



## **DCUSA Change Report**

DCP 172 - 'Clarification Of Way In Which Voltage Rise Is Used In Determining The New Network Capacity'

### **Executive Summary**

DCP 172 seeks to amend the Common Connection Charging Methodology (CCCM) to provide clarification of the way in which voltage rise is used in determining the New Network Capacity.

This document presents the Change Report for DCP 172 and invites respondents to vote on the proposed change.

## 1 PURPOSE

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- 1.1 This document is issued in accordance with Clause 11.20 of the DCUSA and details DCP 172 'Clarification of way in which voltage rise is used in determining the New Network Capacity'.
- 1.2 The voting process for the proposed variation and the timetable for the progression of the Change Proposal (CP) through the DCUSA Change Control Process is set out in this document.
- 1.3 Parties are invited to consider the proposed amendments (Attachment 2) and submit their votes using the form attached as Attachment 1 to [dcusa@electralink.co.uk](mailto:dcusa@electralink.co.uk) no later than **11 March 2016**.

## 2 EXECUTIVE SUMMARY

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- 2.1 Following an Ofgem determination (please see paragraph 5.4), DCP 172 was raised by Scottish Power Energy Networks on the 29 April 2013 to amend the Common Connection Charging Methodology (CCCM) to provide clarification of the way in which voltage rise is used in determining the New Network Capacity.
- 2.2 This CP changes the wording of 'Voltage Drop' to 'Voltage Change' in the New Network Capacity definition. This change to the legal text ensures that the DNO can apply a calculation to apportion costs for the installation of assets required due to Voltage Rise. A Voltage Rise calculation will typically be used where the DNO is evaluating the impact of a Distributed Generation (DG) connection to the distribution network. During the change analysis, the Working Group agreed that it was within the scope of the CP to provide supporting Examples showing how the voltage rise calculation is treated.
- 2.3 A consultation was issued on four approaches to calculating the Cost Apportionment Factor (CAF) for a connection where Voltage Rise is the main driver for the network to be reinforced. Following the consultation, the Working Group were concerned that there was not sufficient engagement on this change from the Distributed Generation (DG) community. The Working Group re-issued the consultation highlighting in the cover e-

mail who is impacted and why DG parties should be interested in responding to this consultation. The Working Group noted that only two responses were received to the re-issued consultation and that both of these were from DNOs to repeat the responses they provided under the original consultation.

- 2.4 The Working Group considered the feedback from Parties on the four approaches and agreed to progress Option 1 to ensure a consistent application to this calculation across all DNOs.

### **3 BACKGROUND TO THE DCP 172 CHANGE PROPOSAL**

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- 3.1 This proposal follows on from discussions which have taken place between DNO's at the COG CSG (Commercial Operations Group, Connections Sub-group) and with industry stakeholders who attend the CCMF (Connection Charging Methodologies Forum).
- 3.2 The COG CSG and CCMF were established to assist the governance of the Common Connection Charging Methodology whilst maintaining a consistent and transparent approach. Industry stakeholders who attend the COG CSG and CCMF are of the view that further clarity is required within the CCCM to the way in which voltage rise influences the calculation of New Network Capacity within the Cost Apportionment Factor.

### **4 INTENT OF DCP 172 CHANGE PROPOSAL**

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- 4.1 DCP 172 has been raised by Scottish Power Energy Networks on the 29 April 2013 to amend the Common Connection Charging Methodology (CCCM) to provide clarification of the way in which voltage rise is used in determining the New Network Capacity.

### **5 DCP 172 – WORKING GROUP CONSIDERATIONS**

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- 5.1 The DCUSA Panel established a Working Group to assess DCP 172. The Working Group met on eight occasions and was comprised of DNO and Customer representatives with an Ofgem observer in attendance.

- 5.2 Meetings were held in open session and the minutes and papers of each meeting are available on the DCUSA website – [www.dcusa.co.uk](http://www.dcusa.co.uk).
- 5.3 All Working Group members were supportive of the general principle of DCP 172.
- 5.4 The Working Group noted that the DCP 172 change supports the determination<sup>1</sup> (Attachment 6) issued by Ofgem which recognises circumstances under which the voltage rise method may be valid.
- 5.5 The Working Group requested DNOs to estimate the number of occasions where reinforcement is prompted by Voltage Rise. This estimate will indicate how many connection quotations are likely to be impacted by the CP. The DNO responses are as shown in attachment 7 and indicate that approximately 600 quotations per annum have connection charges calculated that may be subject to the arrangements in the CP. There are typically over 300,000 connection quotations issued every year and so this figure represents 0.2% of the total number of quotations that are issued.
- 5.6 The Working Group noted the ‘Discussion and Conclusions’ remarks regarding apportionment of costs as shown in section 7 of the Ofgem determination. These include:

“.....Therefore we consider that the capacity of assets sized to remain within ESQCR voltage limits may be considered as New Network Capacity for the purposes of calculating the Security CAF.”

“We recognise that, due to the current wording in the CCCM, other interpretations as to the treatment of voltage rise could exist.”

“The Security CAF is dependent on what proportion of the New Network Capacity is used by a customer. The load flow analysis found that no further generation can be connected at the Premises without compromising the ESQCR voltage limits. We therefore consider that the Customers' generation uses 100% of the voltage capability of the New Network Capacity and the Company was not acting unreasonably when apportioning 100% of the reinforcement costs to the Customers.”

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<sup>1</sup> RBA/TR/A/DET/184

“We acknowledge that the current definition of New Network Capacity is not clear on the treatment of voltage rise.....We note that a Distribution Connection and Use of System Agreement (DCUSA) modification proposal, DCP172, has been submitted to, and will be reviewed by, an industry working group. This modification proposal is seeking to clarify the consideration of voltage rise when determining New Network Capacity. We will consider any such modification on its merits.”

“We note that in July 2011 we determined a dispute relating to the apportionment of costs for reinforcement. In this case we determined that costs should be apportioned based on the driver for the reinforcement. Similarly, in the case now considered, the driver for the reinforcement is the generation connection. Therefore we consider that the costs of reinforcement should be apportioned on the basis of the of the capacity required by the connection which drives the reinforcement.”

5.7 During the analysis of the change, the Working Group agreed that amending ‘voltage drop’ to ‘voltage change’ in the New Network Capacity definition would allow DNOs to cost apportion connections which require the network to be reinforced due to voltage rise but would not provide consistent application. The Working Group agreed to draft Examples of scenarios where voltage rise occurs and how the calculation is treated to act as a guide. Four Options were identified which could act as solutions to the issue. The proposed Four Options and the Examples for each of the Options are as shown in Attachments C, D, E & F of Consultation one.

5.8 The four Options which the Working Group identified are described below:

- The first Option is where a voltage rise calculation is applied (which in some cases apportions 100% of the cost to the connecting customer).
- The second Option is to apply a thermal capacity calculation where voltage rise occurs (which would normally apportion the costs between the DNO and the connecting customer).
- The third and fourth Options introduce a new concept of an exception to Option 1 by recognising situations where the reinforced network could benefit other

customers for future new connections. In such cases, a thermal calculation to apportion the cost of the connection may be appropriate.

- Under Option 3 a thermal calculation applies if all of the four conditions below are satisfied.

The Reinforcement:

- requires installation of a Substantial Asset; and
- requires installation of a Complete Asset; and
- provides connection to a Demand Dominated Network; and
- normally provides connection to a number of customers in excess of the Number of Customers Threshold.

- The new terms used in these four conditions are defined as

<b>Substantial Asset</b>	Assets with a thermal rating at or in excess of the following in relation to the highest operating voltage: LV: 100kVA HV and above: 500kVA
<b>Complete Asset</b>	For circuits, means an asset installed from the circuit originating substation to the end of the circuit. Where a circuit is interconnected and relies on such interconnection for its compliance with security of supply standards it is the entirety of all dependent interconnected circuits from the originating substation(s). For substations, means all the assets required to achieve secure capacity, as applicable.
<b>Demand Dominated Network</b>	Where our assessment is that the maximum demand exceeds the maximum generation (this will be a separate assessment of maximum demand and maximum DG conditions, inclusive of diversity)
<b>Number of Customers Threshold</b>	Means where the number of customers normally connected to the asset is in excess of: LV assets: 10

HV and above assets: 20
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If any of the four conditions above are not satisfied, a voltage rise method of cost apportionment must be applied.

- Under Option 4 a thermal calculation applies if the two conditions below are satisfied.

The Reinforcement:

- requires installation of a Complete Asset or Assets; and
- provides connection to a Demand Dominated Network
  - The new terms used in these two conditions are defined as

<b>Complete Asset</b>	Asset which is HV and above
<b>Demand Dominated Network</b>	Where our assessment is that the maximum demand exceeds the maximum generation. (this will be a separate assessment of maximum demand and maximum DG conditions, inclusive of diversity)

If either of the two conditions above is not satisfied, a voltage rise method of cost apportionment must be applied.

### APPLICATION RULE OPTIONS FOR CIRCUMSTANCES WHERE VOLTAGE RISE OCCURS

5.9 The Working Group identified the following Options for establishing the application rules for circumstances where the network is reinforced due to voltage rise to accommodate a connection to the network. This table sets out the Working Group's assessment of the advantages and disadvantages of each Option.

Options	Advantages	Disadvantages
<p><b>Option 1</b></p> <p>Always apply the voltage rise method</p>	<ul style="list-style-type: none"> <li>• Simple to apply</li> <li>• Where a Complete Asset such as a transformer is replaced then the CAF is less than 100%</li> <li>• Reinforcement works and costs sized only to meet the connecting customers requirement</li> <li>• Greater transparency of application than Options 3 and 4</li> </ul>	<ul style="list-style-type: none"> <li>• Where only part of a circuit is reinforced, then CAF normally = 100%</li> <li>• Gives no credit for the additional thermal capacity that results</li> <li>• Where this approach results in 100% charge to the connecting customer it may appear unfair that no credit is even given for recovered apparatus and no acknowledgement of any deferral of renewal.</li> </ul>
<p><b>Option 2</b></p> <p>Always apply the thermal capacity ratings</p>	<ul style="list-style-type: none"> <li>• Simple to apply</li> <li>• Reduces the Cost Apportionment Factor for the connecting customer</li> <li>• It may reflect that additional capacity is</li> </ul>	<ul style="list-style-type: none"> <li>• In some cases does not reflect that the extent of Reinforcement has been limited to that necessary to provide the new connection.</li> </ul>



	<p>available for other customers</p> <ul style="list-style-type: none"> <li>• Greater transparency of application than Options 1, 3 and 4</li> </ul>	
<p><b>Option 3</b></p> <p>If the four conditions below are satisfied, the thermal method applies.</p> <p>Where the Reinforcement:</p> <ul style="list-style-type: none"> <li>• involves a Substantial Asset; and</li> <li>• involves a Complete Asset; and</li> <li>• provides connection to a Demand Dominated Network; and</li> <li>• normally provides connection to a number of customers in excess of the Number of Customers Threshold.</li> </ul> <p>If any of the four conditions above are not satisfied, a voltage rise method of cost apportionment must be applied.</p>	<ul style="list-style-type: none"> <li>• Attempts to give the customer the benefit of the thermal CAF when a network benefit is realised</li> <li>• Recognises the likelihood of future benefit to other parties</li> </ul>	<ul style="list-style-type: none"> <li>• Complicated to apply in practice and it may not be clear if the a total asset has been replaced</li> <li>• It appears to not recognise network benefits provided for future DG connections but only where it is a demand dominated network</li> <li>• If they do not meet the 4 criteria then there will still be 100% apportionment in some cases</li> <li>• It introduces four new definitions that will not otherwise be used within the Methodology</li> <li>• Greater complexity than Options 1 and 2</li> </ul>
<p><b>Option 4</b></p> <p>If the two conditions below are</p>	<ul style="list-style-type: none"> <li>• Simple and more easy to apply arrangement than Option 3</li> </ul>	<ul style="list-style-type: none"> <li>• Two new definitions which are not definitely applicable across a range of examples</li> </ul>

<p>satisfied, the thermal method applies.</p> <p>Where the Reinforcement:</p> <ul style="list-style-type: none"> <li>• Involves a Complete Asset (is an asset which is HV and above); and</li> <li>• provides connection to a Demand Dominated Network</li> </ul> <p>If either of the two conditions above is not satisfied, a voltage rise method of cost apportionment must be applied.</p>	<ul style="list-style-type: none"> <li>• The mitigation issues from the definitions are reduced to some effect</li> </ul>	<ul style="list-style-type: none"> <li>• Greater complexity than Options 1 and 2</li> </ul>
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## 6 DCP 172 CONSULTATION ONE

6.1 The Working Group carried out a consultation (Attachment 4) to give DCUSA Parties and other interested organisations an opportunity to review and comment on the proposed DCP 172 solution. There were seven responses received to the consultation. Six respondents were Distributors and one respondent was a Distributed Generator. The Working Group discussed each response and its comments are summarised alongside the collated consultation responses in Attachment 4.

6.2 A summary of the responses received, and the Working Group's conclusions are set out below:

### **Question 1: Do you understand the intent of the DCP 172?**

6.3 All respondents understood the intent of the CP.

### **Question 2: Are you supportive of the principles of the DCP 172?**

6.4 All respondents were supportive of the principles of the CP.

### **Question 3: Options 1-4 have been set out in table 1 of this consultation. Which Option do you prefer and why?**

6.5 The following table provides a summary of respondent's preferences for Options 1-4.

Party Type	Option 1	Option 2	Option 3	Option 4	Option 1 (second preference) and Option 2 (first preference)	Options 1 and 4	No preference
DNOs	2	1	0	2	0	1	0
DG	0	0	0	0	0	0	1
DNOs: Changes to DNO Parties solution preferences after the consultation responses were discussed	2	0	0	0	1	3	0

6.6 A summary of the comments on each solution is provided below:

### **Option 1**

Two respondents who preferred Option 1 considered this solution to be the most simple to administer. It reflects the main driver required for the work by assessing the new network capacity based on the voltage rise constraints following reinforcement.

The respondent who supported Option 1 and 4 advised that Option 1 takes account of the limiting factor for New Network Capacity making it an appropriate option to be used under these circumstances.

### **Option 2**

The respondent who preferred Option 2 considered that this option was straight forward for Customers to understand and could be applied in a consistent manner.

### **Option 3**

There were no respondents who preferred Option 3.

### **Option 4**

A respondent who preferred Option 4 noted that it was the option that most accurately reflects the reinforcement charges associated with a DG connection. Another respondent considered that Option 4 is relatively simple and reflects the driver behind the need to reinforce in most cases. This solution gives a thermal option should potential thermal benefits result.

The respondent who preferred both Option 1 and 4 considered that Option 4 is appropriate as it uses a methodology to identify scenarios where the reinforced assets are likely to also provide usable 'demand' capacity and which leads to the thermal capacity method being used. Option 4 provides a simple mechanism to define which of the two calculation methods should apply.

### **None**

The DG respondent recommended that the consultation document was improved and re-circulated. This respondent did not consider that the Voltage Rise Calculation was explained

sufficiently. The calculation set out is a security CAF calculation rather introducing a Voltage Rise CAF. The Examples provided did not assist understanding and the respondent thought that there should be an Extra High Voltage (EHV) Example.

- 6.7 At the subsequent Working Group meeting to discuss these consultation respondents, two DNO respondents who originally submitted a preference for Option 4, advised that they would also support Option 1. Another respondent who preferred Option 2 as the solution advised that they would support the Option 1 solution as their second preference.
- 6.8 The DG respondent who did not have a preference for any of the options proposed, provided a representative to attend the Working Group meeting. This representative proposed an alternative approach involving a CAF based on the proportion of voltage rise. The respondent agreed to consider whether to raise an alternate change with a more detailed strawman to include a Voltage Rise calculation. Following discussion with the Working Group, the respondent accepted the necessary high level nature of the methodology document and the rationale behind the limited number of Examples which do not cover all scenarios. The Working Group agreed to consider whether more detail could be provided regarding the CAF calculation in any further documentation as appropriate (please see Section 7).

**Question 4: Options 1-4 have been set out in table 1 of this consultation. Which Option would you definitely not support and why?**

- 6.9 The following table provides a summary of respondent's preferences for Options 1-4.

Party Type	Option 1	Option 2	Option 3	Option 4	Options 1 and 4	All Options
DNOs	0	3	3	0	0	0
DG	0	0	0	0	0	1

6.10 A summary of the comments on each solution is provided below:

### **Option 2**

Three respondents did not support Option 2. Respondents considered that Option 2:

- does not reflect accurately the costs that should be attributed to a generation customer. This method could be seen to subsidise a DG connection.
- is not cost reflective of the driver for reinforcement for generators. In most areas where reinforcement is required for generation there are no thermal issues, hence no thermal benefits, the benefit is only for voltage headroom.
- recognises thermal capacity created that has very little correlation to system constraints that may still exist for generation following the reinforcement.

### **Option 3**

Three respondents did not support Option 3. Respondents considered that Option 3:

- is overly complex
- is the most complicated to administer and also may have risks of alternative interpretations.
- under the definition of 'complete asset' is too complicated and likely to lead to disagreement on its interpretation.

### **All Options**

The DG respondent provided the same response to question 3 which the Working Groups addresses in their response to question three.

6.11 The Working Group noted the responses.

**Question 5: Do you support Option 1 to always apply the voltage rise method?**

6.12 Two respondents advised that they supported Option 1. Four respondents did not support Option 1.

6.13 One respondent advised that Option 4 was more cost reflective. The DG respondent considered that “it is too easy to create practical examples where 100% cost is apportioned to a triggering user who will make use of only a fraction of the new asset capacity; a non-cost-reflective cost signal. More practically, this straw-that-broke-camels-back approach will become a barrier to project entry thereby creating an obstacle to competition in the generation of electricity (contrary to DNO license)”.

6.14 The Working Group noted the responses.

**Question 6: Can you identify any additional advantages or disadvantages to Options 1-4 that are not captured in table 1 of this consultation?**

6.15 Six respondents could not identify any further advantages or disadvantages to Options 1-4. One DG respondent requested that the Voltage Rise calculation be explained fully in the consultation in order to provide users with sufficient information to respond to the questions.

6.16 The Working Group agreed to ensure that any further documentation provides more information about methods of calculation.

**Question 7: Do you agree with the high level approach of Option 3?**

6.17 Five respondents did not agree with the high level approach of Option 3. Their comments are summarised below. Option 3:

- does not reflect the driver for the additional work;
- is too complex and the definition of “Substantial Asset” may be too subjective;
- may recognise thermal capacity created as a by-product of reinforcement that could be utilised in predominantly demand areas but is potentially difficult to administer, could be subjective in some instances and is not as transparent; and
- will introduce a methodology that is complicated, difficult to understand and difficult to apply. It is easily interpreted inconsistently and introduces levels of subjectivity and possible discrimination. The new set of definitions introduced to

the CCCM by Option 3 will make it less clear as to what is determined to be reinforcement.

- 6.18 One respondent did not state whether they agreed with the approach to Option 3. This respondent commented that Option 3 may recognise thermal capacity created as a by-product of reinforcement and it could be utilised in predominantly demand areas. This Option is potentially difficult to administer and could be subjective in some instances. As a result it is not as transparent.
- 6.19 The DG respondent considered that they had insufficient information on which to base a response to this question. This respondent was concerned that “Complete Asset” classification is unnecessarily complicated and may lead to users ‘gaming’ the system. The respondent thought that it was likely to produce perverse incentives which could lead the industry away from the most efficient, coordinated and efficient overall connection solution.
- 6.20 The Working Group noted the responses. In regards to the DG response, the Working Group discussed Examples of possible gaming opportunities. Ofgem noted that it would be beneficial to discuss in the report the potential for gaming and how it could be mitigated. Please see Section 9.

**Question 8: If you are in agreement with the high level approach of Option 3, do you agree with the detail of this approach? Please provide any alternative methodology which could be employed.**

- 6.21 Two respondents did not support Option 3 and the remaining responses stated that the question was not applicable or referred to their response to question 7.
- 6.22 The Working Group noted the lack of support for Option 3 as the solution to this change.

**Question 9: Do you agree with use of the consideration of a Substantial Asset and if so would you have any alternative way of defining this term?**

- 6.23 Three respondents did not agree with the use of the definition Substantial Asset. One respondent simply stated that they did not support Option 3. The DG respondent restated their answer to question 3 which the Working Group responds to under question 3 above.
- 6.24 The remaining respondents commented:



- This question is only applicable to Option 3 and the definition is arbitrary as the justification for using such a threshold may require some explanation.

**Question 10: Do you agree with use of the consideration of a Complete Asset and if so would you have any alternative way of defining this term?**

6.25 Two respondents did not agree with the use of the definition of Complete Asset. One respondent advised that the definition does not reflect the driver for the additional work. One respondent who did not provide a preference advised that the term may be open to interpretation, especially with regard to complex networks. Two respondents were satisfied with the definition of Complete Asset with one respondent preferring the simplified Complete Asset definition under Option 4 to Option 3. The DG respondent restated their answer to question 3 which the Working Group responds to under question 3 above.

6.26 The Working Group noted the responses.

**Question 11: Do you agree with use of the consideration of a Demand Dominated Network?**

6.27 Two respondents did not agree with the use of the consideration of the Demand Dominated Network and two respondents were in favour of it. The remaining respondents provided comments or referred to a response to a previous question.

6.28 One of the respondents who agreed with taking the Demand Dominated Network in to consideration advised the Working Group to make the definition of demand clearer. Is the maximum demand applied over an annual period or at any given time? This respondent provided an example where the maximum output of a photovoltaic site in summer could exceed the maximum demand of the network and advised that the reverse could be true in the winter.

The Working Group considered the respondent's request to clarify the demand definition. The Working Group explained that the intention of this change was for the maximum sustained demand at any time to be compared against the maximum sustained DG at any time even though they might occur at different times of the year (a simple approach). It was agreed that the document could have been clearer on this point.

6.29 The DG respondent interpreted that the intention of the Demand Dominated Network consideration is that in a generation-dominated network any voltage-triggered

reinforcement should be apportioned 100% to the new party. The respondent argued that where such a charge is levied as an up-front capital charge significantly in advance of energisation it would provide a barrier to market entry and prevent effective competition in generation of electricity. The proposals regarding Demand Dominated Networks would cause undue discrimination against generation. The respondent requested that the Working Group address the charging barrier described to make it less of an obstacle. This respondent proposed that a solution may be developed that is similar in manner to transmission connection charging.

The Working Group considered the DG respondents concerns on the treatment of the consideration of a Demand Dominated Network. The Working Group explained that the methodology was not intended to always apportion 100% to a new generator.

- 6.30 The DG respondent attended the Working Group meeting that considered these responses. This attendee advised that their view remains that considering thermal CAF only for demand dominated networks as an approach is undue discrimination. The attendee explained that with transmission connection charging the applicant has the option to pay charges over time which eases project financing.

**Question 12: Do you agree with use of the consideration of a Number of Customers Threshold?**

- 6.31 Two respondents did not agree. One respondent advised that the use of total demand is more relevant. Two respondents noted that this consideration was in reference to Option 3 which was not their preference. One respondent considered that an explanation would be required to justify using a threshold. Another respondent considered that it was not reflective of the driver for the additional work.

- 6.32 The Working Group requested an explanation as to why the respondent considered that the use of total demand is more relevant. The attendee explained that the total demand could be more significant than the number of customers in relation to the capacity and demand of each customer.

**Question 13: Do you consider that Option 3 is more appropriate than Option 4? Please explain.**

6.33 Four respondents considered that Option 3 was not more appropriate than Option 4. One respondent did not consider either Option to be sufficiently transparent and advised that Option 3 is more difficult to administer.

6.34 One respondent referred to their answer to another question. The DG respondent reiterated their response to Question three. The Working Group responds to these comments at the relevant question.

**Question 14: Do you agree with use of the consideration of a Complete Asset and if so would you have any alternative way of defining this term?**

6.35 Three respondents stated that Option 4 is more appropriate than Option 3. These respondents considered Option 4 to be less complex. This Option removes the subjectivity of having to assess what “sizeable Assets” or “Customer Numbers” are connected and the ability to discriminate between Customers through this assessment. This solution can be applied in a more consistent manner as it has clearer definitions.

6.36 Some respondents advised that Option 4 is simpler and more consistent in its application. The remaining respondents referred to responses that they made to other questions which the Working Group have addressed above.

**Question 15: What are the potential costs of this change? Which option for your organisation would have the lowest or highest cost?**

6.37 Two respondents considered that Option 1 is the lowest cost Option. This is due to this Option being current practice in their organisation. Whilst Option 2 is the highest cost as it is adopting a practice that is not yet in place.

6.38 One respondent considered that Options 3 or 4 would have highest cost due to the additional administrative burden. One member advised that Option 3, being the most complex, may mean that the design takes longer. As the costs of designs are borne by customers who proceed then there is no net change in cost to the DNO.

6.39 One respondent commented that Option 4 could result in an increase in DNO funded DG related reinforcement of 4%. Another respondent considered that the costs for a DNO would be unchanged with all of the Options as the apportionment of reinforcement costs is split between the general mass of DUoS customers and the customer requesting the connection. In theory, the DNO should see no net change in costs.

6.40 The sharing of the costs between connecting and DUoS customers may change markedly, depending on the solution ultimately adopted (if any). Some connection projects, such as medium sized rural embedded generation, may no longer be economically viable, with particular effect on those with little geographic flexibility (e.g. community renewables projects).

6.41 Another respondent advised that any move away from the thermal methodology which is their current practice could lead to higher connection charges in their areas.

**Question 16: Are you supportive of DCP 172 being implemented at the next DCUSA release following Authority consent?**

6.42 Six respondents were supportive of the implementation date of DCP 172 of next DCUSA release following Authority consent. One respondent requested further information on the proposed change and its resulting impact before the change is made.

6.43 The Working Group noted the responses.

**Question 17: Which DCUSA General Objectives does the CP better facilitate? Please provide supporting comments.**

1. **The development, maintenance and operation by each of the DNO Parties and IDNO Parties of an efficient, co-ordinated, and economical Distribution System.**
2. **The facilitation of effective competition in the generation and supply of electricity and (so far as is consistent with that) the promotion of such competition in the sale, distribution and purchase of electricity.**
3. **The efficient discharge by each of the DNO Parties and IDNO Parties of the obligations imposed upon them by their Distribution Licences.**
4. **The promotion of efficiency in the implementation and administration of this Agreement and the arrangements under it.**
5. **compliance with the Regulation on Cross-Border Exchange in Electricity and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.**

Respondent Party Type	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
<b>DNOs</b>	1	1	5	1	0
<b>DNO: Options 1</b>	1	0	0	1	0
<b>DNO: Options 2, 3 and 4</b>	1	1	0	1	0
<b>DG</b>	0	0	0	0	0

6.44 The Working Group noted that the majority of respondents considered that DCUSA General Objective 3 was better facilitated by this change. One respondent provided the Objectives that were best facilitated for each Option whilst other respondents provided the Objectives best facilitated by the change. The DG respondent considered that they had insufficient information to comment on the Objectives.

6.45 Respondents provided the following comments on why Objective three was best facilitated by this change:

- as compliance with the methodology facilitates the discharge by the licensee of the obligations imposed on it under their licence.
- by adding further clarity to the CCCM which allows Distributed Generators, other developers and ICPs to estimate more accurately the costs they will be subject to.
- As Licence Condition 13 requires each DNO to have in force a connection charging methodology.

6.46 The DG respondent who attended the meeting considered that Options 3 and 4 may fail to meet Objective 2 on Competition on grounds of undue discrimination against generation.

6.47 The Working Group noted the responses. The General Objectives that the Working Group considers are best facilitated by this change are set out in Section 12 of this report.

**Question 18: Which DCUSA Charging Objectives does the CP better facilitate? Please provide supporting comments.**

- 1. that compliance by each DNO Party with the Charging Methodologies facilitates the discharge by the DNO Party of the obligations imposed on it under the Act and by its Distribution Licence**

2. that compliance by each DNO Party with the Charging Methodologies facilitates competition in the generation and supply of electricity and will not restrict, distort, or prevent competition in the transmission or distribution of electricity or in participation in the operation of an Interconnector (as defined in the Distribution Licences)
3. that compliance by each DNO Party with the Charging Methodologies results in charges which, so far as is reasonably practicable after taking account of implementation costs, reflect the costs incurred, or reasonably expected to be incurred, by the DNO Party in its Distribution Business
4. that, so far as is consistent with Clauses 3.2.1 to 3.2.3, the Charging Methodologies, so far as is reasonably practicable, properly take account of developments in each DNO Party's Distribution Business
5. that compliance by each DNO Party with the Charging Methodologies facilitates compliance with the Regulation on Cross-Border Exchange in Electricity and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.

Respondent Party Type	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
DNOs	5	1	2	0	0
DG	0	0	0	0	0

6.48 The Working Group noted that the majority of respondents considered that DCUSA Charging Objective 1 was better facilitated by this change. The DG respondent considered that they had insufficient information to comment on the Objectives.

6.49 Respondents provided the following comments on why Objective one was best facilitated by this change:

- as it will provide clarity and consistency to customers and allow DNOs to fulfil their obligations under the licence; and

- Improved clarity within the CCCM will help ensure more consistent application in accordance with the relevant licence conditions 13 and 14.

6.50 The Working Group noted the responses. The Charging Objectives that the Working Group considers are best facilitated by this change are set out in Section 12 of this report.

**Question 19: Do you have any comments on the proposed legal text for DCP 172?**

6.51 Three respondents had no further comments on the legal text. One respondent advised that the definitions under Option 3 or 4 need to be refined. Another respondent advised that in the DCP 162<sup>2</sup> Authority decision letter it was stated that the examples “do not necessarily represent the Minimum Scheme and are provided purely for illustrative purposes”. This respondent asked whether the Working Group is satisfied that the proposed minimal change to the wording in the main body of text in Options 1 and 2 are sufficient.

6.52 The Working Group considered that the methodology must be consistent and covers a wide range of connection scenarios. Some Working Group members considered that the Examples form part of the methodology equal to the legal text. Members considered the observation important but thought it was unclear what further change could be made to the main body of the text to provide further clarity.

6.53 The Working Group noted the responses.

## **7 OUTCOME OF DISCUSSIONS ON THE DCP 172 CONSULTATION ONE**

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7.1 The Working Group reviewed the consultation document and added further explanation for customers. The red-lined legal text was revised so that it did not just highlight the differences between the Options but was red-lined against the DCUSA wording. The legal text was also updated to reflect the changes to the New Network Capacity definition due to the implementation of the DCP 162<sup>3</sup> change.

7.2 The Working Group noted that a DG attendee to the Working Group had considered raising an alternate proposal by developing a new voltage rise Cost Apportionment Factor (CAF) caused by the addition of generation as another solution to this change. This respondent

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<sup>2</sup> Non-Secure Connections in the Common Connections Charging Methodology

decided not to raise an Alternate and decided to accept the logic behind Options 2 and 4. The attendee advised that there are situations where it could be argued whether the restrictive determination of voltage driven reinforcement should be triggered at all where the existing assets could be used better. The Working Group noted the attendee's concern.

## **8 DCP 172 CONSULTATION ONE RE-ISSUED**

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- 8.1 Following consideration of the consultation one responses, the Working Group concluded that there was not sufficient DG engagement on this change and agreed to re-issue the consultation (Attachment 5) with an invitation to those contacted to circulate the DCUSA consultation more widely. The Energy Networks Association (ENA) took the opportunity to issue the DCP 172 consultation to their members. UK Power Networks issued the consultation to their list of DG contacts. This consultation was highlighted to members of the CCMF which is regularly attended by customers. The consultation was also issued to a list of DG contacts including (but not exclusive to) renewable organisations such as the Renewable Energy Association, Renewable UK and the Solar Trade Association.
- 8.2 The Working Group made minor amendments to the consultation based on feedback from a DG attendee to the DCP 172 Working Group meeting to review the initial consultations responses.
- 8.3 There were two responses received to the consultation. Both respondents were Distributors. The Working Group discussed each response and its comments are summarised alongside the collated consultation responses in Attachment 5.

### **Question 1: Do you understand the intent of the DCP 172?**

- 8.4 All respondents understood the intent of the change. One respondent noted that their views had not changed since the first issue of this consultation in November 2014.

### **Question 2: Are you supportive of the principles of the DCP 172?**

- 8.5 All respondents were supportive of the principles of the DCP 172 change.

### **Question 3: Options 1-4 have been set out in table 1 of this consultation. Which Option do you prefer and why?**



8.6 One respondent supported both Options 1 and 4 and another respondent only Option 1 as a solution to this change. The rationale provided is set out below:

**Option 1**

- It properly takes account of the actual limiting factor for New Network Capacity and is the most appropriate option for the circumstances under consideration.
- It is transparent and simple to administer. Where reinforcement is required because of voltage limitations it is logical to assess the new network capacity based on the voltage rise constraints following the reinforcement.

**Option 4**

- Uses a methodology to identify scenarios where the reinforced assets are likely to also provide usable 'demand' capacity and which leads to the thermal capacity method being used. Option 4 provides a simple mechanism to define which of the two calculation methods should apply.

8.7 The Working Group considered the responses and agreed to add wording to the change report on how Option 1 takes account of the actual limiting factor for New Network capacity.

**Question 4: Options 1-4 have been set out in table 1 of this consultation. Which Option would you definitely not support and why?**

8.8 One respondent advised that they would not support Option 3 as the definition of Complete Asset could lead to different interpretations of this solution. The second respondent advised that they would not support Option 2 as this proposed solution recognizes thermal capacity created with very little correlation to system constraints that may still exist for generation following the reinforcement of the network.

8.9 The Working Group agreed to consider in the change report how there maybe gaming opportunities if a solution was progressed that introduced definitions that were open to interpretation.

**Question 5: Do you support Option 1 to always apply the voltage rise method?**

8.10 All respondents support Option 1.

**Question 6: Can you identify any additional advantages or disadvantages to Options 1-4 that are not captured in table 1 of this consultation? Please comment.**

8.11 The respondents did not identify any additional advantages or disadvantage to Options 1-4.

**Question 7: Do you agree with the high level approach of Option 3?**

8.12 One respondent did not agree with Option 3. The second respondent commented that:

- Option 3 may recognise thermal capacity created as a by-product of reinforcement that could be utilised in predominantly demand areas but is potentially difficult to administer, could be subjective in some instances and is not as transparent.

8.13 The Working Group noted the responses.

**Question 8: If you are in agreement with the high level approach of Option 3, do you agree with the detail of this approach? Please provide any alternative methodology which could be employed.**

8.14 One respondent advised that the question was not applicable and the other respondent referred to their preceding answer.

**Question 9: Do you agree with use of the consideration of a substantial asset and if so would you have any alternative way of defining this term?**

8.15 The first respondent chose not to provide an alternate as the alternate would only be applicable to Option 3 which they did not support. The second respondent advised that the definition of substantial asset was arbitrary and that the justification for using any thresholds would require explanation.

8.16 The Working Group noted that the Option 1 solution avoids use of arbitrary thresholds.

**Question 10: Do you agree with use of the consideration of a complete asset and if so would you have any alternative way of defining this term?**

8.17 The first respondent agreed with the simplified term of Complete Asset under Option 4 as opposed to Option 3. The second respondent considered that the Complete Asset definition was open to interpretation especially in regards to complex networks.

8.18 The Working Group noted the responses.

**Question 11: Do you agree with use of the consideration of a Demand Dominated Network?**

8.19 The first respondent agreed with the use of the consideration of a Demand Dominated Network. Whilst the second respondent considered that it depended on how it was measured as it could be subjective.

8.20 The Working Group noted the responses.

**Question 12: Do you agree with use of the consideration of a Number of Customers Threshold?**

8.21 The first respondent advised that a Number of Customers Threshold was a consideration under Option 3 only. This respondent preferred Option 4. The second respondent considered the definition to be arbitrary which would require explanation if used.

8.22 The Working Group noted the responses.

**Question 13: Do you consider that Option 3 is more appropriate than Option 4? Please explain.**

8.23 The first respondent did not consider Option 3 more appropriate than Option 4 as it is overly complicated. The second respondent considered that the solution may be workable but was subject to arbitrary rules.

8.24 The Working Group noted the responses.

**Question 14: Do you consider that Option 4 is more appropriate than Option 3? Please explain.**

8.25 The first respondent considered Option 4 more appropriate as it sets out the circumstances under which each of the two methodologies apply making it easier to put in practice than Option 3. The second respondent advised that Option 4 may be workable but was still subject to arbitrary rules.

8.26 The Working Group noted the responses.

**Question 15: What are the potential costs of this change? Which option for your organisation would have the lowest or highest cost?**

8.27 The first respondent pointed out that they currently only use the thermal methodology and so any move away from this position would potentially lead to higher connection charges in

their areas. The second respondent considered that the costs to this solution would be limited to additional administrative burden which are at their highest under Options 3 and 4.

8.28 The Working Group noted the responses.

**Question 16: Are you supportive of DCP 172 being implemented at the next DCUSA release following Authority consent?**

8.29 Both respondents were supportive of the DCP 172 change being implemented in the next DCUSA Release Following Authority Consent.

8.30 The Working Group noted the responses.

**Question 17: Which DCUSA General Objectives does the CP better facilitate? Please provide supporting comments.**

- 1. The development, maintenance and operation by each of the DNO Parties and IDNO Parties of an efficient, co-ordinated, and economical Distribution System.**
- 2. The facilitation of effective competition in the generation and supply of electricity and (so far as is consistent with that) the promotion of such competition in the sale, distribution and purchase of electricity.**
- 3. The efficient discharge by each of the DNO Parties and IDNO Parties of the obligations imposed upon them by their Distribution Licences.**
- 4. The promotion of efficiency in the implementation and administration of this Agreement and the arrangements under it.**
- 5. compliance with the Regulation on Cross-Border Exchange in Electricity and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.**

8.31 Both respondents considered that Objective 3 was better facilitated by this change for the following rationale:

- by adding further clarity to the CCCM which allows distributed generators, other developers and Independent Connection Providers (ICPs) to estimate more accurately the costs they will be subject to; and
- Licence Condition 13 requires each DNO to have in force a connection charging methodology and this CP allows the DNO to discharge this obligation efficiently by ensuring the methodology is, as far as reasonably possible, balanced and clear.

8.32 The Working Group noted the responses. The General Objectives that the Working Group considers are best facilitated by this change are set out in Section 12 of this report.

**Question 18: Which DCUSA Charging Objectives does the CP better facilitate? Please provide supporting comments.**

- 1. that compliance by each DNO Party with the Charging Methodologies facilitates the discharge by the DNO Party of the obligations imposed on it under the Act and by its Distribution Licence**
- 2. that compliance by each DNO Party with the Charging Methodologies facilitates competition in the generation and supply of electricity and will not restrict, distort, or prevent competition in the transmission or distribution of electricity or in participation in the operation of an Interconnector (as defined in the Distribution Licences)**
- 3. that compliance by each DNO Party with the Charging Methodologies results in charges which, so far as is reasonably practicable after taking account of implementation costs, reflect the costs incurred, or reasonably expected to be incurred, by the DNO Party in its Distribution Business**
- 4. that, so far as is consistent with Clauses 3.2.1 to 3.2.3, the Charging Methodologies, so far as is reasonably practicable, properly take account of developments in each DNO Party's Distribution Business**
- 5. that compliance by each DNO Party with the Charging Methodologies facilitates compliance with the Regulation on Cross-Border Exchange in Electricity and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.**

8.33 One respondent considered that both Charging Objectives 1 and 3 were better facilitated by this change. The second respondent considered that only Charging Objective 1 was

better facilitated. The rationale behind those choices is set out below:

#### **Charging Objective 1**

- Improved clarity within the CCCM will help ensure more consistent application in accordance with the relevant licence conditions 13 and 14.

#### **Charging Objective 1 and 3**

- by adding further clarity to the CCCM which allows distributed generators, other developers and ICPs to estimate more accurately the costs they will be subject to.

8.34 The Working Group noted the responses. The Charging Objectives that the Working Group considers are best facilitated by this change are set out in Section 12 of this report.

#### **Question 19: Do you have any comments on the proposed legal text for DCP 172?**

8.35 The first respondent pointed out a missing bracket in the Demand Dominated Networks definition. The second respondent suggested that if Options 3 or 4 were progressed then the definition would need to be refined.

8.36 The Working Group noted the responses.

#### **Question 19: Are there any alternative solutions, refinements to any of the proposed solutions or any other matters that should be considered by the Working Group?**

8.37 Both respondents had no further matters for consideration by the Working Group.

### **9 THE RATIONALE BEHIND THE WORKING GROUP DECISION TO SUPPORT OPTION 1**

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9.1 The Working Group considers that Option 1 is simple, supports existing practice, is consistent with the rest of the methodology, can be precisely calculated and consistently applied.

9.2 It is fundamentally linked to the driver for the reinforcement and is based on an appropriate proportion of the new network capacity relating to DG.

9.3 It is noted that it will sometimes result in a 100% charge to the connecting customer. However, the circumstances where it may result in a 100% charge are normally where the extent of reinforcement (and therefore also the costs) has been limited to that required to

keep the voltage rise within acceptable limits such that capacity would only be available to other users if further reinforcement works are carried out.

- 9.4 It is consistent with other parts of the connection charging methodology in that it is based on the direct technical considerations for the connection e.g. it is consistent with the existing use of Voltage Drop in the calculation of New Network Capacity for a demand connection.
- 9.5 It is clear, simple and transparent. The Cost Apportionment Factor may be calculated precisely and is not dependent on new defined terms being added to the methodology which are not used elsewhere.
- 9.6 Respondents expressed a number of concerns with the proposed new defined terms that would be used within the other Options. Respondents also expressed concerns with Option 2 including that it is not cost reflective of the driver for reinforcement.
- 9.7 The Working Group has achieved consensus support for Option 1 amongst its members.
- 9.8 The Option 1 methodology is supported by Ofgem determination RBA/TR/A/DET/184.
- 9.9 The Working Group has noted that other Options rely on the introduction of newly defined terms. The Working Group considers it inappropriate to create new terms that will only apply in a limited number of circumstances where the voltage rise limit defines the New Network Capacity. It is also considered inappropriate to introduce new terms that are open to interpretation. For example the definitions proposed for Complete Asset and Demand Dominated Network are open to a degree of interpretation in relation to the number of interconnected circuits and the time of the demand/generation assessment, respectively. It is also considered inappropriate to introduce new terms that are in themselves subjective. For example, the defined limitations within the terms Substantial Asset and Number of Customers Threshold are not based on any factual considerations but only subjective assessment.
- 9.10 The use of new defined terms within the other Options may give rise to gaming opportunities. This is because they introduce thresholds either side of which result in different treatment within the connection charge assessment. For example the connection applicant could choose to select its DG capacity output specifically to be at a value that

would more likely attract the thermal method of cost apportionment under operation of the Demand Dominated Network assessment.

9.11 The Working Group has noted the comment made by Ofgem in its determination i.e. “We recognise that, due to the current wording in the CCCM, other interpretations as to the treatment of voltage rise could exist.” The Working Group has considered, proposed and consulted upon other interpretations but must conclude that they have significant disadvantages compared to Option 1.

9.12 In consideration of the above, the Working Group recommends Option 1 as the most appropriate solution.

## **10 PROPOSED LEGAL TEXT**

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10.1 The proposed legal text has been reviewed by the DCUSA Legal Advisor and acts as Attachment Two. This CP changes the wording of ‘Voltage Drop’ to ‘Voltage Change’ in the New Network Capacity definition to ensure that the DNO can apply a calculation to apportion costs for the installation of assets required due to Voltage Rise. Three supporting Examples are included to show how the voltage rise calculation is treated.

## **11 DCP 172 – WORKING GROUP CONCLUSIONS**

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11.1 The Working Group reviewed each of the responses received to consultation one and concluded that all of the respondents understood the intent of DCP 172.

11.2 The Working Group agreed that all respondents were supportive of the principle of the CP.

11.3 The Working Group unanimously agreed to support Option 1 as the solution to this change. Please see section 12.

11.4 The Working Group noted that all respondents felt that specifically DCUSA General Objectives 3 and DCUSA Charging Objective 1 were better facilitated by this change.

11.5 The Working Group concluded that the primary benefit of this CP is that it amends the Common Connection Charging Methodology (CCCM) to clearly set out the way in which Voltage Rise is treated in determining the New Network Capacity within the cost apportionment factor. This change will help to ensure that the treatment of Voltage Rise is applied consistently by DNOs and provide clarity to Customers.



## 12 EVALUATION AGAINST THE DCUSA OBJECTIVES

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12.1 The Working Group considers that DCUSA General Objective 3 and DCUSA Charging Objective 1 are better facilitated by DCP 172. The reasoning against the objectives is set out below:

**General Objective Three** – *The efficient discharge by the DNO Parties and IDNO Parties of obligations imposed upon them in their Distribution Licences.*

**Charging Objective One** - *That compliance by each DNO Party with the Charging Methodologies facilitates the discharge by the DNO Party of the obligations imposed on it under the Act and by its Distribution Licence.*

**Working Group view on DCP 172:** The Working Group agreed that DCUSA General Objective 3 and DCUSA Charging Objective 1 are better facilitated by this change.

DNOs are obliged by Standard Licence Condition (SLC) 13.1 to have Connection Charging Methodologies which are defined in SLC 1 to mean “a complete and documented explanation, presented in a coherent and consistent manner, of the methods, principles, and assumptions that apply in relation to connections, for determining Connection Charges”. DNOs consider that by clarifying the way in which the Connection Charging Methodologies are applied, the proposals would better facilitate the discharge by DNOs of their obligations under the Agreement. This change will facilitate the consistent application by all DNOs of the appropriate way in which Voltage Rise is taken into consideration in determining the New Network Capacity within the cost apportionment factor thus facilitating SLC 13.1 and DCUSA General Objective 3 and DCUSA Charging Objective 1.

## 13 IMPACT ON GREENHOUSE GAS EMISSIONS

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13.1 In accordance with DCUSA Clause 11.14.6, the Working Group assessed whether there would be a material impact on greenhouse gas emissions if DCP 172 were implemented. The Working Group did not identify any material impact on greenhouse gas emissions from the implementation of this CP.

## 14 IMPLEMENTATION

14.1 Subject to Party approval and Authority consent, DCP 172 will be implemented in the next DCUSA release following Authority consent.

## 15 PANEL RECOMMENDATION

15.1 The DCUSA Panel approved the DCP 172 Change Report on 17 February 2016. The timetable for the progression of the CP is set out below:

Activity	Date
Change Report approved by DCUSA Panel	17 February 2016
Change Report Issued for Voting	19 February 2016
Party Voting Closes	11 March 2016
Change Declaration Issued	15 March 2016
Authority Decision	19 April 2016
Implementation <sup>4</sup>	Next DCUSA Release Following Authority Consent

## 16 ATTACHMENTS:

- Attachment 1 – DCP 172 Voting Form
- Attachment 2 – DCP 172 Proposed Legal Text
- Attachment 3 - DCP 172 Change Proposal
- Attachment 4 – DCP 172 Consultation One Documents
- Attachment 5 – DCP 172 Consultation One Re-issued Documents
- Attachment 6 – Ofgem Determination
- Attachment 7 – Request for Information and DNO responses

<sup>4</sup> The next DCUSA release is scheduled for the 30 June 2016.