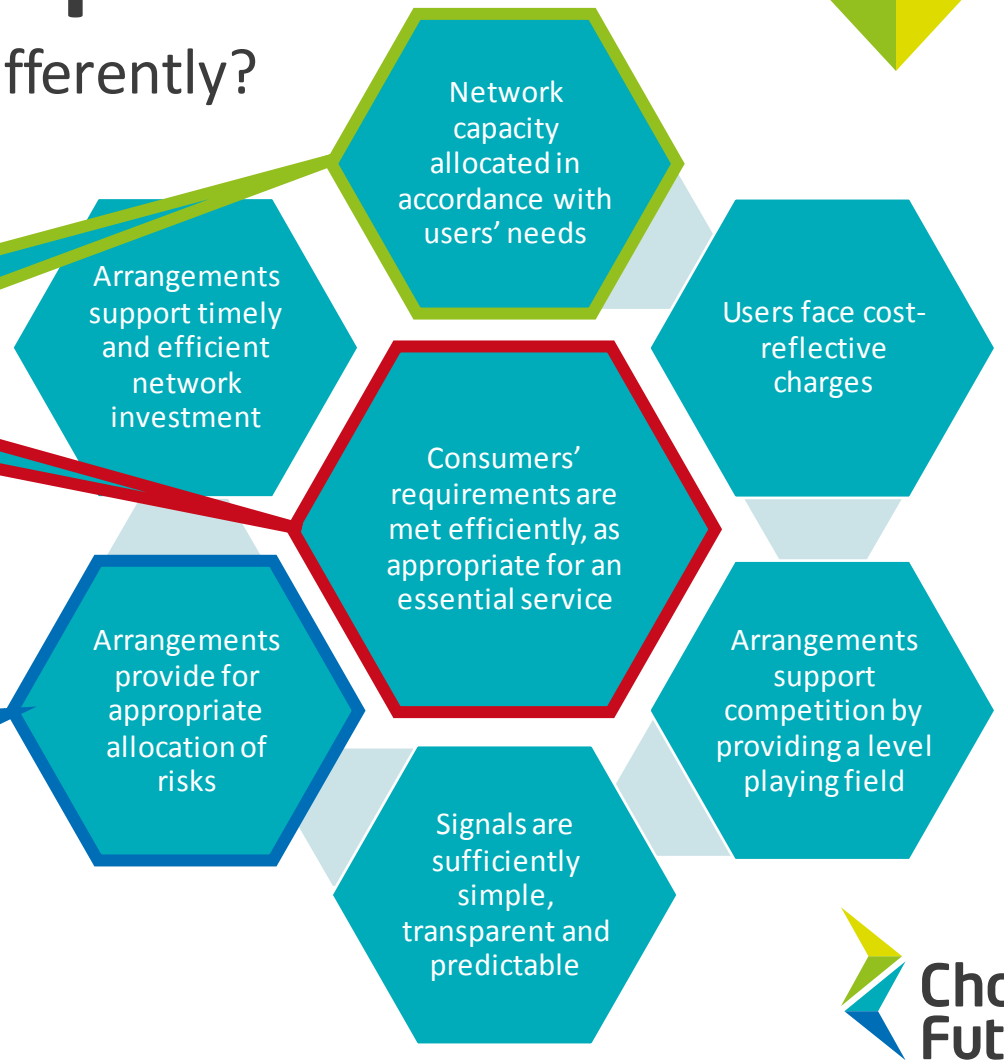
As domestic energy usage changes, how do we encourage optimal use?

> Should we treat this customer group differently?

Domestic User requirements consist of things which are absolutely necessary: lighting, cooking and (possibly) heating

There are potential differences between a domestic user's needs, the cost of meeting these needs and the relative value that users are able to place on the available capacity.

Particularly at a domestic level, network reinforcements consider the cumulative effect of many users. An individual user will have limited ability to manage this risk



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Nature and treatment

- Do we currently treat this customer group differently?
  - CDCM – Use of system charges
  - SLC13 – Service alteration reinforcement charges

- Are there differences in this customer group?
  - WS2 of the Open Network Project identified four different user archetypes:
    - System Service Providers
    - Active Participant
    - Passive Participant
    - Passive Consumer

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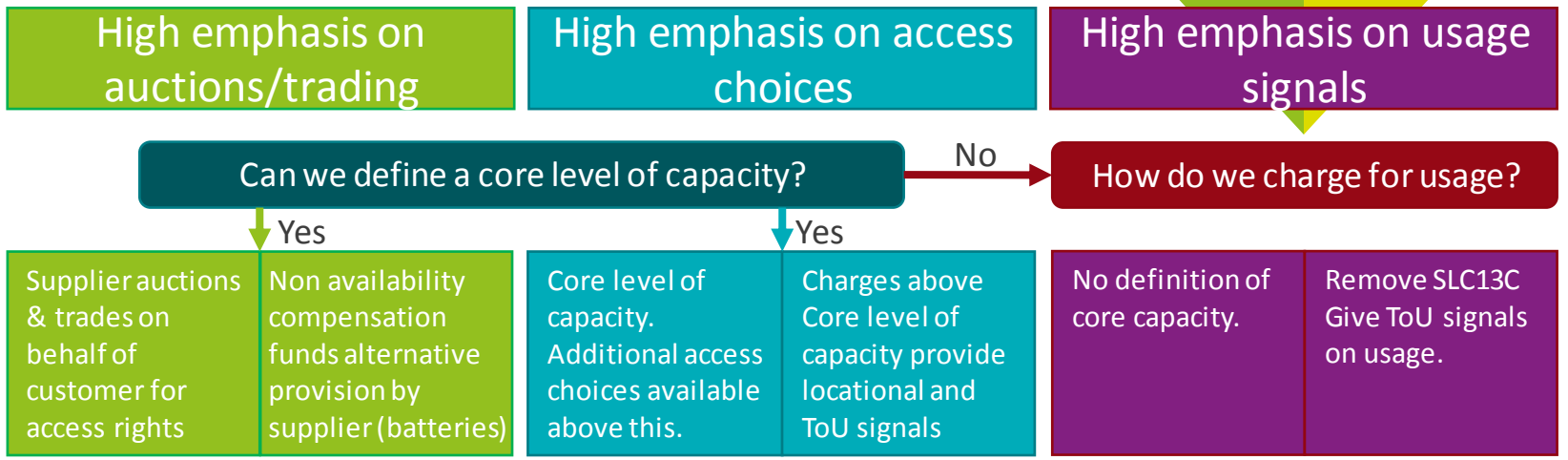
Scenario assessment: Domestic



Network capacity allocated in accordance with **users' needs**			
Users face **cost-reflective** charges			
Arrangements support competition by providing a **level playing field**			
Signals are sufficiently **simple, transparent and predictable**			
Arrangements provide for **appropriate allocation of risks**			
Arrangements support **timely and efficient network investment**			
Consumers' requirements are met efficiently, as appropriate for an **essential service**			

Threshold

- If we were to treat, domestic/non-domestic users differently, how would we define the relevant threshold?
  - Total consumption
  - Ombudsman definition of 'micro-business' –
    - "A micro business is defined as a company which meets one of the following criteria:

      • consumes less than 55,000 kWh of electricity a year, or

      • has fewer than ten employees (or their full-time equivalent) and an annual turnover or annual balance sheet total not exceeding £2m."
  - Other options?

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Breakout Questions

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	**Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Capacity charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.**	**Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.**

- How do the scenarios relate to the three scenarios?
- Is it appropriate to treat domestic/small non-domestic differently under any of the scenarios?
  - If so, how should we define domestic and small-non-domestic users? What is the threshold?
  - If so, what should the alternative arrangements look like?
- Should we define a core level of capacity for domestic/small non-domestic users?

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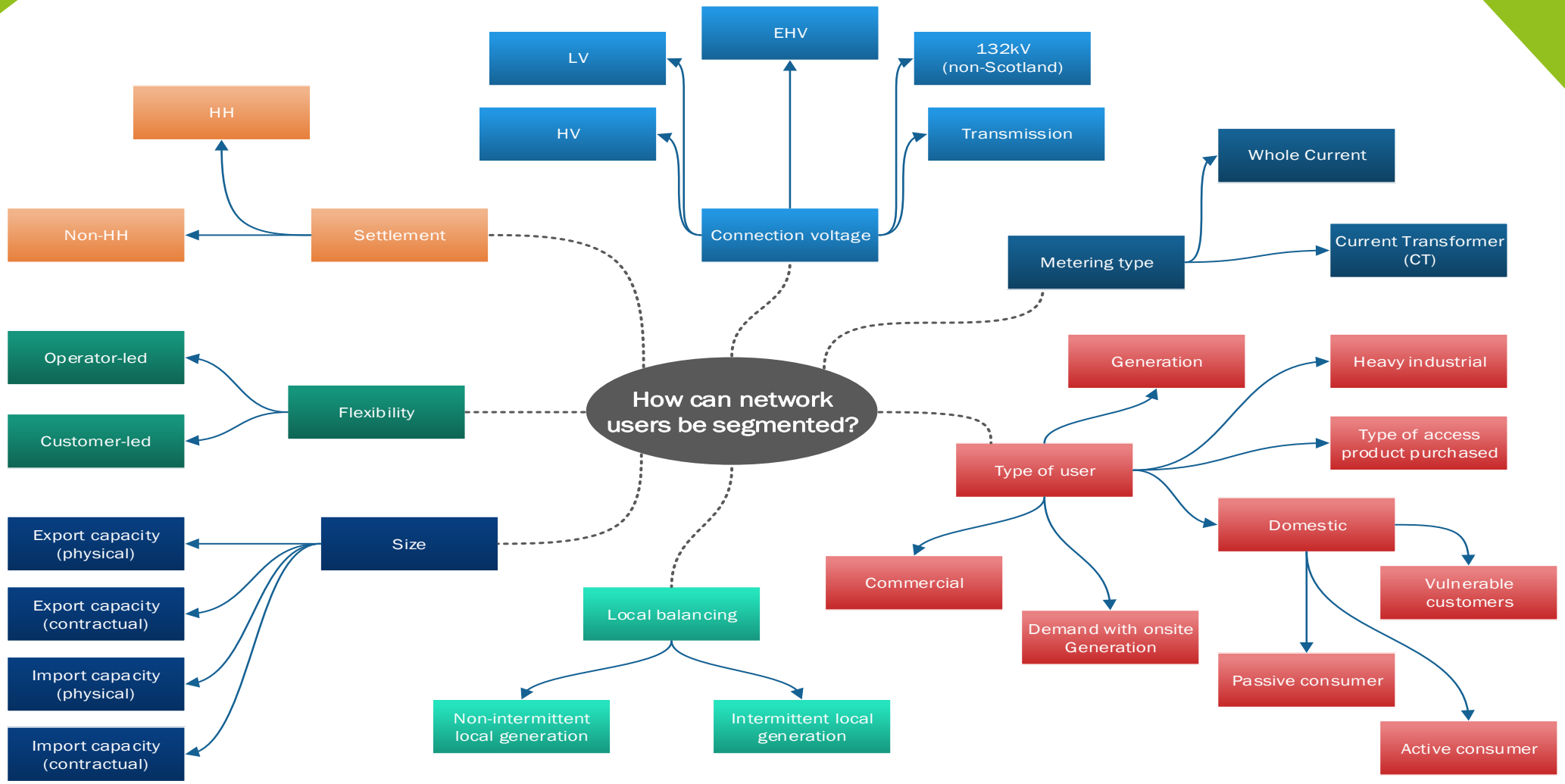
Cross Cutting Issue: User Segmentation

To what extent should users be segmented in each scenario?

User segmentation options



Not an exhaustive list of segments

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Desirable criteria

- Provide a level playing field for all users, avoiding discrimination
- Be practical
- Meet the essential service requirements of network users

- Working assumption that user groups should not be segmented unless the essential service requirements of that user group cannot be met without undue discrimination.

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Size

Size based segmentation refers to capacity, either physical circuit capacity, or contractual capacity within a connection agreement

Scenario 1 (Segmented)	Auctions should be segmented by size. Large users vs small does not seem appropriate.
Scenario 2 (Segmented)	Access rights should be partially segmented in S2. A common suite of access 'products' should be available to all users regardless of size, however smaller users' essential service requirements should be taken into account.
Scenario 3 (Common)	Currently users are not segmented on size but by connection voltage and type. Greater emphasis on UoS would not require any segmentation by size.

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Demand/generation

Demand/generation is a clear split.

Both segments have different requirements for the system (i.e. entry vs. exit capacity)

Segmentation on a demand/generation basis would work for all three scenarios.

Scenario 1 (Segmented)	Auctions for entry/exit capacity should be separated
Scenario 2 (Segmented)	Options for entry/exit capacity should be different products
Scenario 3 (Segmented)	UoS charges should charged differently for D/G as they place different costs on the network

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Metering type

Metering type would not seem an appropriate split for any scenario as it appears to more arbitrary than the other splits.

Although this currently exists (WC vs. CT metering), it shouldn't be taken forward as an option for segmenting access products

Potential discrimination issues (however unintentional) could arise. Two users may want the same access but be limited to different products based on their meter type (this could include smart metering systems as a user could have opted-out.

Scenario 1 (Common)	Users should not be segmented.
Scenario 2 (Common)	
Scenario 3 (Common)	

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Voltage level

Users are currently segmented by voltage type within the suite of network charging models. Users should continue to be segmented, as they use different parts of the network (i.e. charges associated with the LV level shouldn't be levied to an EHV connected customer). Consideration should be made towards ensuring there are no perverse incentives to connect at different voltage level.

Scenario 1 (Segmented)	Each voltage tier uses different parts of the system, in different ways, so there would be a need for segmentation in auction.
Scenario 2 (Segmented)	Users should be segmented by voltage level in a FCFS model – different parts of the system are used by different voltage level segments.
Scenario 3 (Segmented)	If no change to access right choices or allocation/reallocation model is developed then current charging models would need to be retained. Current models are segmented by voltage level (CDCM – LV/HV, EDCM – EHV, TNUoS Model – Transmission).

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Settlement type

Users should be segmented by settlement type in all scenarios.

Options that are more granular (i.e. HH capacities/SToD capacities) wouldn't work for a NHH settled customer.

Scenario 1 (Segmented)	Users should be segmented
Scenario 2 (Segmented)	
Scenario 3 (Segmented)	

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Segmentation options

	S1 – Emphasis on Auctions	S2 – Emphasis on Choices	S3 - Emphasis on UoS
Size	Segmented		Common
D/G	Segmented		
Metering type	Common		
Voltage level	Segmented		
Settlement type	Segmented		

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Breakout

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	**Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Capacity charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.**	**Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.**

- How do the three scenarios interact with the options for user segmentation?
- Is it appropriate to treat any segment of users differently under any of the scenarios? What considerations need to be made to avoid undue discrimination?
- Are there links between the user segmentation building blocks and any of the other building blocks?

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Coffee Break

Cross-cutting building block 2 – Connection Boundary

Options for Connection Boundary

Options from paper

- **Shallow** (as currently exists at transmission level) – newcomer only pays for sole use assets and does not pay for any reinforcement – these costs are recovered via UoS charges
- **Shallowish** (as currently exists at distribution level) – newcomer pays for sole use assets and a proportionate share of reinforcement works within a defined boundary (at present in distribution identified by voltage level). Remaining reinforcement costs recovered via UoS charges. Second-comer rules share some costs to other who benefit within a defined timeband and a £200/kW rule exist for generation
- **Deep** – newcomer pays all associated sole use and reinforcement costs

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Interaction with Potential scenarios

Scenarios

- **High emphasis on auctions/trading** – provided reserve prices reflect location (in terms of reinforcement costs) then this would fit best with a shallow connection boundary
- **High emphasis on access rights choices** – any connection boundary could be appropriate
- **High emphasis on better usage charges** – if this is a time of use emphasis then it would fit best with shallowish or deep connection boundary, whilst if an emphasis on location then it could fit with shallow connection boundary

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Interaction with other building blocks (1)

Access

- **Depth of access** – by definition reinforcement costs cannot exist outside the depth of access sought, hence whilst any boundary option can work those wanting limited depth would probably prefer a shallow boundary whilst those wanting full depth would probably prefer a shallowish or deep boundary
- **Lifespan of access** – those looking for shorter timescales are likely to prefer shallow whilst those looking for longer timescales are likely to prefer shallowish or deep boundary
- **Firmness of access rights** – likely to favour shallowish or deep boundary as this would indicate to the user the value of the limitation on the access right
- **Time of use/Seasonal access rights** – likely to favour shallowish or deep boundary as this would indicate to the user the value of the limitation on the access right
- **Volumetric access rights** – depends of exact definition of these rights but more likely to require a shallowish or deep boundary to give the locational signal

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Interaction with other building blocks (2)

Forward looking charges

- **Nodal** – Highly locational signal hence shallow connection boundary preferred
- **Zonal** – Some locational signal hence shallow or shallowish connection boundary preferred
- **National** – no locational signal hence shallowish or deep connection boundary

Degree of user commitment

- A shallower connection boundary at distribution could impact the user commitment arrangements.

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User segmentation – appropriate?

Existing examples of segmented connection boundary

- **Voltage** – different boundaries exist at transmission and distribution levels
- **User types** – different treatment of demand and generation at the distribution level (£200/kW rule for generation)
- **User types - DCP 205/SLC13** – for domestic and small business customers low carbon technology additions (e.g. EV chargers, PV, storage etc.) if work is not required on the service to the customer to accommodate the addition any reinforcement costs are socialised rather than apportioned

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Initial assessment of connection boundary against assessment criteria (1)

Criteria	Deep	Shallowish	Shallow
Efficiently meet the essential service requirements of network users			
Optimise capacity allocation			
Ensure that price signals reflect the incremental future network costs and benefits that can be allocated to and influenced by the actions of network users			
Provide a level playing field for all users			
Provide efficient networks user price signals i.e. price signals that can be reasonably anticipated by a user with sufficient confidence to allow them to take action			

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Initial assessment of connection boundary against assessment criteria (2)

Criteria	Deep	Shallowish	Shallow
Appropriately allocate risk between individual network users and the wider body of users			
Support efficient network development			
Be practical			
Be proportionate			

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Breakout Questions

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
Access products are well-defined (including being financially firm) and purchased via auctions, with scope for re-sale. Charging models still used to set robust reserve prices, with potential changes needed to ensure they reflect differential value of access adequately.	**Access rights are granted broadly on a first come first served basis, with a range of choice around type of access to maximise use of capacity. Capacity charges reflect impact of different choices on network costs. Changes so that non-firm holders can trade curtailment obligations through a market-based mechanism.**	**Limited changes to access, with reliance on usage charges, with most charges focused on usage at system peaks. Could include more locational charging for constraint costs.**

- How does the connection boundary interact with the three scenarios that we have identified?
- Hoes does the connection boundary interact with the other building blocks outlined in the jan paper?
- What are the advantages/disadvantages of a deeper/shallower connection boundary?
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Other cross-cutting building blocks

Cross cutting building blocks

High emphasis on auctions/trading	High emphasis on access right choices	High emphasis on better usage charges
User Segmentation		
Connection boundary		
Unused capacity		
Range of access products		
	Method of initial allocation	
Re-allocation of access rights		
Operational costs		
These issues could also cut across auctions, depending on the need for charging models (e.g. reserve price)	**Capacity vs Volumetric**	
	Temporal signals	
	Locational signals	
	Charging model	

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Cross cutting building blocks

User Segmentation – Should all users be treated the same or cut into different segments?

Connection boundary – How deep/shallow should connection charges be? How should they be paid?

Unused capacity – Should over allocation of access be avoided? If so how?

Range of access products – Should there be a single access product available or a choice? If a choice, which options? E.g. Depth/whole system, lifespan, firmness, time of use, volumetric shared, 'off the shelf' products

Method of initial allocation – First come first served, connect and manage, auction,

Re-allocation of access rights – Bilateral (with operator or market based trading), BM extended, shared, none

Operational costs – How to recover operational costs such as constraint costs? In a residual or targeted manner

Tariff design – What signals should be created through tariffs?

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Cross cutting building blocks- breakout

Break into groups to discuss:

- Do you agree that:
  - The building blocks listed are cross cutting
  - They are correctly aligned with the three scenarios
- Are there any cross cutting building blocks missed?
- What are the most important building blocks?

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Way forward

Way forward

The next Task Force meetings

- Access TF – 20 March
- FLC TF – 21 March

The focus of theses meetings will be assessing options against the assessment criteria (eg advantages/disadvantages, ease of implementation)

Agree actions from this meeting

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