ofgem Making a positive difference for energy consumers

Challenge Group – 30 Sept 19

Ofgem

Challenge Group meeting agenda

Item	Timing
Introduction and overview	10:00 - 10:10
Project update • 1st working paper • 2nd working paper	10:10 - 10:30
Update on IA, access, charge design and cost model workstreams	10:30 - 11:00
Connection boundary – overview of options and assessment of options	11:00 - 12:30
Lunch	12:30 - 13:15
Small users – overview of our approach and initial thinking	13:15 - 14:25
Transmission network charging – introduction to areas of focus and initial thinking	14:25 - 15:25
Non SCR – Access update	15:25 - 15:55
Next steps	15:55 - 16:00

Objective of todays' session:

- General update on the project since the last time we met and next steps
- Introduction to the options being covered in the second working paper:
  - How options could apply to small users
  - Review the distribution connection boundary
  - Focused review of transmission network charges
- Update on Non-Access SCR work

Project update

Access SCR objective and key milestones

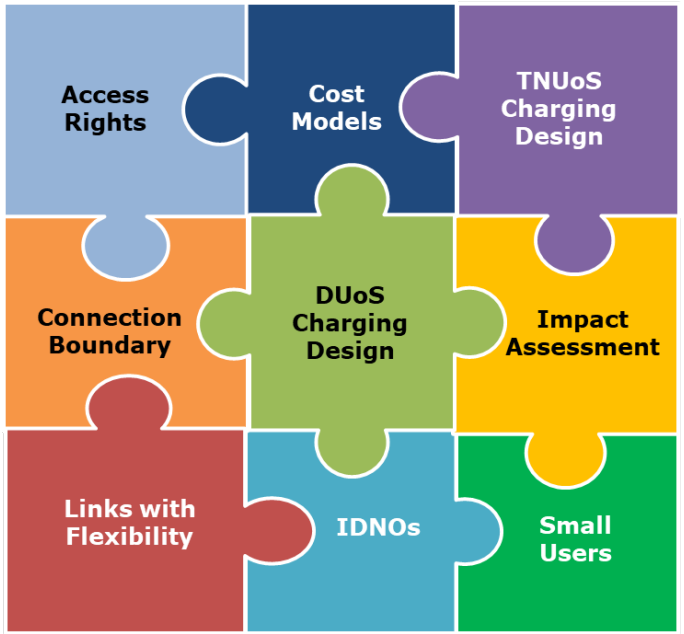
Objective of Access Significant Code Review (SCR): We want to ensure electricity networks are used efficiently and flexibly, reflecting users' needs and allowing consumers to benefit from new technologies and services while avoiding unnecessary costs on energy bills in general.

			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		30-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. **Distribution Network Charge Design** – assessing changes to how charges are designed to improve cost reflectivity and signals to users
5. **Transmission Network Charge Design** – assessing changes to the charge design for demand transmission network charges and whether distribution users should face transmission network 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

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

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

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

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

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.

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

Ongoing Activity

Network Modelling	• The locational cost model subgroup is developing an approach to building Reference Network Models. An initial prototype will be developed **by mid-October**.
Tariff Modelling	• We are continue to work with CEPA and TNEI on the development of options specifications for CDCM and EDCM tariff modelling. These will be provided to Ofgem **by mid-October.**
Impact Assessment	• Our ITT for the Impact Assessment modelling has been issued. The contract is expected to commence in **late November** • The Access team are attending Ofgem's Academic Panel to discuss our thinking on charge design options, and options for sending effective locational signals

Additional activity

Network Benefits	• We will be holding a workshop with DNO network planners towards the **end of October** to assess how different options are likely to drive changes in behaviour; how these changes would be reflected in network planning processes; and how these changes would deliver network benefits

Access sub-group update

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

2. Small users:

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

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

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

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

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

7. The respective roles of sharing and trading access

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

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

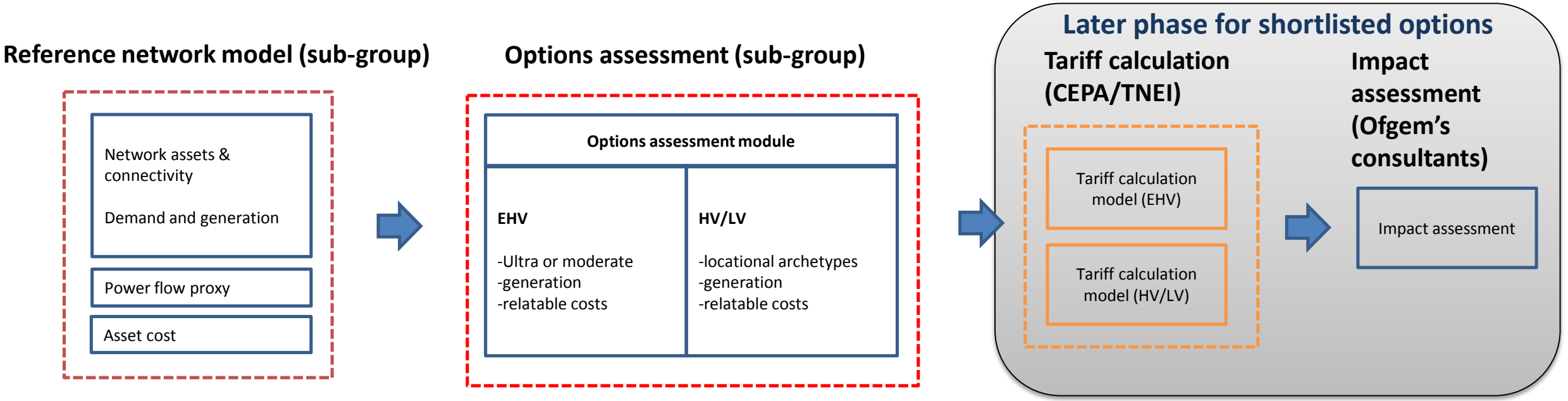
3. Literature review: we are continuing to build on our current review of academic literature and case studies from other countries to understand the existing evidence regarding the behavioural impact of the different charging design options and any implementation challenges.

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

Distribution locational cost models design update

1. Locational cost model quantitative analysis: sub-group developing model to assess options outlined in the working paper. On track to lock-down model by mid-November, with options assessment analysis by Christmas. (see model architecture below)

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



Connection boundary

Connection charging boundary – session overview

This session will discuss the distribution connection charging boundary.

We are keen to hear your views on a number of questions as we progress through the session:

- Do you see **issues with the current arrangements**?
- And if so, what are they and how can we build evidence of them to help inform our assessment?

- What is your **initial feedback on the options**?
- Have we missed anything?

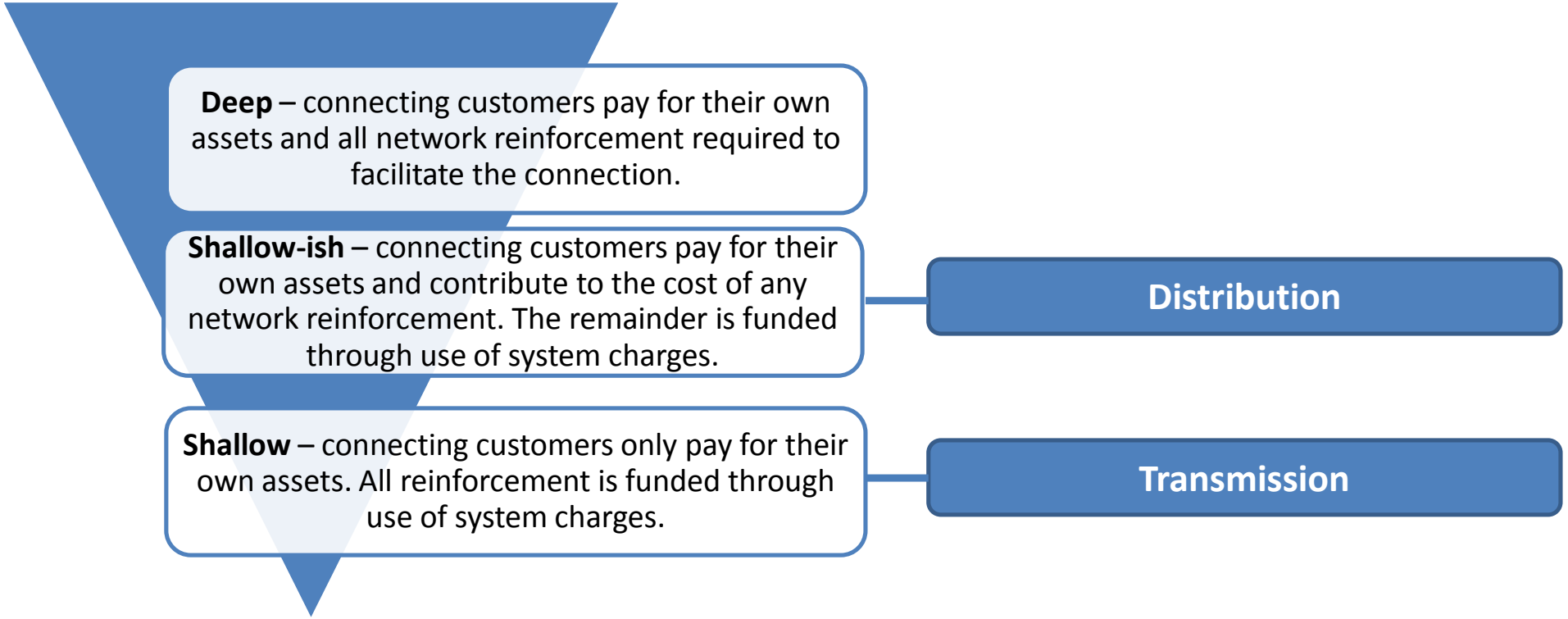
- Do you agree with our **assessment criteria** with regard to the efficiency guiding principle?
- How well do you think a move to more shallow arrangements performs against them?
- Have we missed anything?

- What are your views on the **viability and desirability of user commitment**?

- What are your views on **user segmentation**?

Connection charging boundary – current arrangements

When we launched the SCR we said we would explore a range of options for the distribution connecting charging boundary. The connection boundary is the extent to which customers pay for a new connection and is currently called **"shallow-ish"** for distribution.



- Do you see **issues with the current arrangements**?
- And if so, what are they and how can we build evidence of them to help inform our assessment?

Connection charging boundary – the case for change

A majority of respondents to the SCR launch consultation supported reviewing the distribution connection charging boundary. These respondents highlighted benefits such as reduced barriers to entry and creating greater consistency between transmission and distribution. Conversely, the current arrangements protect wider users from the cost of stranded or under used assets.

Most decisions on where or how to connect are technical involving a solution that matches the size of the connection to the voltage level. However, where a choice exists, differences between approaches at transmission and distribution may create the potential for signals to connect, in a potentially inefficient manner, to a specific network.

There is therefore a trade-off for potential connecting users:

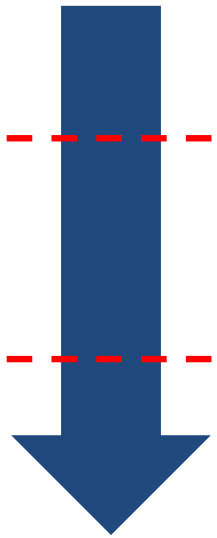
Distribution
- Relatively higher connection charges as contributing to reinforcement
- Relatively lower use of system charges (or credits) over the lifetime of the asset

Transmission
- Relatively lower connection charges as most work funded through transmission network charges
- Relatively higher use of system charges over the lifetime of the asset (including local circuit charges)

Gathering evidence of issues with the current arrangements is a crucial part of our assessment. We are issuing a call for evidence but would also welcome submissions directly to FutureChargingandAccess@ofgem.gov.uk.

Connection charging boundary – options for change

The scope of the work group has been based on the assumption that the current arrangements should provide the baseline, with potential options becoming more shallow. For example:



Keeping the shallow-ish boundary but make other changes (eg, allowing payment over time)

Moving shallower (eg, connecting users only contribute to reinforcement at their voltage level and no higher, with the rest funded by distribution network charges)

Shallow (eg, all reinforcement is funded through distribution network charges)

More detailed descriptions of the possible options are available in the material issued before today's meeting.

- What is your **initial feedback on the options**?
- Have we missed anything?

Connection charging boundary – assessing the options

While we are considering the options against all the guiding principles, we think the analysis against the efficiency principle will be critical. We see key considerations for this as:

Efficient signals for network users.

- The move to a shallower connection boundary removes the locational signal provided by the connection charge, reducing incentives for efficient use and development of network capacity, so needs to be considered together with potential for more locational distribution network charges.

Supporting efficient network development.

- Moving to a shallower boundary where the DNO funds reinforcement in full may mean that they are better placed/incentivised to choose the timing of when to reinforce or find an alternative solution if appropriate (eg procuring flexibility storages from storage/DSR provider).
- However, needs to be accompanied by clear framework for when extra capacity should be added – currently user willingness to pay the connection charge is a clear signal for this

Connection charging boundary – assessing the options

Following on from the previous slide, we see key considerations as:

Addressing distortions between different types of users.

- If evidence suggests that the current different approaches to connections at transmission and distribution do risk distorting location decisions then this could be addressed through moving to a shallower approach at distribution.

Reducing barriers to entry.

- If evidence suggests that high costs are a barrier to entry for some users, this could addressed by more shallow arrangements. If it is the requirement to pay in advance, another solution may be more appropriate.

- Do you agree with our **assessment criteria** with regard to the efficiency guiding principle?
- How well do you think a move to more shallow arrangements performs against them?
- Have we missed anything?

Connection charging boundary – user commitment

User Commitment is used in transmission and aims to find a balance of risk sharing between the transmission network charge bill payer and the new connecting user.

Removes barriers to entry associated with upfront cost of connection

Incentivises users to provide notice of delays or cancellation

Protect wider transmission network charge bill payers from picking up costs resulting from terminations

Provides protection to the Transmission Owners to recover cost of stranded assets

Moving to a shallow boundary or allowing connection charges to be paid over time could increase the risk of stranded assets and costs faced by distribution customers – but also help mitigate some of the potential issues for connecting users. This needs to be balanced with the risk of creating new barriers and what is practical and proportionate for distribution connections.

- What are your views on the **viability and desirability of user commitment**?

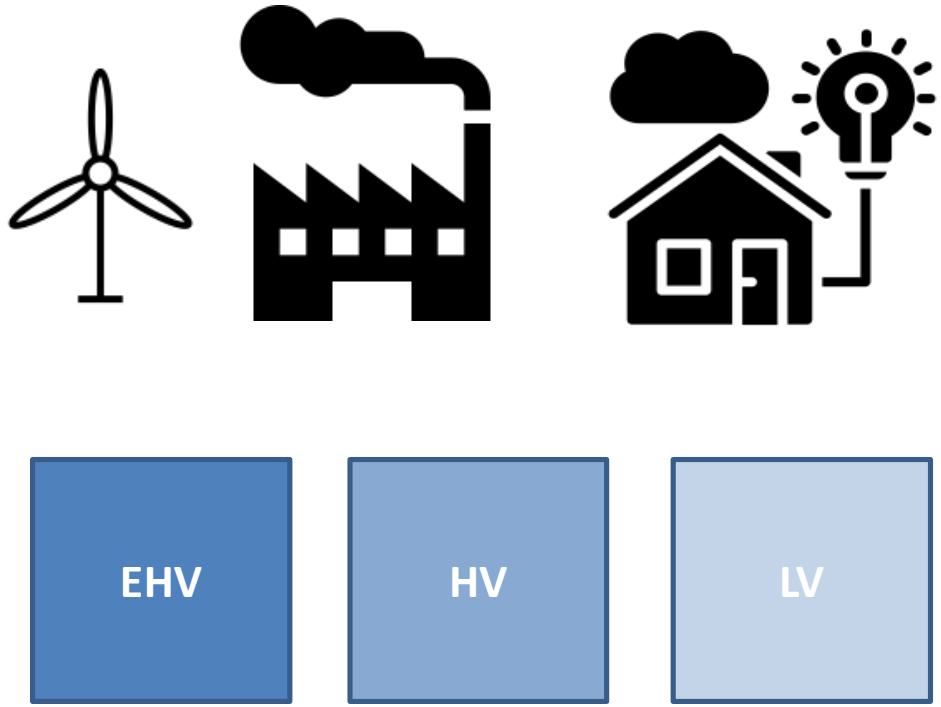
Connection charging boundary – user segmentation

There could be merit in considering whether one approach is suitable for all users, or if there is a case for user segmentation.

This could be between generation and demand, or across different voltage levels. Potential drivers for this could be the extent to which:

- Distribution network charges provide improved signals for different voltages/groups
- user commitment is viable for different groups
- those seeking new connections are likely to take into account future distribution network charges

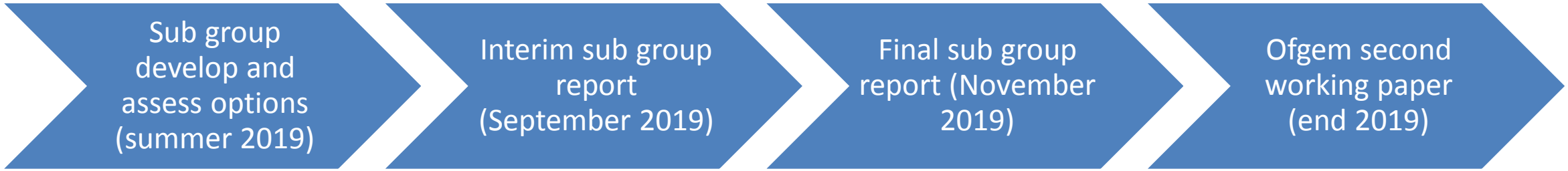
We will continue to consider the options for segmentation, taking into account any work done by the small users' sub group.



- What are your views on **user segmentation**?

Connection charging boundary – next steps

The sub group will continue to develop the options ahead of the final report in November. This will inform our second working paper and shortlisting of options in early 2020.



We would welcome the CG's comments on the interim report and any of today's material today or at FutureChargingandAccess@ofgem.gov.uk.

Lunch

Small users

Small users workstream - scope and approach

When we launched the Access SCR we said we would consider as a priority area:

- **Better defined access rights and greater choice for small users**,
- Distribution use of system charging reform and reforms to the distribution connection boundary
- **Potential protections** to mitigate the potential adverse impacts of the reforms

Who are small users?

- By small users we mean those **distribution-connected users who do not have an agreed capacity requirement** as the basis for their distribution network charges.
- These users typically do not have Current Transformer meters.
- This definition includes both **generation and demand** users, **domestic and non-domestic**.

We have established a cross-industry subgroup to consider the suitability of options for small users and any potential adaptations.

What will this subgroup be looking at?

The **primary focus for this subgroup**, however, is the suitability of arrangements for:

- **domestic customers,** with a particular focus on **those who may be vulnerable,** and
- **small non-domestic demand customers**, such as **microbusinesses**.

We want to understand the extent to which the options we have identified for larger users could or should apply directly for these specific user groups, or any adaptations which may be needed.

Small users options and assessment

SCR objectives:

1. **Arrangements support efficient use and development of system capacity**
2. **Arrangements reflect the needs of consumers as appropriate for an essential service**
3. **Any changes are practical and proportionate**

The small users workstream assessment will focus on the 2nd and 3rd principles, liaising with other policy workstreams to assess the impact of small user options on principle 1.

Specifically, the small users workstream will consider:

- Whether **adaptations** to our options may be needed to enable **domestic and microbusiness** consumers to **engage with and benefit from** new access and charging arrangements.
- This includes considering **whether any protections may be needed** for certain groups.

Overview of options

Charging options

Considering whether any limits on the level of locational or temporal granularity or degree of change in dynamic signals may be appropriate for specific types of small user demand

Access options

Considering whether any limits should apply on the choice of access option or level for specific groups of small users, for some or all demand, including a potential core access level option

Wider retail provisions

Considering the role for principles-based obligations or other retail market provisions, including possible approaches to engaging with consumers in relation to any new arrangements

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

We outlined two key aspects in launching the SCR:

Electricity provides an **essential service**, and for **small users** in particular we need to ensure that arrangements **do not lead to inappropriate outcomes or unacceptable impacts**, particularly for those in **vulnerable situations**. This may be achieved in the access and charging arrangements themselves or through the wider policy and regulatory arrangements.	This may involve considering **which forms of customer demand**, or which **customer groups**, can **readily shift consumption**, or may be able to with appropriate **enablers**. Also, any potential for **inappropriate adverse impacts** – financial or of other types, and any adverse affects on particular groups.
Users, or suppliers/intermediaries on their behalf, are **able to understand arrangements** and **have sufficient information** to be able to reasonably predict their future access and charges.	This may involve considering what **types of data and information** are required, and in which form, and how this might **differ between customer groups**, with different capabilities.

Which factors are particularly important to consider against this guiding principle?

Principle 3. Any changes are practical and proportionate

Our recent working paper identified the following key aspects, also noting constraints of our proposed 2023 implementation date:

- Data collection, processing and analysis requirements
- Existing **systems**, **assets and equipment**, including **billing** systems, **metering and monitoring**
- **Charge calculation and settlement** considerations – including updates to models and methodologies, and the impact of any need for reconciliation
- **Engineering and planning standards**, assessing whether a particular option would require changes to engineering or planning standards, the scale of change required and the expected implementation timescales.
- **Customer engagement or commercial agreements**, considering any changes that would be required to how customers are engaged and managed and any impact on existing commercial arrangements.
- The **ease** with which the **options can be implemented**, considering any need for legislative changes, transitional arrangements and complexity.

Which of these would be particularly key for the small users options assessment? Are there other relevant factors?

Consumer characteristics - domestic

We are working with Citizens Advice to understand key consumer characteristics which might be relevant to consider. These could include:

For domestic customers

Household income

For microbusinesses

Type of business (eg agricultural, commercial industrial, other)

For all small users

Location - urban / rural / suburban
Heating type – off gas grid / electric heating / mains gas
Electric vehicle(s) – none / 1 / more than 1
Energy consumption level

Are these the right characteristics to consider – for domestic consumers and microbusinesses? Are there others you are aware of, or data you could point us to?

Phase 1 – (Sept–Oct 19)

- Options and key design choices, opportunities and risks mapping
- Initial discussion of options assessment and confirm analysis or assessment needed
- Citizens Advice input on customer characteristics
- Deliverables structured around four key aspects of arrangements:

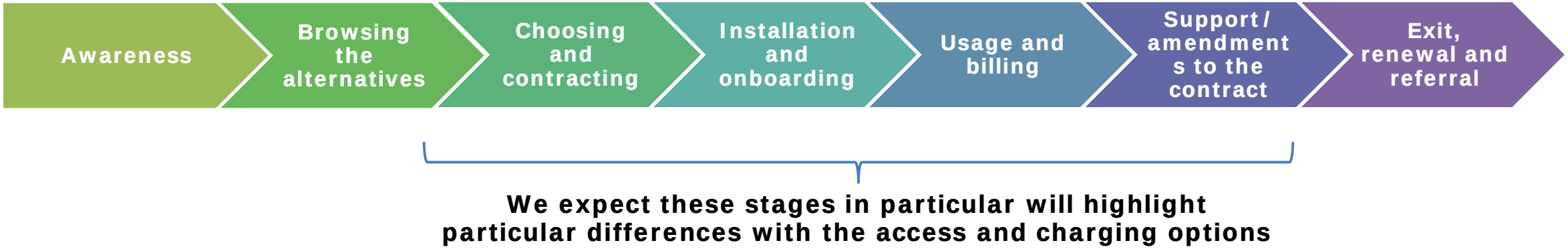
Use of system charging | **Access** | **Distribution connection boundary** | **Wider retail measures**

Phase 2 (Oct–early Nov 19)

- Complete above assessment
- Consider how options may be drawn together into potential packages for further assessment of alternatives / substitutes and complementary variants

Proposed framework – customer journey

We propose to consider the options mapped to the stages of an illustrative customer's journey:



- Each stage of the journey may have particular steps involved – for suppliers, network companies and the customer.
- We propose to use this tool to guide assessment and understanding of the options including:
  - What will be involved in the option
  - What opportunities and risks may exist with each stage
  - How adaptations or mitigations could apply

Draft long list – access and use of system charging options

In the first phase of the SCR we have considered a **'long list' of access and charging options** which could potentially **apply for any user**. We did not specifically focus on the requirements of small users in developing these options.

The **options we have identified** include:

Forward-looking charging options

1. Volumetric ToU
2. Actual capacity
3. Agreed capacity
4. Dynamic charging
5. Critical peak rebates

Access options

1. Level of firmness
2. Time-profiled access
3. Shared Access

Cross-cutting aspects:

4. Standardised options
5. Monitoring and enforcement choice

Potential small user variants:

Key questions and potential variants include **how granular or dynamic** any signals should be, and the suitability of capacity vs volumetric charging. A potential variant could include a **'basic' charging tier**.

A key question is **how and to what extent** small users' access rights should be **better defined, and** how far **all options should be available**. Potential variants could include **protected 'core' level** of access.

Draft long list - connection boundary and potential retail options

We are also now considering options and conditions for reform of the **distribution connection boundary** and **wider retail arrangements**.

The **options we have identified to date,** which we are developing with the subgroup, include:

Connection boundary options

1. Shallowish connection boundary
2. Options to make the connection boundary shallower
3. A shallow connection boundary, potentially involving user commitment

We are considering whether **different approaches** may be warranted for some **small users**.

Wider retail options

1. Principles-based approach
2. Approaches to customer engagement and communication
3. Tailoring offers to consumers' needs and capabilities, including identifying and protecting vulnerable consumer
4. Tariff design features
5. Standardisation around aspects of good practice

We are also considering wider existing provisions which may be relevant in the customer protection landscape, eg WHD / ECO

Are there options which you consider seem likely to perform better / less well for small users, considering the above principles?

Focused transmission network charging reforms

Introduction to focused review of Transmission Network Use of System Charges (TNUoS)

Our focused review of transmission network charging covers:

Transmission network charging design for demand users

Transmission network charging design for Distributed Generation

The ‘reference node’

Transmission network charging design for demand users (including those engaged in DSR)

Our SCR launch document identified three key issues with transmission network charging for demand users:

Uncertainty due to triad timings

- How significant are the costs for industry in managing exposure to Triad?
- Should operational signals be sent through market-based mechanisms?
- What are the practical challenges with collecting transmission network charges on the basis of agreed capacity charges?

Triad periods not always aligned with peak network constraints

- Do triad based charges reflect costs imposed on the network by demand users? Is this likely to change?
- As the energy system evolves, will constraints be less well aligned with triad periods?
- Are the nature of the costs similar enough to those at distribution level to warrant a consistent approach?

Distortions between directly-connected and onsite generation

- Are there differences between directly-connected and onsite generation that justify a different approach to charging for exports to the network?
- Non-exporting generation is currently treated as variation in demand and faces the inverse (or opposite) of demand charges, should this change?

Options to address this might include:

- Retaining or reforming the existing approach
- Moving to an agreed capacity approach
- Any other approach that which may help align the signals faced by distribution-connected and onsite generation with those of transmission-connected generators

Transmission network charging of Distributed Generation
Small Distributed Generation (DG) (<100MW) Issues

Existing Arrangements

- Charging arrangements differ significantly between transmission-connected (TG) generators and those connected at lower voltages.
- Is there evidence that charging DG based on Triad creates perverse incentives?
- What alternatives exist?

TG/DG approach differences

- Is small DGs impact on the Transmission network similar to that of larger generation?
- Is it practical and proportionate for small DG to pay for any costs they impose on the transmission networks?
- Do recent changes (SQSS, BM opening, connect & manage applied to DG) mean that small DG's access to the transmission system is now largely the same as larger generators?

DG Local Circuit Charges

- Local circuit charges do not currently apply to DG. In some cases this may be creating large distortions, leading to a need for new investment in remote parts of the network (eg Orkney).
- How could this be addressed? Can we identify what assets DG use and how should that use be charged for?
- What are the practical considerations with collecting any charges?

Options include:

- Retaining the existing approaches
- Better aligning charging arrangements and incentives of small DG and larger generation
- Improving the cost-reflectivity of the demand charges and applying the inverse to small DG
- Considering the role of the Embedded Export Tariff and the floor-at-zero
- Applying local circuit charges to DG where these are used (e.g. island links)

- **What are your views on the potential issues we have identified?**
- **Are there other options we should be considering?**

Reference node recap

- The ‘reference node’ is from ‘the Transport model’ which derives the locational charges for different users and areas
- Two key issues with the current approach will be considered
  - Likelihood of breaching the €2.50/MWh cap
  - Reducing distortions between different types of generation
- Does change to the reference node offer an effective way to achieve a more level playing field while maintaining compliance with the €2.50/MWh cap?

The reference node & the Transport Model

- The Transport Model calculates the incremental cost of transmission from and to different areas, and this cost is reflected in the demand and generation forward looking charges.
- It does this by modelling the transmission system as over 900 ‘nodes’ (junctions where different parts of the system meet) connected by over 1400 ‘circuits’ (transmission lines or cables that carry power), and modelling how an additional injection of power at each node would flow to a ‘reference node’.
- The current approach to defining the ‘reference node’, is referred to as the ‘demand weighted distributed’ approach.
- The effect of the approach is that demand users, in aggregate, contribute approximately zero revenue from the locational charges.
- Generators, in aggregate, contribute a positive amount of revenue from the locational charges.

Reference node methodology - considerations

Reducing distortions between different types of generation

- Is the current choice of reference node causing distortions between different providers of energy services?
- As the energy system evolves, will this lead to inefficient investment decisions?
- Are there potential benefits in terms of reducing distortions to cross-border trade?

Likelihood of breaching the €2.50/MWh maximum cap on transmission generation charges

- Will the changes we may make as part of this review increase average transmission generation charges making it more likely that the cap will be breached?
- Would a changed reference node reduce average Transmission network generation charges and the risk of breaching the cap?

Options include:

- Retaining the existing distributed demand node
- Adopting a distributed generation node where average generation charges are close to £0
- Considering options for more equal forward-looking contributions from demand and generation

- **What are your views on the potential issues we have identified?**
- **Are there other options we should be considering?**

Non-SCR update

Product 1: Trading of Non-firm DG Curtailment Obligations

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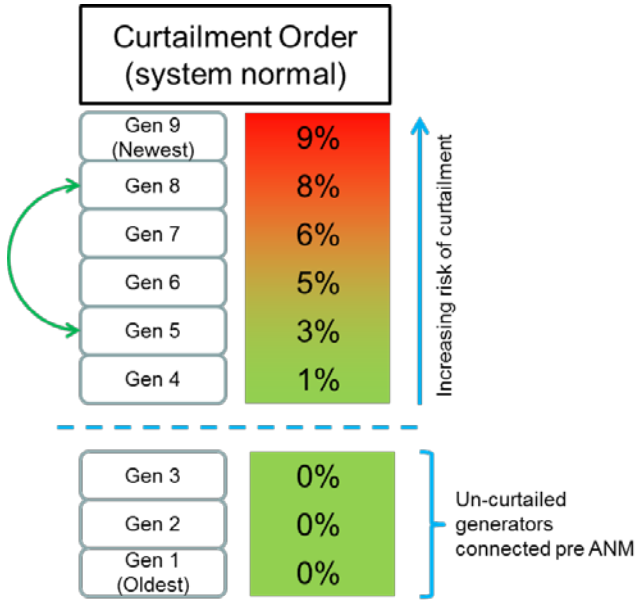
Example 1

Trading between generators that are at risk of being curtailed



- Generator 8 seeks to reduce the likelihood that it will be curtailed by trading with generator 5.
- The new curtailment ‘stack’ will go in the sequence generator 9, 5, 7, 6, 8 then 4.
- Depending on the extent of the constraint, there may now be circumstances in which generator 5 is curtailed but generator 8 is not.

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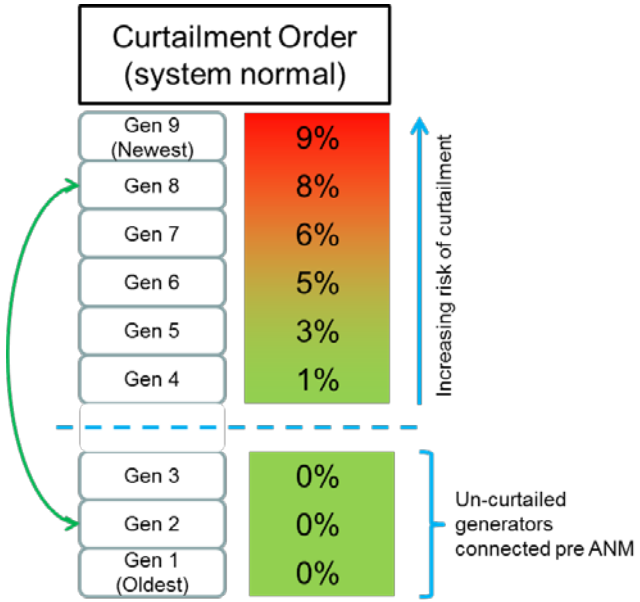
Example 2

Trading between a generator at risk of being curtailed and a non-curtailable generator



- Generator 8 has traded away its curtailment obligation entirely by trading with generator 2.
- The new curtailment ‘stack’ will go in the sequence generator 9, 2, 7, 6, 5 then 4.

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Charging Futures

Principles and Rules for Trading

PRINCIPLE 1: Transparent information sharing

Sufficient information must be made available to enable generators to undertake trades, and to enable network operators to determine the new 'stack' post-trade.

Potential rules:

1. The network operator must make information available about a constraint to the network users impacted by that constraint.
2. The network operator must publish the process it will follow to determine which generators to curtail to alleviate the constraint under each plausible scenario
3. Parties who have traded must provide the network operator with details of the trade.

PRINCIPLE 2: Ability to maintain network continuity

Trading of curtailment obligations must not undermine the ability of the network operator to maintain the continuity of its network in the constrained area.

Potential rules:

1. *The network operator must pre-authorise any generator wishing to trade, by confirming that generator has the ability to comply should it become liable for a curtailment obligation.*
2. *The MW reduction agreed by the generator must have an equivalent impact on the constraint as the MW reduction already required by the generator with the curtailment obligation.*

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Charging Futures

Principles and Rules for Trading

PRINCIPLE 3: Visibility of other potential trading parties

Those generators which have 'opted in' to trading must be aware of other potential trading parties and understand other trading parties' capability for flexibility.

Potential rules:

1. Generators wishing to trade must opt in to potential trading.
2. A list of generators connected to the network that have the potential to alleviate the constraint and which have opted in to trading must be made available, including:
   a) their existing curtailment obligation (if applicable);
   b) their current curtailment obligation;
   c) their flexibility or curtailment granularity; and
   d) their effectiveness in alleviating the constraint (i.e. their sensitivity factor).

PRINCIPLE 4: Transparent trading arrangements:

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

Potential rules

1. Trades must be defined in time periods of [minimum trade duration]; and
2. Trades can take place at any point between [time period] and [time period] before the time at which the trade will take effect.

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Product 2: Exchange of Non-curtailable Capacity

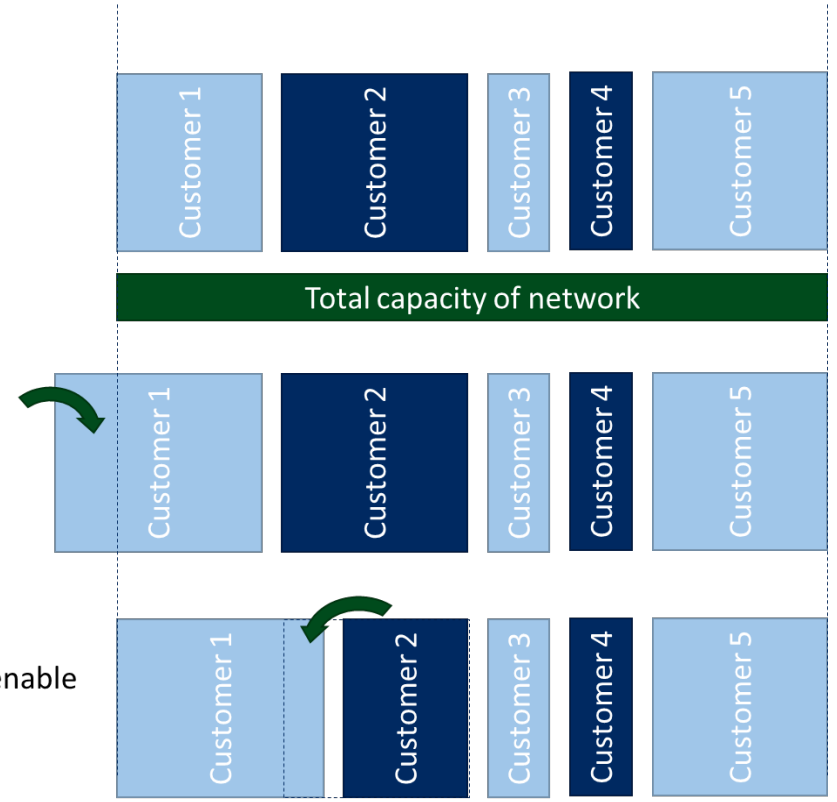
Product 2 – exchange of non-curtailable Capacity

Exchange means a user reducing their maximum capacity rights and another user increasing their maximum capacity rights.

An existing network is built to meet the capacity requirements of five customers. Customer 1 wishes to increase their allocated capacity.

Option 1
Reinforcement is completed to enable Customer 1 to increase their allocated capacity.

Option 2
Customer 2 releases some of their allocated capacity to enable customer 1 to increase their allocation.



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Principles and Rules for Trading

PRINCIPLE 1: Transparent information sharing

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

Potential rules

1. The network operator must make information available about head room capacity to the network users impacted by a potential constraint.
2. Parties who have agreed to exchange capacity must provide the network operator with details of the exchange, including which parties have exchanged, the magnitude of the exchange and the time periods for which the exchange will be applicable to ensure connection agreements can be updated.

PRINCIPLE 2: Ability to maintain network continuity

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

Potential rules

1. The exchange of maximum capacity will be assessed on a case by case basis to ensure it is technically feasible. The cumulative impact of the exchange on the network must have the same or less impact on the potential constraint.

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Principles and Rules for Trading

PRINCIPLE 3: Visibility of other potential trading parties

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

Potential rules

1. Users wishing to exchange capacity must opt in.
2. A list of users connected to the network behind the potential capacity restriction that have the potential to exchange capacity and which have opted in to exchange must be made available.

PRINCIPLE 4: Transparent trading arrangements

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

Potential rules

1. Exchanges must be defined in time periods of [minimum trade duration]; and
2. Exchanges can take place at any point, however[time period] is required before the time at which the exchange will take effect.
3. Exchanges must be approved with the network company before they come into effect and connection agreements updated.

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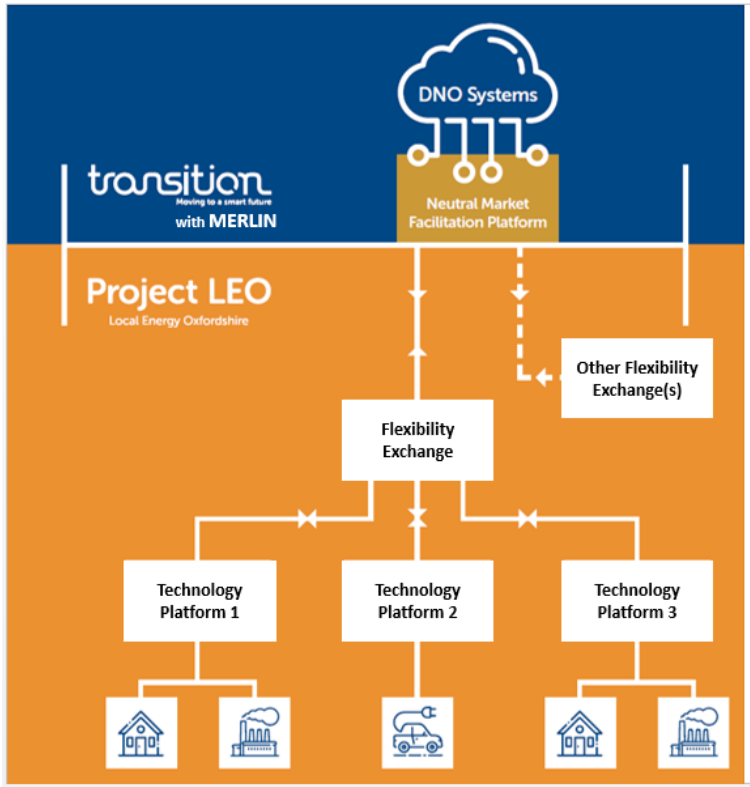
Testing the Theory

1. SSEN Oxfordshire Projects – wide project scope, opportunity to test these concepts as part of the wider programme

2. Use ‘wargames’ or ‘roleplay’ to test the natural responses to market rules – what works well, what would make them better, what is irrelevant

3. War games use real DER operators and developers to give real insights

4. Noting that the Oxfordshire Programme is much wider and focused slightly further into the future than the scope of P1/P2; want to deliver solutions sooner



Project Outputs

The six key outputs of the programme are:

1. **Develop Markets** - accelerating the development of a mature flexible energy market of Distributed Energy Resources that provides solutions to energy needs, constraints and decarbonisation.
2. **Inform New Investment Models** - for Distributed Energy Resources that reflect the value of their assets and their flexibility.
3. **Demonstrate DSO Model** - In Project LEO and TRANSITION we will demonstrate the DSO's core role of neutral facilitation of markets, to enable the utilisation of Distributed Energy Resources, and how it resolves possible conflicts of interest.
4. **Develop Assets for Strategic Planning** - developing the tools needed to make effective and efficient whole-system decisions about the energy ecosystem.
5. **Build Datasets for Ongoing Research** - sharing understanding so the experience can be replicated elsewhere both in the local context but also nationally through the Electricity Networks Association (ENA's) Open Networks project.
6. **Create a community of Skilled People** - improving the skill sets of participants and enhancing the social capital of the local energy sector in Oxfordshire and more widely across UK's Economic Heartland.

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Testing the appetite

1. Feedback from you
2. Future WebEx, post ‘War Game Outcomes’ – Late Oct/Early Nov
3. Other Engagement

Delivering solutions

Having established the concepts and tested them…

…we will use the Open Networks Project to draft specific changes in 2020 ready for implementation

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Our other work

Product 3

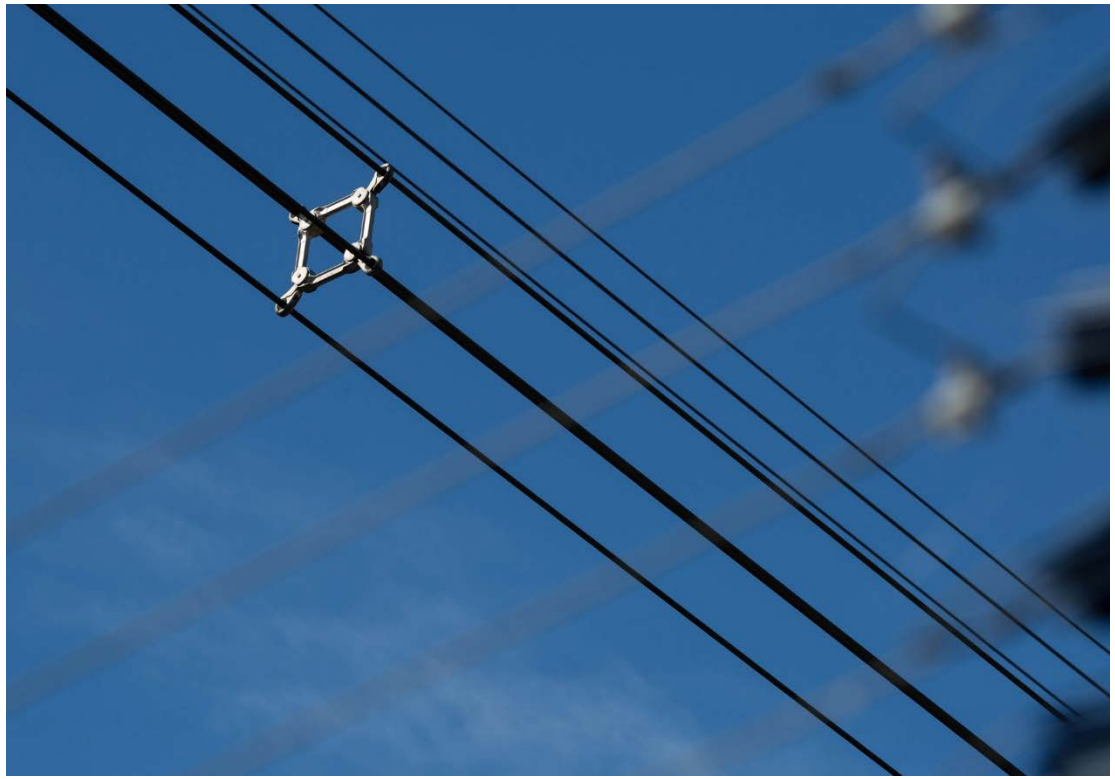
Application Interactivity and Connection Queue Management

- Consultation (under Open Networks) closed on 25th September 2019.

Product 4:

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

- Change proposal passed into DCUSA governance (DCP348)



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Next steps

Next steps

- We intend to publish our second working paper by the end of the year.
- The next Challenge Group will focus on the contents of the second working paper.
- We intend to determine a shortlist of options which we will assess in further detail early next year, with consultation on our draft SCR conclusions in summer 2020.
- To keep up to date with all our work on Future Charging and Access – make sure you are added to the Charging Futures distribution list at: http://www.chargingfutures.com/sign-up/sign-up-and-future-events/