Kenny McPartland and Jody O'Boyle
Utility Regulator
Queens House
14 Queen Street
Belfast
BT1 6ED

6 October 2023

Re: "A Review of the Connections Policy Framework in Northern Ireland Call for Evidence" DfE & UR - A joint Call for Evidence

Dear Kenny / Jody,

I am writing in regard to the DfE & UR "A Review of the Connections Policy Framework in Northern Ireland Call for Evidence" that seeks to gather evidence to assess potential changes to the current connections charging policy in NI and the costs and benefits of potential changes.

The Consumer Council

The Consumer Council is a non-departmental public body (NDPB) established through the General Consumer Council (Northern Ireland) Order 1984. Our principal statutory duty is to promote and safeguard the interests of consumers in Northern Ireland.

The Consumer Council has specific statutory duties in relation to energy, postal services, transport, and water and sewerage. These include considering consumer complaints and enquiries, carrying out research, and educating and informing consumers.

The Consumer Council welcomes the opportunity to provide evidence that has potential to influence changes to the current connections charging policy in NI which are fit for purpose and facilitates delivery of DfE's Energy Strategy. However, more details are needed to fully understand the potential impact on domestic customers and small businesses, given the complexity of potential arrangements needed to create a flexible, resilient and integrated energy system to deliver our power, heat and transport needs, whilst also meeting the Climate Chage Act (Northern Ireland) 2022 statutory target that 80% of electricity consumption is from renewable sources by 2030. Both the legislation on connections and the regulatory framework will need to change in order to meet this target and to deliver the 2050 vision of net zero carbon and affordable energy.

"A Review of the Connections Policy Framework in Northern Ireland Call for Evidence"

The DfE/UR's proposals deal with some aspects of reform, but there is reform also being progressed by other parties, for example Flexible Connections – A Call for Evidence, that has been consulted on by NIE Networks last month. The overall picture needs to be coordinated, specifically, these include:

- The definition of access rights of different types – flexible, timed, “firmness" (physical / financial), customer choice, standardisation or bespoke, and the need for detailed rules governing network operation (e.g. curtailment) so that rights and obligations are clear and outcomes are predictable;
- DUoS charging structures to achieve fair cost recovery, cost reflexivity and provide incentives for efficient network build and use;
- Use of flexibility markets to achieve efficient outcomes.

These are inherently interdependent. For example, a shallower connection boundary requires more of the cost to be recovered from the generality of customers via DUoS. An active market for flexibility may reduce the need for forward looking incentives to be built into distribution charges. As work undertaken by Cambridge Economic Policy Associates (CEPA) on behalf of Ofgem suggests **(See Annex 1)**, locational signals within DUoS charges for efficient siting of generation or demand may reduce the economic costs (from inefficient siting) that could be caused by a such interdependencies. The Consumer Council suggest it is essential that these issues are fully explored to ensure a co-ordinated approach to reform can be developed. At present the Consumer Council does not believe the development of such arrangements is as “inherently coordinated” as noted in the consultation document.

Given the complexity and the potential plethora of design decisions, the Consumer Council believe that an overarching set of high-level principles needs to be set out which not only emphasises the desirability of efficiency, but also recognises distributional impacts. We suggest the design of new arrangements should follow principles in four areas (three of which are based on those used by Ofgem in its equivalent reforms – **see Annex 2**):

- Arrangements to support efficient use of and development of system capacity;
- Facilitates net zero transition;
- Reflect needs of consumers of an essential service;
- Practical and proportionate.

The Consumer Council would emphasise the importance of considering the consumer impact of any reforms and their evolution.

There are many factors to consider in the choice of arrangements for the connection boundary **(See Annex 3)**. Ostensibly a shallower boundary could encourage more renewables by reducing costs of connection and potentially could also facilitate the development of flexibility markets. However, the boundary decision needs to be progressed alongside other changes to alleviate other potential barriers to participation, particularly those mentioned in the consultation: connection application process and timescale, flexible management of queues to avoid unnecessary hold-ups. The Consumer Council believe that planning permission (for projects that need it) should be a requirement, though planning permission and other requirements should be subject to de minimis application so that it does not deter domestic or low-capacity generation participation. In these instances, there should be easy arrangements as possible in place to encourage participation.

However, there is a discernible impact on those that need to pay the additional costs should the boundary become more shallow. This is quantifiable in terms of bill increases which would increase

the proportion of NI consumers in fuel poverty. Consumer Council research in 2022 estimated that fuel poverty rates were 34%, and our follow up research, completed in 2023[1] estimated fuel poverty rates were 51% (alongside an approximately 70% increase in energy bills). If socialised reinforcement costs in NI were to increase average consumer bills by around 10%, £100 a year at current prices, it would have an impact on consumer affordability and fuel poverty rates. The most recent Consumer Council Household Expenditure Tracker highlights that NI's lowest earning quartile of households have less than £20 per week discretionary income, and a £2 per week increase in electricity bill would reduce this by 10%.

This is not a small increase and would have serious welfare effects. There would need to be countervailing benefits, of which access to the potential benefits of participation in the energy system is one. In providing this, it needs to be as easy as possible – with simple processes and firm commitments to processing and decision-making timelines and criteria.

The Consumer Council believes that NIEN should have obligations or meaningful incentives perhaps expedited through suppliers in relation to vulnerable customer participation in the energy system transition and urge the UR to allow funding in its settlement for such proposals. The Consumer Council encourages innovation in this space.

There will be a need for detailed analysis, including modelling of potential outcomes to various stakeholders, articulation and where possible quantification of costs and benefits and for robust engagement. The changes are inherently complicated and will take time to understand. A programme of collaboration is likely to be more successful than only engaging via formal consultation. The phasing options noted are not necessarily wrong, but in England, the phasing is different:

- Connection boundary and access rights definition first;
- Then reform of DUoS charges.

The Consumer Council would like to reaffirm our commitment to collaboration with DfE, the UR and other key stakeholders so that the electricity network continues to meet the wide and varied needs of NIE Network customers, both today and in the future, and it works in the best interest of Northern Ireland consumers.

Pleased see overleaf our responses to the Call for Evidence questions. We look forward to continuing our engagement with DfE, UR, NIE Networks and the energy industry throughout the RP7 Price Control Period.

Yours sincerely,

Raymond Gormley

Raymond Gormley
Head of Energy Policy

[1] Research on The Impact of the Energy Crisis on Affordability and the Impact of Energy Transition on Consumers, August 2023

Question	Response
Q1. What are the risks and opportunities in relation to the development of **micro grids** and what issues do these raise for the connections framework in NI?	The development of micro grids should be encouraged, they have the potential to improve power quality, boost energy security for critical loads, reduce energy poverty and maximize overall system efficiency. Micro grids are a relatively recent development in Northern Ireland and are seen as a solution for communities to help overcome energy poverty. The successful roll out of community micro grids (in comparison to commercial and industrial micro grids for which getting the technology right is important) depends more on the framework conditions that have to be in place, for example the policies which might be lacking or form a barrier to take-up. **Establishing the framework** – there has to be some stable framework conditions for participants and investors. Standards and protocols for micro source integration and participation in traditional and regulated power markets, as well as recommendations for safety and protection, should be developed. However, it is important to not over regulate micro grids, prosumerism ought to be encouraged and available for all. It needs to be a win, win scenario for the adoption to be increased. If we want to scale up microgrids and empower communities in their journey to net zero, then it also has to benefit their financial future as well as reducing their carbon footprint.
Q2. Do you agree with our guiding principles? Please expand your answer.	It is hard not to agree with the three principles that are set out: • Facilitate the delivery of the Executive's Energy Strategy targets. • Just transition and changes proportionate to the benefit • Future proofed as far as possible However, they are a bit vague, with more detail is needed on how they will be applied. Just transition is being used as a catch all term when discussing decarbonisation in the UK. Thoughtful consideration of what exactly just transition means in this context is required, with reference to the definition in the Northern

	Ireland Climate Change Act 2022. Future-proofing is also a term that is a bit vague even if well-intentioned. Further explanation as to what exactly future proofing entails should be provided by DfE/UR. Any principle which goes to cost benefit analysis needs also to consider the distributional impacts. There is a danger that you focus too much on economic calculus versus a wider social justice perspective and perhaps underplay factors which are difficult to reliably quantify.
Q3. Do you agree with our proposed scope in relation to this connection review, this includes: • Are there other issues which you consider we should take into account? If so, please explain why. • Are there any connection areas we should remove from the scope of our review? If so, please explain why.	The Call for Evidence focusses quite heavily on the connection boundary but the Consumer Council would strongly support the inclusion of the process issues also discussed within the scope while encouraging you to narrow and/or clarify the scope as soon as practical. As the energy system decentralises and decarbonises, it is increasingly important that the current arrangements do not provide barriers to the uptake of new uses of electricity and new technologies, including Low Carbon Technologies (LCTs) such as EVs and heat pumps. Furthermore, with increasing replaceability and competition between generators at different voltage levels, differences between transmission and distribution should not lead to distortions in investment and operational decisions. There is a need to join up changes on the various reforms which are being progressed by different parties e.g. NIE Networks. The Consumer Council welcomes the statement on page 43 of the CfE, "Any further socialisation of connection costs would need to be done in line with the current/future NI tariff structure". **Issues to take into account:** • How is this socialisation of costs practically being achieved? • Why is the standard connection charge from developers being excluded?

	• Should rebate arrangements for subsequent connections be more clearly in scope? (They are omitted from the description of the arrangements).
Q4. Do you consider the current 'partially deep' connection boundary in NI appropriate? Please explain your rationale further and provide evidence.	As we have set out in the covering letter, the Consumer Council believe that the various possible reform initiatives should be considered in a joined-up way as there are interdependencies between them. All possible approaches should be explored, (including the use of flexibility markets), decisions in relation to the setting of the connection charging boundary and hence the burden of costs to be recovered directly from connectees or from DUoS charges. This holistic view of reform will require a greater degree of co-ordination between the parties (DfE, UR, NIEN and others). If such co-operation does not exist, there is a likelihood of inconsistent approaches which may waste cost, reduce benefits, or result in unintended consequences. (For some Ofgem analysis of the quantitative and non-quantitative impacts for a shallow boundary for demand and a shallow-ish boundary for generation (**see Annex 4**). We recognise that development of Northern Ireland's public charging infrastructure is lagging behind the rest of the United Kingdom, with 23 chargers available per 100,000 people here compared to 66 chargers per 100,000 people UK-wide. Additionally, there are 12.6 rapid chargers available per 100,000 people across the whole of the UK while in Northern Ireland there are just three rapid chargers per 100,000 people. The current 'partially deep' connection regime could be a factor restricting grid development and as noted above it is increasingly important that the current arrangements do not provide barriers to the uptake of new technologies. However, when considering the socialization of costs for EV grid connections it is also important to note that in the short to medium term the purchase price of an electric vehicle may be unaffordable for many consumers in the lower quartiles of household income.
Q5. Do you consider a shallow connection boundary to be appropriate in the NI context?	Questions 5 and 6 ask for views on whether a shallow or shallow-ish connection boundary

Please explain your rationale further and provide evidence. If so, which of the following connection types should have a shallow connection boundary; -Demand only -Generation only -Demand and Generation -An alternate connection type (for example Domestic/Non-Domestic connections) Please explain your rationale further.	might be appropriate in the NI context and if so which type of connection might face connection costs determined under either type of boundary. It is clear from the work conducted by Ofgem that the decision over which type of connection might be most appropriate is a complex one and our response to Q6 (below) sets out some of the considerations that could be relevant to deciding on which type of boundary is appropriate for which connection. The response to Q6 is therefore also relevant to Q5.
Q6. Do you consider a shallow-ish boundary to be appropriate in the NI context? Please explain your rationale further and provide evidence. If so, which of the following connection types should have a shallow-ish connection boundary; -Demand only -Generation only -Demand and Generation (for example Domestic/Non-Domestic connections) -An alternate connection type Please explain your rationale further.	As we note above, the considerations in relation to choice of boundary are potentially complex. This is clear from the work that Ofgem has progressed on this issue. Its final proposals (see **Annex 3**) differentiated the connection boundary as follows: • Demand (D) to face a shallow boundary such that all reinforcement costs are socialised • Generation (G) to face a shallow-ish boundary such that connections face the cost of reinforcement at the connection voltage We urge DoE/UR to engage with the variety of considerations that have already been explored by Ofgem and suggest that effective collaboration between the UR and Ofgem would make reaching the decision in NI more straightforward. Ofgem justified its decisions be reference to its Guiding Principles and we briefly summarize some of the considerations that seem important to us and perhaps raise questions about their applicability in NI. The key point is that there needs to be a full consideration of the many factors and the potentially complex interaction between them. **Guiding Principle 1 – Barriers to entry:** • Ofgem's proposal suggest that the removal of barriers to entry is more important for D than G. It would therefore be important to consider whether this holds to the same extent in NI.

	• One disbenefit of a shallow boundary is that the incentive to locate D or G efficiently (ie where capacity is cheaper to provide) is removed. The quantitative modelling conducted by Ofgem focusses on this effect. It's modelling (conducted by CEPA) suggested that the cost of a shallow boundary for both D and G was £1-1.4bn, falling to £0.2 to £0.5bn under a shallow-ish boundary, the range depending on assumptions about the DUoS charging regime. The net cost increased only relatively slightly compared to this latter cost if the D boundary was shallow but not the G boundary. (which became the preferred option). This is because D is thought to have less flexibility in location. The question is whether the similar conditions hold in NI and this should be explored. • If a shallower boundary stimulates flex markets this might lower costs of flex and offset some of the costs of inefficiency in locational decisions. The potential for flex markets to develop in NI should be considered, especially given the smaller scale of the NI network. However, the interaction with the wider energy system across the island of Ireland should also be factored in. • The nature of the DUoS charging regime is important to the choice. More cost reflective DUoS charges may, all else equal, reduce the impact of a shallow boundary on siting decisions. DUoS structure should therefore be considered in making the decision on boundary. • Ofgem holds that a shallow boundary may allow for more co-ordinated network planning and management. This should be explored, including the implication of different boundaries for D and G. By way of example, the comparative underdevelopment of Northern Ireland's public electric vehicle (EV) charging infrastructure compared to the rest of the United Kingdom, with 23 chargers available per 100,000 people here compared to 66 chargers per 100,000 people UK-wide, appears to indicate the current partially-deep regime is acting as a barrier to entry.

	Guiding Principle 2 – Needs of consumers: • As we highlighted in the covering letter, the impact on the generality of consumers because of the socialisation of costs, and the distribution of those costs between consumers, is a critical issue and needs to be explored thoroughly, supported by quantitative analysis. • The impact on more vulnerable customers should be fully explored, both in the relation to the impacts on their bills but also on the availability of opportunities to participate in the energy transition. (Also see our answer to Q8 below) • Whatever boundary decision is made, de minimis provisions could be considered for connections below a certain size so that domestic customers benefit from simple, clear processes, guaranteed levels of service and low or waived costs to support participation. • Further vulnerable customers should be supported specifically and UR should consider how it will ensure that NIEN offers such support. • Ofgem suggests the importance of "intertemporal" equivalence – in other words that connecting parties should not be penalised simply by the timing of their connection. This should be explored, in particular considering rules about rebates and queues which seek to (or have the effect of) adjust costs and benefits for one connecting party based on the actions of others. • The current partially-deep regime appears to be acting as a barrier to entry for the installation of EV charging infrastructure and consequently impacting the needs of EV owners and prospective EV owners. However, it is important to note that in the short to medium term the purchase price of an electric vehicle may be unaffordable for many consumers in the lower quartiles of household income. This provides a clear example of the challenge of meeting the Northern Ireland Climate Change Act 2022 goal of achieving a just transition by "tackling inequality" because the socialisation of costs to encourage uptake of a technology could result in costs to

	consumer groups who will never directly benefit from that technology. **Other considerations:** • The potential for distortion if arrangements are not consistent across transmission and distribution. • The extent to which the arrangements encourage or discourage NIEN to explore non-build solutions to increasing capacity. • The impact on financing costs. A shallower connection will result in more assets being added to the RAB and may result in financing at a lower overall cost of capital – as long as regulation of allowed returns is effective. However, these financing costs will fall to the consumer of electricity rather than the buyers of products/services of connecting parties.
Q7. Do you believe that moving to a more shallow connection boundary in NI will deliver NI renewable targets that otherwise would not be met? Please provide evidence to demonstrate your answer.	Moving to a more shallow connection may well deliver NI renewable targets because of lower costs, we are not aware of any convincing real-world evidence to prove or disprove this, but there are other factors too that must be considered other than just the cost of connection. For instance, new projects could face more uncertainty about how long it will take to get a connection. It is important that if we move to a more shallow connection boundary, that it reduces barriers to entry with the uptake of new uses of electricity and new technologies, including Low Carbon Technologies (LCTs) such as EVs and heat pumps and supports the transition to net zero. GB has not yet implemented change but Ofgem are carefully considering it's position so that the connection boundary strikes the right balance between maximising benefits, such as removing barriers and limiting the cost impacts on the wider network customers (DCUSA DCP406 Authority's Decision (ofgem.gov.uk)). We believe that any reforms in the NI network, should adopt a similar approach.
Q8. Please provide evidence on the potential impacts on energy affordability in NI if reinforcement costs were socialised further? What would the impact on energy affordability	The socialisation of connection costs across consumers must be set in the context of a much smaller NI customer base (in comparison

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<td>be in NI if household bills were to increase per annum by;
1-3%
4-7%
7-10%</td>
<td>to GB and ROI) and, therefore, may have the potential for a much greater impact on the individual tariffs of the NI consumer, and in turn, with the current high energy prices, the very real prospect of increased levels of fuel poverty.
The current typical electricity bill is £1,015 (based on Power NI standard rates and annual usage of 3,200 kWh). If electricity prices were increased by the different percentages provided, this would cause electricity bills to increase by the following amounts:
<table><tr><td>1-3%</td><td>£30 per year / £0.57 per week</td></tr><tr><td>4-7%</td><td>£71 / £1.37 per week</td></tr><tr><td>7-10%</td><td>£102 / £1.96 per week</td></tr></table>As stated in the covering letter, Northern Ireland has the highest levels of fuel poverty in the UK. The most recent official fuel poverty rates for NI are 22% according to the 2016 NI House Condition Survey, but energy prices have increased significantly since then. Consumer Council research in 2022 estimated that fuel poverty rates were 34%, and follow up Consumer Council research completed in 2023[2] estimated fuel poverty rates were 51% (alongside an approximately 70% increase in energy bills). It is important to note that an increase of over £100 a year would have an impact on consumer affordability and fuel poverty rates. The most recent Consumer Council Household Expenditure Tracker highlights that NI's lowest earning households have less than £20 per week discretionary income, and a £2 per week increase in electricity bill would reduce this by 10%. In addition, it is worth noting that electricity bills will likely increase as electrification of heat and transport increases, thus the typical annual usage figure of 3,200 kWh is likely to increase. This would mean that the percentage increases</td>
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[2] Research on The Impact of the Energy Crisis on Affordability and the Impact of Energy Transition on Consumers, August 2023

	on bills would have a bigger impact on consumers here, especially those in vulnerable circumstance.
Q9. Can NIE Networks differentiate between RP6 allowances, RP7 business plan connection requests and how these differentiate and have been factored into the analysis that has been done on potential reinforcement connection cost analysis NIE Networks has completed?	• N/A
Q10. Do you think that a developer led or plan led is the best approach for the future development of connections in NI? Please explain your answer.	A plan led approach seems better at this point of time because it provides more certainty and predictability about connection opportunities and costs which is important for people and businesses facing uncertainty. However, the risk is that NIEN fail to get this right and potentially waste resources and so the Consumer Council believe that there should be an adequate level of oversight over NIEN's effectiveness in pursuing such an approach.
Q11. Do you think the current 3- month timeframe for SONI and NIE Networks to issue a connection offer is appropriate? Please explain your answer.	The current timeframe is more relevant for other stakeholders to reply to, however the Consumer Council make the following suggestions: • Endeavour not to lengthen timescales • Penalise vexatious or spurious applications • Make sure you commit to short time frames below a de minimis level
Q12. If our legislation facilitated it, should obtaining planning permission be a pre-requisite in order to receive a grid connection? Please explain your answer.	Yes. In a queue based system, not requiring planning permission can potentially lead to a blocked queue and slower than necessary connections.
Q13. If our legislation facilitated it, do respondents consider any other issues associated with the current queue process? Or that a different approach to managing the connection queue, would result in quicker connections? If so, what would that be? Are there any lessons to be learned from other jurisdictions?	The Consumer Council believe you could also consider whether there is scope for introducing queue management policies which allow for flexibility, and look to experience in GB and elsewhere in dealing with these issues. One option might be to consider facilitating trading of queue positions – as these have value. Some thought should also be given as to how the queue works (or not have a queue at all) for smaller customers and/or commit to connection time periods with associated GSOP style guarantees.
Q14. Do you have any other information relevant to the subject matter of this Call for Evidence that you think we should consider?	The relevant information has already been included in the various answers above.

Q15. Please list any connection issues you have raised in order of priority. Please explain your reasoning behind your priority.	• Engage with customers and stakeholders • Co-ordinate reform efforts across organisations • Scope should include not just boundary definition but process and admin barriers • Undertake appropriate analysis of fuel poverty impact and consider such distributional issues fully.

ANNEX 1

The conclusions of CEPA's analysis of the costs and benefits of different depths of connection boundary

Our analysis of Ofgem's connection boundary policy options focuses on the direct quantifiable costs of additional reinforcement driven by the reduction in the strength of the locational signal as the depth of the connection boundary reduces. For the most radical version of the policy, which makes connection charges completely shallow, our analysis shows that these direct additional costs could equate to around £1.4 billion of consumer welfare disbenefit if introduced in isolation. Analysis of the connection decisions of new connectees demonstrates that this additional cost reflects user choices about where to locate on the network in response to the change in signals.

More modest reforms which amend the voltage rule, result in lower consumer welfare disbenefits, with this option reducing the disbenefit to £0.3 billion. A hybrid arrangement in which demand customers would face a shallow connection charge but generation customers would face the amended voltage rule leads to disbenefit of around £0.4 billion.

However, our analysis also demonstrates the interaction between connection boundary policy and the design of the DUoS charge structures that work alongside it. The notional design of the ULR DUoS charging background replaces some of the locational signals that are sent by the shallow-ish connection boundary under the counterfactual such that the impacts on network costs are alleviated slightly. The presence of the ULR charging background reduces the costs of moving to a shallow connection boundary to just under £1 billion under the CT scenario for example.

Ofgem is continuing to consider policy options for DUoS charging structures. Relative to the notional ULR DUoS background, there may be opportunities to strengthen the DUoS signals, e.g. by including a spare capacity indicator or by introducing granularity of the charging structures at the 'primary' level. If these features were included in the DUoS background signal, we anticipate further offsetting of the additional network costs introduced by the changes to the connection boundary.

We also discussed the potential importance of non-modelled factors on Ofgem's principles-based decision. Ofgem has considered whether a revision of the connection boundary could support the development of flexibility services that provide cheaper alternatives to network reinforcement. We presented results from a sensitivity in which the evolution of flexibility services is less pronounced, leading to more expensive flexibility options for DNOs. Under this sensitivity we found that network costs would rise by somewhere in the region of £0.7-0.8 billion across all connection boundary policy options under the CT scenario.

Finally, Ofgem has also signalled the potential importance of a change to the connection boundary to facilitate connections of low-carbon technologies. Ofgem must therefore consider the quantifiable impacts on network costs against the broader benefits that may support the transition to net zero.

ANNEX 2

Ofgem's Three Guiding Principles

Guiding Principle	What it means
1. Arrangements support efficient use and development of network capacity	- Access arrangements support network capacity being allocated in accordance to users' needs and the value they ascribe to network usage - Arrangements provide signals that reflect the costs and benefits of using the network at different times and places, to support efficient use of capacity, and ensure no undue cross-subsidisation between users - They provide effective signals for where new network capacity is justified - Arrangements reduce barriers to entry and enable new business models where these can bring value for system - Arrangements support decarbonisation, primarily by enabling uptake of low carbon technologies through enabling quicker connections and reducing network costs. They will also look to enable and reflect the benefits that new, innovative approaches and business models (such as local energy models) can bring to the network. However, they will not provide any undue preferential arrangements based on technology or user type.
2. Arrangements reflect the needs of consumers as appropriate for an essential service	- Electricity provides an essential service and small users in particular need protection from arrangements which may result in harm to their welfare. This may be achieved in the access and charging arrangements themselves or through the wider policy and regulatory arrangements. - 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
3. Any changes are practical and proportionate	- Changes can be implemented given the applicable legislative framework and technologies - Costs of change are proportionate to consumer benefit

NB in NIEN Flexible Connections CFE response, the Consumer Council suggested these three guiding principles as above, plus one more:

- Arrangements to support efficient use of and development of system capacity;
- Reflect needs of consumers of an essential service;
- Practical and proportionate;
- Facilitates net zero transition.

ANNEX 3

Ofgem's high level analysis of the factors favoring shallow (remove – i.e., no reinforcement costs faced by the connecting party) and shallow-ish (reduce – i.e., reinforcement costs only at the voltage level of the connection) connection boundary.

Option	Guiding Principle 1	Guiding Principle 2	Guiding Principle 3
Reduce the contribution to reinforcement in the connection charge	• Expect benefits of reforms to outweigh these potential costs. • May not go far enough for demand users, where we think charges could be a key barrier and are less likely to have locational flexibility.	• Reduces intertemporal issue of households facing different reinforcement costs based on when they are able to connect. • Results in increased energy bills with reinforcement recovered through network charges.	• Changes to the connection charging methodology would be relatively straightforward to implement through the industry code modification process. • Further licence and legislative change may be necessary.
Remove the contribution to reinforcement in the connection charge	• Does most to remove barriers to entry and support more coordinated and strategic DNO network management. • However, may not be a positive net benefit given extent of potential costs (particularly for generation in the absence of further DUoS reform).	• Removes intertemporal issue of households facing different reinforcement costs based on when they are able to connect. • Results in increased energy bills with reinforcement recovered through network charges.	• Changes to the connection charging methodology would be relatively straightforward to implement through the industry code modification process. • Further licence and legislative change may be necessary.

ANNEX 4

Ofgem's analysis of the quantitative and non-quantitative impacts of its proposal which is for a shallow boundary for demand and a shallow-ish boundary for generation.

Area	Connection Boundary
Monetary analysis	• A PV of £290-£530m of additional costs over 17 years. The central scenario estimates an impact of £380m.
Other system costs and benefits	• Consistent with DNOs exploring alternatives to conventional network reinforcement • Will allow users to make more efficient connection decisions between connecting at transmission or distribution where there is a choice
Competition impacts	• Would help facilitate competition between distributed generators by reducing upfront barriers to connecting to the distribution network • Seeking to align the arrangements for transmission and distribution to the extent possible should also facilitate competition • Unlikely to have a significant negative impact on competition more generally
Security of supply impacts	• Reducing barriers to entry and enabling more generation onto the system may have benefits for security of supply as demand is expected to increase in coming years
Greenhouse gas impacts	• We did not expect our proposals to have any other greenhouse gas impacts other than bringing forward the connection of LCTs
Other environmental impacts	• We considered that our proposals would not have a material impact on emissions related to losses from distribution networks • We thought our proposals may have an overall positive impact in relation to indirect visual and other amenity issues from overhead lines as DNOs consider build and non-build solutions to provide capacity for new connections
Distributional analysis	• We did not expect there to be significant differences in the impact on different types of demand and generation (eg between solar and onshore wind)