Proposed Changes to NIE Networks After Diversity Maximum Demand Design Criteria

Decision Paper

September 2023

1. EXECUTIVE SUMMARY

This decision paper follows on from NIE Networks' consultation paper on Proposed Change to NIE Networks After Diversity Maximum Demand Criteria[1]. This paper considers the responses received to the Consultation Paper and presents NIE Networks intentions to implement changes to the design standards for the connection of domestic dwellings. These changes to design standards shall future proof new connection assets for Low Carbon Technology (LCT) load growth over the coming decades.

NIE Networks welcomes the level of engagement received with 9 responses received comprising of public bodies, developers, an industry body, a housing association, a consultancy firm, a renewable energy installer and a university.

Respondents were generally supportive of the proposals outlined to revise the design criteria for new domestic connections.

1.1 NIE Networks Response

NIE Networks has considered the views of stakeholders and has updated the proposals for the new design standards to reflect this valued feedback.

1.1.1 Proposed Approach to Design Demand

In the consultation NIE Networks proposed to implement an LCT-ready After Diversity Maximum Demand (ADMD) for new domestic connections with the objective of future proofing new assets for LCT load growth. Reflecting on consultation responses the ADMD values have been reviewed and amended to account for greater diversity in demand at higher customer numbers. In addition, the three ADMD values[2] from the consultation paper have been rationalised back to a single LCT-ready ADMD.

NIE Networks has considered stakeholder feedback and is proposing the following approach to implementing the LCT-ready ADMD:

- Future proof new assets for LCT demand through application of LCT-ready ADMD to new domestic connections.

- Implement an efficient and fair approach to the reinforcement of existing network assets. This entails modelling demand on the existing network to reflect the connected load. I.e. connecting customers will not be charged for future proofing the existing network.

In line with a touch the network once philosophy, where customers connect LCTs to the network as part of a new connection, NIE Networks may consider uprating the asset to futureproof for wider LCT adoption. In these circumstances NIE Networks will fund the additional reinforcement works from regulated LCT allowances.

NIE Networks shall update design policy to apply the LCT-ready ADMD to connection offers from 1st November 2023.

1.1.2 Three phase service cables

In the consultation NIE Networks proposed making three phase services cables the standard for new single phase domestic connections. The majority of respondents supported the implementation of this design standard. In

[1] https://www.nienetworks.co.uk/documents/consultations/design-demand-consultation-jun22.aspx
[2] The consultation paper proposed LCT-ready ADMD values for three house types, detached, semi-detached and terraced

recognition of the support NIE Network shall update design policy to reflect. NIE Networks is proposing further engagement with stakeholders to determine an appropriate implementation timeline, likely to be in 2024.

1.1.3 Funding Options

The consultation paper requested stakeholder views on funding options for network connections. NIE Networks welcomes the announcement of a collaborative UR and DfE review of the legislative and regulatory framework for connections in Northern Ireland. A Call for Evidence has been issued with further details available at https://www.uregni.gov.uk/consultations/call-evidence-electricity-connection-policy-framework-review.

2. INTRODUCTION

This decision paper follows on from NIE Networks' Consultation Paper on Proposed Change to NIE Networks After Diversity Maximum Demand Criteria. This paper considers the responses received to the consultation paper and presents NIE Networks intentions to implement changes to the design standards for the connection of domestic dwellings. These changes to design standards shall future proof new connection assets for Low Carbon Technology load growth over the coming decades.

NIE Networks received 9 responses with respondents comprising of public bodies, developers, an industry body, a housing association, a consultancy firm, a renewable energy installer and a university.

NIE Networks welcomes the level of engagement received from across the industry which has provided NIE Networks with a helpful insight on stakeholder views and has helped influence the decisions presented within this paper.

3. RESPONSE TO CONSULTATION QUESTIONS

Respondents were generally supportive of the proposals outlined to revise the design criteria for new domestic connections.

Within the consultation paper NIE Networks asked stakeholders to respond to eight specific questions, five of which related to the technical design standards. The remaining three questions related to connections charging. This section now summarises the responses to each of the questions from the consultation paper.

1. Do you agree the existing design criteria for connections needs to be revised to reflect the additional demand required by the Northern Ireland electricity network to meet net zero (carbon) targets?

   Respondents broadly agreed that the existing design criteria for connections needs to be revised to reflect the additional demand required to meet net zero (carbon) targets.

   One respondent stated that they don't believe they should have to pay for upgrades to the wider network and another respondent stated that they would not be in favour of associated cost increases being passed on to the connecting customer.

2. Do you agree with the approach described in Section 3 to derive a new ADMD to be applied to new connections design in Northern Ireland? – If not, please explain your reasons.

   Three respondents agreed with the approach while one respondent disagreed stating Data/reports for trials dating back to 2015 & 2018 may not be relevant as ASHP & EV technology should have changed considerably since then.

3. Do you agree with the new ADMD values presented in Section 3? - If not, please explain your reasons

   Three respondents agreed with the approach while one respondent disagreed with the new ADMD values querying if energy efficient appliances and LED lighting has been considered.

4. Do you have any objections to the proposed increase in ADMD value to facilitate the future connection of LCTs? – If so, please provide details.

   Three respondents stated they had no objection to proposed increase in ADMD value. One respondent objected on the basis that the advancement of PV & battery storage should help reduce the ADMD of housing developments in the future.

5. Do you have any objections to the implementation of 3 phase service cables to domestic premises as the standard in Northern Ireland? – If so, please provide details.

Four respondents supported the implementation of 3 phase service cables with one respondent welcoming the fact the additional costs noted were relatively low. One respondent objected noting that this approach will require more multi joint boxes as well as a wider cable which will reduce space in footpaths for other services/utilities.

6. Based on the funding options presented in Section 8 which would you be likely to support

- Fully chargeable – 100% of costs associated with new infrastructure and reinforcement of existing assets paid by the connecting customer.

- Subsidised reinforcement works – assets required to facilitate the connection will be 100% chargeable to the connecting customer but the reinforcement of existing assets will be subsidised.

The majority of respondents stated they were likely to support 'subsidised reinforcement works'. One respondent stated they would not support a fully chargeable approach as it will most likely leave rural areas unaffordable to seek new connections. The same respondent also suggested the Standard Connection Charge is retained. One respondent highlighted that if socialising costs increases consumer bills it will have a negative impact on the cost of running a heat pump against conventional heating solutions.

7. Are there further options you feel NIE Networks should consider? – Please provide details.

Several respondents suggested a standard connection charge be considered for all domestic connections, similar to the approach applied in the Republic of Ireland. One respondent noted that whilst this may increase total developer costs, it would help de-risk sites for developers as it would provide certainty, irrespective of the site location and grid capacity. They also stated it would help address rural needs impacts, as grid reinforcement issues are likely to be more of a challenge in these locations.

A further suggestion was rather than basing the mechanism on house type (terrace, semi, detached), would a cheaper connection charge for smaller homes, or a punitive charge for larger homes, be worth exploring, to promote 'sufficiency' in the design of new dwellings (particularly to discourage excessively large, albeit possibly efficient, dwellings)?

8. Do you agree that moving to a 'shallower' charging regime, as outlined in Section 8 to implement Option 2, would accommodate the future growth of LCT's in Northern Ireland while developing a safe and reliable network in the fairest possible way? - Please explain the reason for your answer if different from the reasoning presented in Section 8.

While respondents have expressed a preference for a 'shallower' charging regime based on details provided in the consultation they have indicated they would require further information on how countries charge for connections to establish whether this is the fairest possible solution. Respondents have indicated they are in favour of a review of connection charging principles in Northern Ireland.

4. NIE NETWORKS RESPONSE

NIE Networks would like to thank respondents for taking the time to share their views on the proposed changes to design standards. NIE Networks has considered the views of stakeholders and in some instances updated the proposals for the new design standards to reflect this valued feedback. The following section outlines NIE Networks response to the 3 key areas of the consultation paper:

- Proposed Approach to Design Demand
- Three Phase service cables
- Funding Options

4.1 Proposed Approach to Design Demand

In the consultation NIE Networks proposed LCT-ready ADMD profiles which accounted for the three different dwelling types (detached, semi-detached and terraced), as shown in table 1. To ensure that sites with small numbers of houses (e.g. rural houses with EV chargers and heat pumps) are sufficiently accommodated, it was proposed that an additional allowance of 11kVA is added to the total demand.

House Type	Basic ADMD	Electric Vehicle Charger ADMD	Heat Pump ADMD	Total ADMD per House
Detached Dwelling	2 kVA	2.5 kVA	2.5 kVA	7 kVA
Semi-Detached Dwelling	1.5 kVA	2.5 kVA	2.5 kVA	6.5 kVA
Terrace Dwelling	1 kVA	2.5 kVA	2.5 kVA	6 kVA

Table 1: Consultation Paper: Proposed ADMD for each house type

The majority of respondents supported the proposal however some responses questioned the ADMD values noting further advancements of technology with PV and battery storage highlighted.

With consideration to the responses NIE Networks reviewed the impact PV and battery storage may have on demand. We have concluded that that PV and battery storage is likely to reduce domestic demand at certain times particularly during the summer, but that it is likely to have limited impact during the winter peak. The LCT-ready ADMD value proposed will have the inherent benefit of creating additional generation capacity on new LV networks, supporting the installation of PV and battery storage in future. In addition, NIE Networks reviewed proposals by specialist energy consultants with regards to ADMD with LCTs, and in particular potential diversity of demand usage as customer numbers increase. These indicate that increasing customer numbers on the LV Network should increase diversity and in turn decrease LCT ADMD. In recognition of these developments NIE Networks has amended the proposed LCT-ready ADMD to reflect increasing diversity for LCT demand as customer volumes increase.

NIE Networks has rationalised the LCT-ready ADMD from a range of house types to a single LCT-ready ADMD for a domestic connection. We believe this is a reasonable approach to simplifying network modelling as:

- LCT demand should have a significantly higher impact than the basic dwelling demand
- The updated approach applied to increased diversity/reduced demand inherently accounts for the typical density of connections on circuits/transformers based on housing type (e.g. due to physical space there are typically more terraced properties connected to an asset than detached properties)

Figure 1 shows the LCT-ready ADMD NIE Networks shall implement along with the three ADMD values in the consultation paper. As previously outlined this accounts for an increase in diversity across connected customers and a corresponding lower ADMD at higher customer numbers.

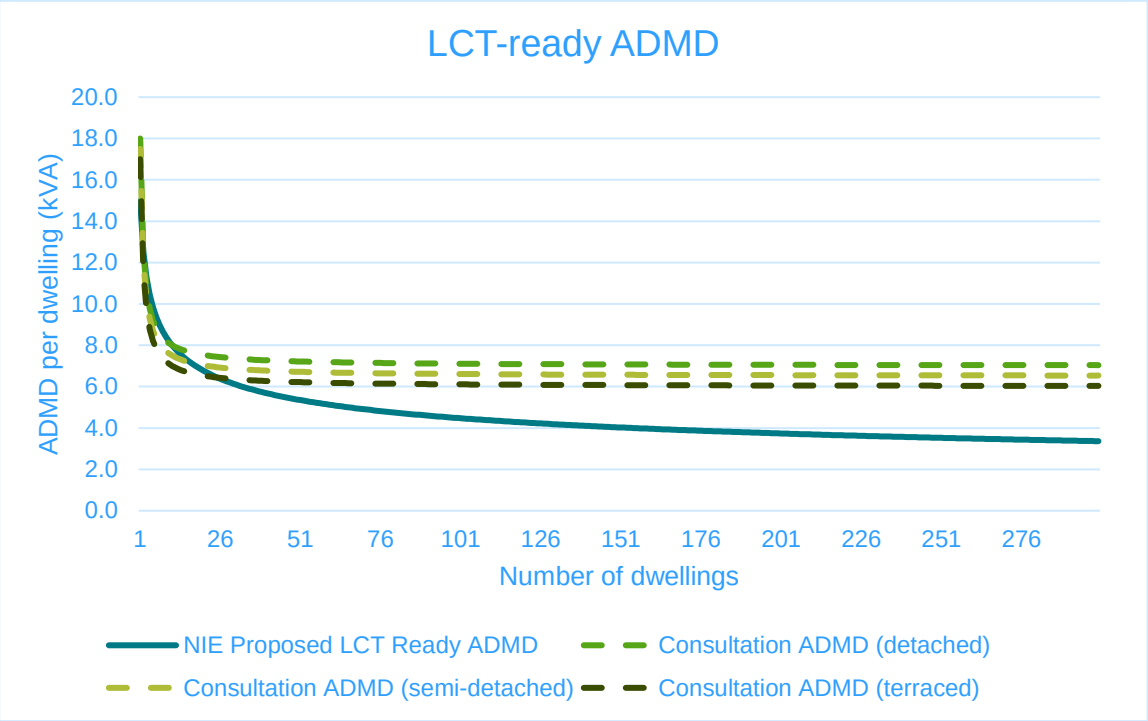

Figure 1: Consultation Paper Proposed ADMDs & Decision Paper ADMD

4.1.1 Application of LCT-ready ADMD

In the consultation paper NIE Networks proposed to apply the new design standards for all new connections to the network. Stakeholders raised concerns regarding the costs associated with reinforcement of the existing network to facilitate the new design standards. NIE Networks has considered the stakeholder feedback and is proposing the following approach to implementing the LCT-ready ADMD:

- Future proof new assets for LCT demand through application of LCT-ready ADMD to all new domestic connection assets

- Implement an efficient and fair approach to the reinforcement of existing networks assets. This entails modelling demand on the existing network to reflect the connected load. I.e. connecting customers will not be charged for future proofing the existing network

This approach should mitigate network reinforcement costs to the connecting customer and support an efficient implementation of existing network reinforcement as load increases. A holistic approach to reinforcement can be applied as both existing and newly connected customers adopt LCTs over the coming decades.

Applying LCT-ready ADMD in this way shall have no impact on the connection cost for single domestic connections.

As outlined in the consultation paper, application of the LCT-ready ADMD will have connection cost implications for housing developments. Connection costs may vary considerably on a site by site basis subject to the specific

characteristics however the consultation paper outlines the additional costs associated with applying the LCT-ready ADMD to two housing developments. These costs are summarised in table 2 below and relate to future proofing the new assets.

	Site A	Site B
No. of Dwellings	42	98
Cost increase for site (ADMD)	£15k	£70k
Cost increase per house (ADMD)	**£357**	**£714**

Table 2: Consultation Paper: Cost increase for LCT-ready ADMD for two housing developments

As described in the consultaion paper, applying the LCT-ready ADMD is the long term most cost efficient option as it avoids costly and disruptive retrospective reinforcement which would increase costs for all customers.

In line with a touch the network once philosophy as outlined in NIE Networks RP7 Busines Plan[3], where customers connect LCTs to the network as part of a new connection NIE Networks may consider uprating the asset to futureproof for wider LCT adoption. In these circumstances NIE Networks will fund the additional reinforcement works[4] from the regulated LCT allowances.

Refer to Section 5 for implementation timeline.

4.2 Three Phase service cables

In the consultation NIE Networks proposed making three phase services cables the standard for new single phase domestic connections with the additional cost noted as £270 per connection The majority of respondents supported the implementation of this design standard. In recognition of the support NIE Networks shall update design policy to reflect this. The benefits of this approach are:

- much greater flexibility in balancing the network without the need for excavating service connections, maximising load potential of network assets
- reduced electrical losses that arise on LV networks due to imbalance
- future proofing of service arrangement for customers to embrace LCTs and remove requirement to revisit and replace service cable within asset life

Refer to Section 5 for implementation timeline.

[3] https://www.nienetworks.co.uk/rp7-business-p lan

[4] In this context additional reinforcement works relates to works above and beyond the LCTA reinforcement for standard domestic connections to the network

4.3 Funding Options

The Consultation Paper requested stakeholder views on funding options for network connections. NIE Networks welcomes the announcement of a collaborative UR and DfE review of the legislative and regulatory framework for connections in Northern Ireland. A Call for Evidence has been issued with further details available at https://www.uregni.gov.uk/consultations/call-evidence-electricity-connection-policy-framework-review.

In addition to the above, NIE Networks is currently consulting[5] on options for the Standard Connection Charge[6] for housing sites.

5. IMPLEMENTATION TIMLELINES

5.1 Proposed Approach to Design Demand

As per section 4.1, NIE Networks shall implement the LCT-ready ADMD to the design of new connection assets. NIE Networks intends to update NIE Networks design policy to apply the LCT-ready ADMD to new domestic connection offers from 1st November 2023.

5.2 Three Phase Service Cables

As per section 4.2 NIE Networks intends to make three phase services cables the standard for connections to new domestic premises. As part of this proposal developers shall be required to provide sufficient space within the metering cabinet to facilitate a three phase cut-out. With consideration to this NIE Networks is proposing further engagement with stakeholders to determine an appropriate implementation timeline, likely to be in 2024.

[5] https://www.nienetworks.co.uk/connections/scc-consultation-paper

[6] Applies to new housing development with 12 or more individually serviced Domestic Premises