Northern Ireland Electricity Networks

PROPOSED CHANGES TO METHODOLOGY FOR CALCULATING DISTRIBUTION LOSS ADJUSTMENT FACTORS

CONSULTATION PAPER

13 FEBRUARY 2018

Contents

1. Executive Summary

This consultation is seeking views regarding proposed amendments to the calculation of Northern Ireland's Distribution Loss Adjustment Factors (DLAFs) with the introduction of Site Specific DLAFs for generators connected at 33kV and time of day DLAFs.

Condition 32 of NIE Networks' Electricity Distribution licence requires NIE Networks to produce DLAFs each year to apportion the distribution losses to customer metered demand and generation. DLAFs are used by the Single Electricity Market Operator (SEMO) and the System Operator Northern Ireland (SONI) in their charges to suppliers (c£700m annually), and in SEMO's payments to distribution connected generators.

Following the recent growth in distributed generator connections and export volumes, NIE Networks commissioned NEPLAN AG (NEPLAN) and their subcontractor Parsons Brinckerhoff (PB) to assess the impact of distributed generation on network losses. Their main findings were:

(i) the majority of generators connected to the 33kV network increased electrical losses on the 33kV network; and
(ii) generators connected to the 11kV and LV networks reduce upstream distribution losses but have minimal impact on losses associated with their connected voltage.

NEPLAN and PB were also tasked with comparing NIE Networks' DLAF methodology with that employed by the distribution network operators (DNOs) in Great Britain (GB) and the Republic of Ireland (ROI) and propose a suitable DLAF methodology for Northern Ireland to best reflect how demand and generator customers contribute to the distribution losses.

NIE Networks currently publish 3 DLAFs each year – the annual average DLAFs for connections to the 33kV, 11kV and LV networks. There is no seasonal or time of day differentiation in the DLAFs. With the exception of different DLAFs for each distribution connected voltage, there are no locational DLAFs in Northern Ireland.

In Northern Ireland a common DLAF applies to both demand and generation connected at each voltage. As the published DLAFs are greater than unity this assumes customer demand increases distribution losses while generation reduces distribution losses. However this is no longer the case for generation connected to the 33kV network – as demonstrated by NEPLAN's power flow results.

In GB and ROI there is greater granularity in the published DLAFs used to attribute losses to demand and generator customers connected at distribution voltages. Site Specific DLAFs allow for the appropriate allocation of losses to generators in relation to their individual impact on network losses. The site specific losses are then taken into account when the remaining losses are apportioned to other generator and demand customers for the calculation of Generic DLAFs. In addition, GB DNOs generally apply Seasonal Time of Day DLAFs while ESB Networks publish day and night DLAFs. The time differentiated DLAFs provide signals to encourage customer behaviour; to reduce network losses when the system is heavily loaded.

After considering existing practices in GB and ROI, it is proposed to introduce (i) Site Specific DLAFs for 33kV generator exports; (ii) a default DLAF of 1.000 for 33kV exports where there is no or incomplete metered information (assumes a neutral position on losses); and (iii) Day and Night DLAFs for all demand and generator customers.

The benefits of the proposed methodology are:

- the DLAFs will better reflect the influence of generation and demand customers on losses in the distribution network and will result in a fairer recovery of losses by the respective customers;
- the proportion of losses attributed to demand customers will decrease due to the recognition, through the Site Specific DLAFs, that most 33kV connected generators increase distribution losses; and
- with the introduction of Day and Night DLAFs, demand customers could influence the amount of energy they pay for without reducing their total consumption, by moving a higher proportion of their consumption to night time.

SEMO's charges to suppliers are based on supplier consumption volumes multiplied by the DLAFs. Similarly their payments to distributed generators are based on generator exports multiplied by the DLAFs. If payments to distributed generators reduce then, in a balanced market, charges to suppliers would also reduce. Similarly, if payments to generators increase then charges to suppliers would also increase.

We are holding a workshop to discuss these proposals at 10am on Thursday 8th March at our office in Danesfort. NIE Networks welcomes views on the proposed amendments to the DLAF methodology as described in section 5 of this consultation paper. The consultation period closes on 27 March 2018. Section 7 of this paper includes information on how to register for the workshop and on how to respond to the consultation.

The outcome of this consultation will form the DLAF methodology which NIE Networks will use for the 2018/19 DLAFs.

2. Introduction

2.1 Losses

The amount of energy delivered to the distribution network to supply electricity customers is greater than the amount of energy metered at the customers' premises. The difference between these volumes is called the distribution losses.

Distribution losses can be classified as either technical or non-technical losses. Technical losses, also known as system electrical losses, are an inherent characteristic of electricity networks and are a product of the load on the network, the distance the electricity has to travel across the network and the number of transformation levels the electricity has to pass through. Non-technical losses are associated with unidentified and uncollected revenue, for example, arising from illegal connections, meter tampering, metering errors and estimations.

2.2 DLAFs

The NIE Networks' Electricity Distribution licence requires NIE Networks to produce adjustment factors each year to apportion the distribution losses to customer metered demand and generation. These adjustment factors are called DLAFs and are published in the NIE Networks' "Statement of Charges for use of the NIE Networks Electricity Distribution System by Authorised Persons" (latest version effective from 1 October 2017 to 30 September 2018[1]). SEMO use the DLAFs to recover the cost of the energy consumed through network losses.

NIE Networks currently publish three DLAFs, one for each distribution voltage. The same DLAF currently applies to both demand and generator customers connected at each voltage. Under the current methodology, all published DLAFs are greater than unity which assumes:

- demand customers connected to the distribution network will increase the losses; and
- generators connected to the distribution networks will reduce the losses.

In the Single Electricity Market (SEM), energy is bought and sold based on the volumes of demand and generation at the transmission-distribution boundary. Supplier consumption volumes are multiplied by the DLAFs to reflect the equivalent energy requirements of their customers (i.e. customer consumption plus losses) at the energy trading point and SEMO applies charges[2] to these volumes, as set out in the Trading and Settlement Code. The charges[3] levied by SONI are also applied to the uplifted supplier volumes. SEMO and SONI's charges to suppliers are c£700m[4] annually.

The DLAFs are also applied to distribution connected export volumes to reflect the equivalent energy that would be provided at the energy trading point. As the DLAFs are currently greater than unity, it means that the distributed generators are paid for more energy than they actually export onto the Northern Ireland distribution network.

2.3 Review of Distribution Losses and DLAFs

DLAFs are calculated in relation to the losses on each distribution network level. While NIE Networks can evaluate the total losses on the entire distribution network (i.e. difference in energy entering the distribution network and exiting the distribution network at customer supply points), it is not possible to accurately measure the losses on each voltage level without significant metering at the transformation points.

NIE Networks recalculates the DLAFs annually to reflect changes to the energy flows into and exiting NIE Networks' distribution voltage levels. The losses on the 33kV and 11kV networks are estimated based on load simulations performed in 2012 and factors which determine the relationship between energy entering the network and electrical losses. All residual losses, including non-technical losses, are allocated to the LV network.

Since 2012, NIE Networks has connected approximately 650MW of large scale generation sites, 240MW small scale generation and 82MW of G83 micro generation requiring significant reinforcement of existing infrastructure and extension of the network.

In response to the growth in distributed generation, NIE Networks commissioned NEPLAN and PB to assess our electrical losses, the impact of distributed generation on network losses and to propose a suitable DLAF methodology for Northern Ireland following a review

[1] http://www.nienetworks.co.uk/documents/Regulatory-documents/DUoS-Statement-Oct17-Sept18-Approved.aspx

[2] SEMO's charges for capacity, imperfections, market operator costs and energy charges.

[3] The applicable charges levied by SONI are Transmission Use of System charges (TUoS), System Support Services (SSS) and Collect Agency Income Requirement (CAIRt).

[4] Based on a high level assumption that SEMO and SONI's charges are circa 8p/kWh in total.

of GB and ROI methodologies. This work was undertaken using information for the most recent full year for which metering data was available at the time the consultants commenced the load studies i.e. data for January – December 2015. Within this paper we have set out:

(i) a summary of their findings in relation to the distribution losses on the NIE Networks distribution network (see section 3 of this paper);

(ii) a summary of the methodologies employed in GB and ROI to calculate DLAFs (see section 4 of this paper);

(iii) proposals for changes to the methodology used by NIE Networks to calculate DLAFs (see section 5 of this paper); and

(iv) the potential impact on generator and demand customer metered volumes (see section 6 of this paper).

3. Loss Studies on Distribution Network

3.1 Distribution Network Losses

NEPLAN was engaged to carry out studies on NIE Networks' distribution network to evaluate the losses at each distribution voltage level and to assess the impact of generator connections on network losses. The first phase of the study was to calculate the network losses on a monthly basis.

This was conducted by means of power system analysis to assess the losses at 33kV, 33/11kV transformation, and 11kV voltage levels. For the 11kV/LV transformation and LV voltage levels the losses were estimated as the difference between the total network losses and the losses determined from the power flow analysis. Non-technical losses are attributed to the LV network.

The losses were calculated for two defined time periods: the day period covers the time from 08:00 to 23:00, while the night covers the time from 23:00 to 08:00 local time.

The distribution losses calculated by NEPLAN are summarised in Table 1 below.

Network Level	Losses (GWh)		
	Day	Night	Total
33kV network	60.5	19.4	80.0
33/11kV transformation & 11kV network	85.7	27.2	112.9
11kV/LV transformation & LV network	513.8	148.9	662.7
Total	**660.0**	**195.5**	**855.6**

Table 1: NEPLAN Study

3.2 Impact of 33kV Generators on Network Losses

NEPLAN's power flow calculations showed that most generators connected at 33kV increase losses. NEPLAN calculated losses of 15.3 GWh during the day and 7.7 GWh at night accounting for 29% (23 GWh) of the total 33kV network losses.

Most of these generators are connected to the 33kV network via dedicated assets including long circuits, which are deemed part of the 33kV network. The increase in losses on the 33kV network is explained by the flow of the generator's export through the dedicated assets which connect these generators to the rest of the network where power flows to supply demands.

3.3 Impact of 11kV Generators on Network Losses

NEPLAN concluded that the generation connected at 11kV had the following impact:

- 11kV generation reduces the losses in the upstream 33kV network
- minimal impact on the 11kV network losses (c0.3% reduction) ; and
- 11kV generation does not directly affect the losses in the LV network.

Generation connected to NIE Networks' 11kV network effectively reduces the amount of energy required from the transmission system and flowing through the 33kV network. Consequently, 11kV generation reduces 33kV network losses.

NEPLAN's power flow studies showed the 11kV generation impact on 11kV network losses was dependent on the system loading. They estimated that 11kV generators reduced the 11kV network losses by approximately 0.3% (0.2 GWh). This is the net impact of reduced 11kV network losses during the day, and increased network losses during the night.

The results of the studies showed that the reduction in 11kV network losses during the day occurred because generators on the 11kV network tend to be connected close to demands and so reduce power flows in 11kV circuits. Also, 11kV generators do not tend to have significant dedicated assets in which additional losses occur. The consultant's study also showed that the increase in 11kV network losses during the night was explained by reverse power at times during the night when the system loading was low, i.e. the generator output having to travel further to supply demand.

3.4 Impact of LV Generators on Network Losses

NEPLAN concluded that LV generation had the following impact:

- LV generation reduces the losses in the upstream 33kV and 11kV networks; and
- the net impact of LV connected generation on the LV network losses was minimal.

Generation connected to the LV network reduces the amount of energy required to be supplied via the upstream 11kV and 33kV networks. Consequently, LV generation reduces the distribution losses in the 11kV and 33kV networks.

Approximately 89% of exports from LV connected generators were provided by generators connected via dedicated 11kV/LV transformers and metered at LV. This connection design, while in line with NIE Networks' least cost technically acceptable solution, increases the LV losses due to the generator export power flows through the transformer and any dedicated 11kV circuit and the fixed losses of the dedicated transformer. The consultants estimated the annual LV losses associated with these generators to be approximately 5.7 GWh.

Conversely the generators connected directly to the LV network with local demand such as domestic PV, can reduce power flows through the LV network and 11kV/LV transformers. The consultants estimated the LV losses were reduced by between 4 GWh and 7 GWh due to exports from these generators.

4. DLAFs

This section of the paper explains NIE Networks' current DLAF methodology and compares it to the methodologies employed by the GB Distribution Network Operators (DNOs) and ESB Networks in ROI.

4.1 NIE Networks' Current DLAF Methodology

NIE Networks currently publish annual average DLAFs for connections to the 33kV, 11kV and LV networks. There is no seasonal or time of day differentiation in the DLAFs. With the exception of different DLAFs for each distribution connected voltage, there are no locational DLAFs in Northern Ireland.

In Northern Ireland a common DLAF applies to both demand and generation connected at each voltage. As the published DLAFs are greater than unity this assumes customer demand increases distribution losses while generation reduces distribution losses. However with the recent growth in distributed generation, the net impact of 33kV connected generators is to increase losses.

NIE Networks currently recalculate the DLAFs annually to reflect changes to the energy flows into and exiting NIE Networks' distribution levels. The total distribution losses are calculated using the last full calendar year data, e.g. the metering data for 2015 was used to calculate the 2016/17 DLAFs. The losses on the 33kV and 11kV networks are estimated based on the losses calculated using power system analysis performed in 2012 adjusted to reflect the flows into the network level. All residual losses including non-technical losses are allocated to the LV network.

4.2 The DLAF Methodology Employed in GB

In GB, DLAFs are calculated in accordance with the Balancing and Settlement Code Procedure (BSCP) 128 – "Production, Submission, Audit and Approval of Line Loss Factors", which defines the principles that the 14 DNOs must comply with when calculating DLAFs. The BSCP128 ensures consistency regarding the calculation and application of DLAFs used in energy settlement by creating a set of high level principles, which all DNOs must adhere to.

The differences between the approved methodologies adopted by the DNOs reflect some specific configurations and conditions in the respective distribution networks. There are differences in the definitions of voltage class within the GB DLAF methodologies, especially for Extra High Voltage (EHV). Appendix 1 gives an overview of the EHV and High Voltage (HV) definitions in the approved DLAF methodology statements.

All GB DLAF methodologies are required to comply with the main principles described below:

- DLAFs shall be calculated using a Generic (non Site Specific) method except for:
    - sites that are connected at EHV; or
    - where the customer has requested a Site Specific DLAF, and the DNO is in agreement.
- All Site Specific DLAFs shall account for technical losses only.
- All Generic DLAFs shall account for all losses (technical and non technical).

- Site Specific losses and the total Grid Supply Point Group losses (total losses in the distribution network downstream of the connection points with the transmission network) shall be considered in the calculation of Generic DLAFs.
- As a minimum, Generic DLAFs shall be calculated separately for Day and Night.
- All Generic DLAFs shall be re-calculated at least every 2 years.
- All Site Specific DLAFs shall be re-calculated when there has been a relevant change to the site or network, and at least every 5 years.

4.3 The DLAF Methodology Employed in ROI

ESB Networks' methodology for calculating DLAFs is set out in the document "ESB Distribution Loss Adjustment Factors - ESB Submission to the Commission for Electricity Regulation"[5]. ESB Networks' DLAFs are approved each year by the Commission for Regulation of Utilities (CRU).

The main principles of ESB Networks' methodology for calculating DLAFs are:

- DLAFs are calculated for LV, MV and 38kV voltage systems, but transformations are not separated as in the GB methodologies.
- DLAFs are calculated using a Generic (non Site Specific) method for demand connections.
- DLAFs are calculated using a Site Specific method for generator connections to the 38kV network as a minimum.
- DLAFs are calculated for the two time periods, Day and Night which are defined differently for respective voltage levels:
    - For customers connected at LV with non quarter-hourly meters the day period covers the time from 08:00 to 23:00 in winter and 09:00 to 00:00 during summer.
    - For LV customers with quarter-hourly meters, MV and 38kV customers the day period is from 08:00 to 23:00, summer and winter. The night period covers the remaining hours from 23:00 to 08:00.
- Non technical losses are included in the LV DLAFs.
- All DLAFs are re-calculated each year.

4.4 Overview of GB and ROI DLAF Methodologies

In GB and ROI there is greater granularity in the published DLAFs. This allows for the appropriate allocation of losses to individual generators in relation to their individual impact on network losses. The site specific losses are then taken into account when the remaining losses are apportioned to other generator and demand customers for the calculation of Generic DLAFs.

In addition, GB DNOs generally apply Seasonal Time of Day DLAFs while ESB Networks publish day and night DLAFs. The time differentiated DLAFs provide signals to encourage customer behaviour; to reduce network losses when the system is heavily loaded.

[5] https://www.esb.ie/esbnetworks/en/downloads/cer0095_1.pdf

5. Proposals for New DLAF Methodology

This section of the paper details our proposals for changes to our current DLAF methodology. In this respect we propose the introduction of:

(i) Site Specific DLAFs for 33kV generator exports; and
(ii) Time of day DLAFs for all demand and generator customers.

5.1 Site Specific DLAFs for 33kV Connected Generators

NEPLAN's loss studies showed that with the recent growth in distributed generation, exports from most 33kV connected generators effectively increase distribution losses, while 11kV and LV connected generators reduce distribution losses upstream.

Under the current DLAF methodology, Generic DLAFs are applied to both demand and generation at the same distribution voltage. As the Generic DLAFs are greater than unity, only demand customers are attributed with increasing losses. NIE Networks' methodology for developing DLAFs needs to change if we are to deliver DLAFs which attribute increases in distribution losses to both generation and demand.

As demonstrated in section 4 of this paper, all GB DNOs and ESB Networks publish Site Specific DLAFs as a minimum for generators connected at 33kV and above. We propose that NIE Networks' should also adopt Site Specific DLAFs for 33kV generator exports. The 33kV Generic DLAFs would continue to apply to the demand at the 33kV generator connection.

Based on the practice in GB and ROI, the substitution method was recommended by our consultants for calculation of Site Specific DLAFs for generators connected to the 33kV network. The substitution method calculates losses with and without generation and the resulting change in losses is attributed to the specific generator connection.

Under the Site Specific methodology, the DLAF value calculated for each 33kV generator would depend on the impact the individual generator has on the network losses over the defined calendar year. In effect:

- If the generator export is found to be increasing network losses, then the Site Specific DLAF would be less than 1.000;
- If the generator export is found to be decreasing network losses, then the Site Specific DLAF would be greater than 1.000.

For cases where there is no metered information or incomplete historic information available to calculate the generator impact on losses, we propose to use a default DLAF of 1.000 for the generator export. A DLAF of unity would assume the generator had no impact on losses (either to increase or reduce). This default figure would apply for the full tariff year and be reviewed the following year when additional data becomes available.

For clarity, our proposal to introduce Site Specific DLAFs is limited to generators connected at 33kV. We do not propose to introduce Site Specific DLAFs for generators connected to the 11kV or LV networks at this time as the net impact of these generators is to reduce network losses, as implied by the Generic DLAF. We will continue to calculate and apply Generic DLAFs to these generators and all demand customers.

The Site Specific DLAFs for 33kV generators will be updated at least every five years, or where there are material changes to the connections or network. This does not prohibit NIE Networks from recalculating the Site Specific DLAFs annually; it simply sets a maximum length of time that the Site Specific DLAFs could apply for. This is the same as the requirement for updating Site Specific DLAFs in GB (reference BSCP128).

5.2 Time of Day DLAFs

Under the principles set out by BSCP128, all GB DNOs are required to develop time differentiated DLAFs, with distinct periods for day and night as a minimum. All GB DNOs also differentiate between seasons with Seasonal Time of Day DLAFs to reflect the impact of losses when the network is heavily loaded, for example at peak times in winter. ESB Networks publish time differentiated DLAFs, with distinct periods for day and night.

NIE Networks currently publish a single DLAF for customers connected at each distribution voltage. The DLAF is calculated as an annual average to apply to all half hour periods in the year.

NIE Networks is proposing a change to the current DLAF methodology with the introduction of time differentiated DLAFs for Day and Night. The Day and Night periods would be defined as follows:

- For customers connected at LV with non half-hourly meters the day period covers the time from 08:00 to 23:00 in winter and 09:00 to 00:00 during summer. The night period covers the remaining hours.
- For customers with half-hourly meters (including LV customers) the day period is from 08:00 to 23:00 summer and winter. The night period covers the remaining hours from 23:00 to 08:00.

It is proposed that the Day and Night periods would apply to Site Specific and Generic DLAFs at all distribution voltages. It is anticipated that the time differentiated DLAFs will provide appropriate signals to customers about their impact on network losses; if customers react to these signals they could reduce their total energy requirements and network losses would potentially reduce.

5.3 Summary of Proposals

The following table provides a summary of our proposed DLAF changes in relation to time differentiation and Site Specific DLAFs (as described above), compared to how these principles are applied currently by NIE Networks, the GB DNOs and ESB Networks.

	NIE Networks Current	NIE Networks Proposal	GB	ROI
Time Differentiated DLAFs	None	Day & Night	Seasonal Time of Day	Day & Night
Site Specific DLAFs	None	33kV Generation	33kV Generation and Demand	38kV Generation & potentially generation at lower voltages

Table 2: NIE Networks' proposal compared to current DLAFs applied in NI, GB & ROI

NIE Networks' proposal for Day and Night DLAFs is similar to the principles applied in ESB Networks' DLAFs. The GB DNO's are required under the BSCP128 to provide a minimum of Day and Night DLAFs, however all GB DNO's provide greater granularity with different DLAFs across the seasons to reflect the impact of energy flows on network losses in summer and winter.

In addition, all DNOs in GB and ROI produce Site Specific DLAFs for generator exports in relation to generators connected at 33kV and above, to reflect the impact each generator has on the distribution losses. NIE Networks propose to adopt this principle in their DLAF methodology to apply a fairer allocation of losses to generator and demand customers.

The DLAF types that would be applied to generator exports and demands under NIE Networks' proposal are summarised in Table 3. For clarity, "demand" refers to metered consumption at demand customer and generator customer sites.

Connected Voltage	DAY		NIGHT	
	Generator Export	Demand	Generator Export	Demand
33kV	Site Specific Day DLAF	33kV Generic Day DLAF	Site Specific Night DLAF	33kV Generic Night DLAF
11kV	11kV Generic Day DLAF		11kV Generic Night DLAF	
LV	LV Generic Day DLAF		LV Generic Night DLAF	

Table 3: NIE Networks' Proposal – DLAF types to apply to Generator Exports and Demands

6. Impact of Proposed Changes

6.1 Site Specific DLAFs

PB calculated Site specific DLAFs for the 44 generators connected to the 33kV network. Nine of these generators did not have complete information for accurate calculation so they were assigned the default DLAF of unity in line with our proposed methodology. This assumes a neutral position in terms of whether the generator is increasing or decreasing network losses.

The Site Specific DLAFs ranged from 0.954 to 1.001 for day and from 0.956 to 1.000 for night. The calculated values show that the vast majority of the Site Specific DLAFs are less than unity to reflect the increase in network losses due to the respective generators.

Figure 1 shows the Site Specific DLAFs as a day and night pair for each 33kV generator. Each of the 44 generators connected to the 33kV network in 2015 are represented along the horizontal axis. The weighted average of the Site Specific DLAFs is 0.985 for day and 0.986 for night.

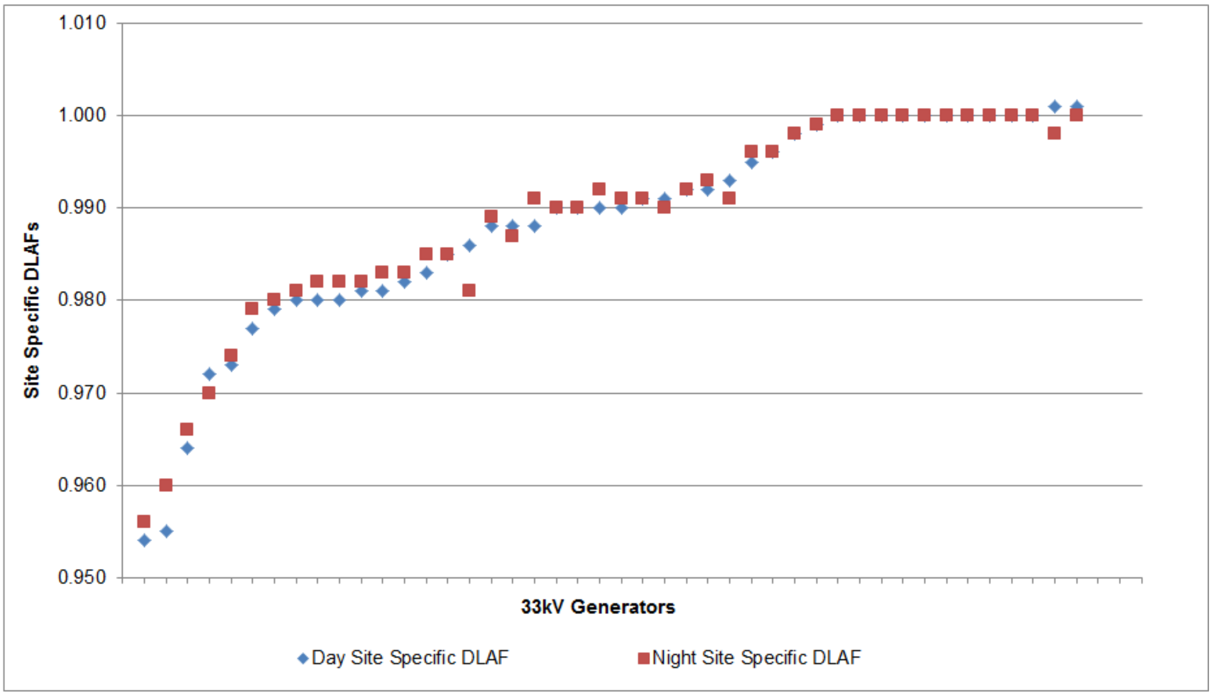

Figure 1: Day and Night Site Specific DLAFs for 33kV Generators

6.2 Comparison of DLAFs Calculated under Current and Proposed Methodology

For illustrative purposes, Table 4 shows the Generic DLAFs calculated under the proposed and current methodologies for demand, based on the NEPLAN study. Under NIE Networks' proposed methodology the Generic DLAFs reduce by between 0.5% and 0.8% due to lower losses attributed to demand customers. This is a direct consequence of introducing Site Specific DLAFs which allow some of the network losses to be attributed to 33kV connected generators and so reduce the losses attributed to demand customers.

Connected Voltage	DLAFs for Demand Customers - Proposed Methodology			DLAFs for Demand Customers - Current Methodology	% Change
	Day	Night	Whole Day Average		
33kV	1.008	1.005	1.007	1.014	-0.7%
11kV	1.024	1.018	1.022	1.030	-0.8%
LV	1.155	1.116	1.144	1.150	-0.5%

Table 4: Comparison of DLAFs for demand – proposed verses current methodology

Table 5 shows the DLAFs calculated under the proposed and current methodologies for generator exports, based on the NEPLAN study. For comparative purposes, the 33kV generation proposed values are the weighted averages of the Site Specific DLAFs. The DLAFs for the 11kV and LV generation are the same as for demand customers connected to the same voltage. As these DLAFs are greater than unity, this assumes the 11kV and LV generators reduce distribution losses.

Connected Voltage	DLAFs for Generation - Proposed Methodology			DLAFs for Generation - Current methodology	% Change
	Day	Night	Whole Day Average		
33kV	0.985	0.986	0.985	1.014	-2.9%
11kV	1.024	1.018	1.022	1.030	-0.8%
LV	1.155	1.116	1.144	1.150	-0.5%

Table 5: Comparison of DLAFs for generation – proposed verses current methodology

6.3 Impact on Distribution Losses Attributed to Generation and Demand

As explained earlier in this paper, supplier consumption volumes are multiplied by the DLAFs to reflect the equivalent energy requirements of their customers (i.e. customer consumption plus losses) at the energy trading point. Metered exports from distributed generators are also multiplied by DLAFs to reflect their impact on distribution losses. Table 6 shows the equivalent generation and demand customer volumes at the energy trading point (i.e. after the metered volumes are multiplied by the relevant DLAFs) under the proposed and current DLAF methodologies. SEMO's charges to suppliers and payments to distributed generators are based on these volumes.

Type of Customer	Metered Volumes (GWh)	Volumes at Trading Point (GWh)		Losses attributed by DLAFs (GWh)	
		Proposed Methodology	Current Methodology	Proposed Methodology	Current Methodology
33kV Generation	1,537	1,514	1,558	23	-21
11kV Generation	90	92	93	-2	-3
LV Generation	209	239	241	-30	-31
Total Generation	**1,837**	**1,846**	**1,891**	**-9**	**-55**
33kV Demand	543	547	550	4	7
11kV Demand	1,441	1,473	1,484	32	43
LV Demand	5,751	6,580	6,611	829	860
Total Demand	**7,735**	**8,600**	**8,645**	**865**	**910**
Total Losses				**856**	**856**

Table 6: Equivalent Generation and Demand Customer Volumes at the Energy Trading Point (transmission-distribution boundary) and Losses Attributed by DLAFs

The total distribution losses in 2015 were 856 GWh. The impact of the proposed DLAF methodology is to simply reallocate the total distribution losses to generator and demand customers to take account of how the majority of 33kV generators now increase distribution network losses. The losses allocated to demand and generation under the current and proposed DLAF methodologies are demonstrated in the last 2 columns of Table 6. A positive value indicates that the generators or demand customers are increasing network losses while a negative value indicates that the network losses are being reduced by the demand or generation flows. As explained earlier, a DLAF greater than unity for demand implies they increase losses while a DLAF greater than unity for generation implies they reduce losses.

Under the proposed methodology distributed generator volumes reduce by 45 GWh. The total customer demand at the energy trading point also decreases by 45 GWh, as expected in a balanced market, (a reduction of c 0.5%).

7. Next Steps and How to Respond

7.1 Next Steps

This consultation paper has set out NIE Networks proposals for the revisions to the methodology for calculating DLAFs. NIE Networks seeks comments from consultees on these proposals.

A workshop to discuss these proposals will take at 10am on Thursday 8th March at our office in Danesfort. If you would like to attend this workshop, please contact Karen Wilson by email at Karen.Wilson2@nienetworks.co.uk or on 028 9068 9113 to register.

NIE Networks will carefully consider any comments received in response to this consultation and will draft a decision paper to respond to the comments and to clarify the position in relation to the DLAF methodology that will be used going forward.

Under NIE Networks' distribution licence, the UR is not required to approve the DLAF methodology; however the UR does approve the actual DLAF values that are produced from the methodology and published in NIE Networks' Statement of Charges.

After discussing the decision with the UR, NIE Networks will publish a copy of the decision paper on its website.

An indicative timeframe for the consultation process is provided below. The outcome of this consultation will form the DLAF methodology which NIE Networks plan to use for the 2018/19 DLAFs.

Consultation process	Indicative Dates
Consultation paper published	13 February 2018
Workshop	8 March 2018
Consultation closes (six week consultation period)	27 March 2018
Decision paper published	April 2018

Table 7: Indicative timetable

7.2 How to Respond

NIE Networks welcomes comments from all stakeholders on the proposals set out in this consultation paper.

The closing date for this consultation is **27 March 2018**. Responses to this consultation must be received in writing before the closing date and should be sent to the contact details provided below. Our preference would be for responses to be sent by email.

Karen Wilson
Network Pricing Team
NIE Networks
Danesfort
120 Malone Road
Belfast
BT9 5HT
Email: Karen.Wilson2@nienetworks.co.uk

If you wish to discuss any aspect of this consultation paper, please contact Roisin Ballentine on 028 9068 9136 or by email at Roisin.Ballentine@nienetworks.co.uk.

Appendix 1: Definition of EHV and HV in the Approved GB Methodology Statements

This table provides an overview of the definition of voltage class within the DLAF methodologies employed by each of the GB DNO groups.

DNO Group	EHV definition	HV definition
Electricity North West Limited	Premises or distribution systems metered at voltages: - 22kV or above, or - where the connection is at a voltage of at least 1kV and less than 22kV at a substation with a primary voltage (the highest operating voltage present at the substation) of at least 66kV.	A nominal voltage greater than 1 kV and less than 22 kV, excluding any site defined as EHV
Northern Power Grid	Premises or distribution systems metered at voltages: - 22kV or above, or - metered at below 22 kilovolts (22kV) but connected to a dedicated primary substation with transformation ratios of 132/66/33kV to the metered voltage	A nominal voltage greater than 1 kV and less than 22 kV
Scottish and Southern Energy - Southern Electric Power Distribution	Nominal voltages of 22kV and above. Sites with exit points at 132 kV, 66 kV, 33 kV and 22 kV or at a 132/33 kV, 132/11 kV, 66/22 kV or 66/11 kV substation	A nominal voltage greater than 1 kV and less than 22 kV, excluding any site defined as EHV
Scottish and Southern Energy - Scottish Hydro Electric Power Distribution	Nominal voltages of 22kV and above. Sites with exit points at 33 kV and BSP/11 kV.	A nominal voltage greater than 1 kV and less than 22 kV, excluding any site defined as EHV
Scottish Power Energy Networks	A connection to the network at a nominal voltage of 22kV or above	A nominal voltage greater than 1 kV and less than 22 kV
UK Power Networks	A site connected at EHV is defined as a site that has a metering system at a connection boundary at a nominal voltage of: - 22kV or above, or - at least 1kV and less than 22kV at a substation with primary voltage of 66 kV and above	A nominal voltage greater than 1 kV and less than 22 kV, excluding any site defined as EHV
Western Power Distribution	Premises or distribution systems metered at nominal voltages of 22kV and above. Sites connected at the 11kV bus bars of a primary substation whose primary voltage is 132kV or 66kV.	A nominal voltage greater than 1 kV and less than 22 kV, excluding any site defined as EHV