

## Part A: Generic

DCUSA Change Proposal (DCP)		At what stage is this document in the process?
<h1>DCP 328:</h1> <h2>Use of system charging for private networks with competition in supply</h2> <p><i>Insert date raised: 15<sup>th</sup> August 2018</i></p> <p><i>Proposer Name: Andrew Enzor</i></p> <p><i>Company Name: Northern Powergrid</i></p> <p><i>Company Category: DNO</i></p>		01 – Change Proposal
		02 – Consultation
		03 – Change Report
		04 – Change Declaration
<p>Purpose of Change Proposal:</p> <p>The intent of this change is to ensure that use of system charging remains cost-reflective when competition in supply on a private network is in place.</p>		
	<p>Governance:</p> <p>The Proposer recommends that this Change Proposal should:</p> <ul style="list-style-type: none"> <li>• Be treated as a Part 1 Matter</li> <li>• Be treated as a Standard Change</li> <li>• Proceed to Working Group</li> </ul> <p>The Panel will consider the proposer’s recommendation and determine the appropriate route.</p>	
	<p>Impacted Parties:</p> <p>DCUSA parties: Suppliers, DNOs and IDNOs</p> <p>Others: private network operators and customers connected to private networks. Potential impact on data collectors or the Supplier Volume Allocation Agent also, should an accompanying Balancing and Settlement Code change be required.</p>	
	<p>Impacted Clauses:</p> <p>To be determined by a working group.</p>	

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Indicative Timeline		 020 7432 3011
<b>The Secretariat recommends the following timetable:</b>		
Initial Assessment Report		08 August 2018
Consultation Issued to Industry Participants		TBC
Change Report Approved by Panel		21 November 2018
Change Report issued for Voting		23 November 2018
Party Voting Closes		14 December 2018
Change Declaration Issued to Authority		18 December 2018
Authority Decision		6 February 2019
		 07843 618994
		 <a href="mailto:DCUSA@electralink.co.uk">DCUSA@electralink.co.uk</a>
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## 1 Summary

### What?

There are several scenarios in which multiple customers can be connected to an electricity distribution system operated by a licence exempt distributor (i.e. to a 'private network'), with that network then connected to the local licensed distribution network operator's (DNO's) network further upstream. Common examples include airports which often have a single point of connection to the local DNO network, with a private network serving individual shops and operations within the terminal buildings. Private networks also exist for generation sites and are becoming increasingly common for the 'co-location' of storage, whereby a storage facility is added to (for example) a wind farm to give control over the time periods in which the power generated by the wind farm is exported onto the DNO network.

Where such private networks exist, there is only one connection to the DNO network at the point where the private network connects to the wider network. The private network then serves multiple customers, generally operating under an exemption from holding a distribution licence. In some circumstances, the private network operator will appoint an electricity supplier, and will pay a single electricity bill in respect of a single Meter Point Administration Number (MPAN) at the DNO to private network boundary, which is then shared amongst the customers connected to the private network through some agreed contractual framework (potentially using some private metering on each customer's connection to the private network to determine that customer's share of the total).

Customers connected to a private network are entitled to request competition in supply, which private network operators are obliged to deliver if requested. This means that, rather than the customer paying their share of the total electricity bill for the entire private network, the customer can enter into contract with their chosen supplier to provide their electricity and pay a separate electricity bill to that supplier. In order to facilitate this, DNOs are required to provide additional MPANs to be used for customers who have requested competition in supply in order to differentiate units which relate to that customer from the remainder of the customers connected to the private network.

This creates complications for use of system charging. For half hourly site-specific settled customers (i.e. those in measurement class C, D or E), DNOs receive usage data by MPAN in order to invoice use of system charges, with an invoice being issued per MPAN per month. Hence when competition in supply is in place, if the DNO followed standard processes, it would issue an invoice in respect of each MPAN, some of which in fact relate to customers connected to the private network.

The DNO only has a relationship with the private network operator (as the party which has a connection to the DNO network), with that relationship likely to be underpinned by a connection agreement, detailing the maximum import (and if applicable maximum export) capacities of the private network.

At a minimum, the DCUSA requires clarification as to how DNOs should apply use of system charges to suppliers which supply customers connected to private networks.

## Why?

Without clarity in the methodology, there is a risk that different DNOs will take different approaches, undermining the intended commonality of the charging methodologies.

Competition in supply on a private network does not alter the use of the DNO's network; hence the use of system charges faced by the multiple suppliers involved when competition in supply is in place should sum to the same total as would be applied if a single supplier were supplying the site as a whole.

When competition in supply is not in place (i.e. there is a single supplier and one MPAN) fixed and capacity charges would be applied in respect of that single MPAN. Where competition in supply is in place (i.e. there are multiple suppliers and multiple MPANs), if all tariff elements are applied in respect of all MPANs (as would be expected), multiple fixed and capacity charges would be applied. This undermines the intended equivalence in charges faced by the single supplier (where competition in supply is not in place) and the sum of charges faced by multiple suppliers (where competition in supply is in place).

## How?

There are a number of possible solutions to this issue which are discussed in detail in section 3.

## 2 Governance

### Justification for Part 1 and Part 2 Matter

The Proposer considers that this Change Proposal should be considered a Part 1 Matter as it satisfies one or more of the following criteria:

- a) it is likely to have a significant impact on the interests of electricity consumers;
- b) it is likely to have a significant impact on competition in one or more of:
  - i. the generation of electricity;
  - ii. the distribution of electricity;
  - iii. the supply of electricity; and
  - iv. any commercial activities connected with the generation, distribution or supply of electricity;

### Requested Next Steps

This Change Proposal should:

- Be treated as a Part 1 Matter
- Be treated as a Standard Change
- Proceed to Working Group

## 3 Why Change?

There are several scenarios in which multiple customers can be connected to an electricity distribution system operated by a licence exempt distributor (i.e. to a 'private network'), with that network then connected to the local DNO's network further upstream. Common examples include airports which often have a single point of connection to the local DNO network, with a private network serving individual shops and operations within the terminal buildings. Private networks also exist for generation sites and are becoming increasingly common for the 'co-location' of storage, whereby a storage facility is added to (for example) a wind farm to give control over the time periods in which the power generated by the wind farm is exported onto the local DNO network.

Where such private networks exist, there is only one connection to the DNO network at the point where the private network connects to the wider network. The private network then serves multiple customers, generally operating under an exemption from holding a distribution licence. In some circumstances, the private network operator will appoint an electricity supplier, and will pay a single electricity bill in respect of a single MPAN at the DNO to private network boundary, which is then shared amongst the customers connected to the private network through some agreed contractual framework.

A simple example is shown in Figure 1.

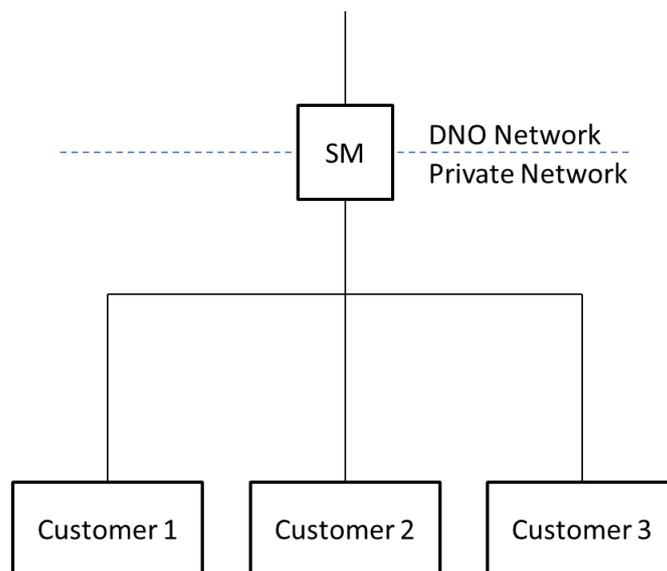


Figure 1 - three customers on a private network

The meter marked as 'SM' will be used in Settlement, and the commercial arrangement with the supplier will be with the private network operator. The private network operator is then likely to pass through the charges from the supplier to the end customers – to do so, it may use private (i.e. non-Settlement) meters for each customer to derive the amount due from each customer, or the energy cost could be included in the lease of the site for each customer.

Customers connected to a private network are entitled to request competition in supply, which private network operators are obliged to deliver if requested. This means that, rather than the customer paying their share of the total electricity bill for the private network, the customer can enter into contract with their chosen supplier to provide their electricity and pay a separate electricity bill to that supplier. In order to

facilitate this, DNOs are required to provide additional MPANs to be used for customers who have requested competition in supply in order to differentiate units which relate to that customer from the remainder of the customers connected to the private network.

If customer 1 in the example above now wishes to use a different supplier to that used by customers 2 and 3, there are three possible metering arrangements which can be used which will facilitate competition in supply on a private network, namely:

- difference metering;
- full Settlement metering; or
- shared metering.

Under all metering options, the DNO is obliged to provide Meter Point Administration Services (MPAS) to customers on the private network and in so doing provides MPANs against which metering data is recorded in Settlement.

### Difference Metering

In order for difference metering to be used to facilitate competition in supply for customer 1, metering arrangements as shown in Figure 2 would be required.

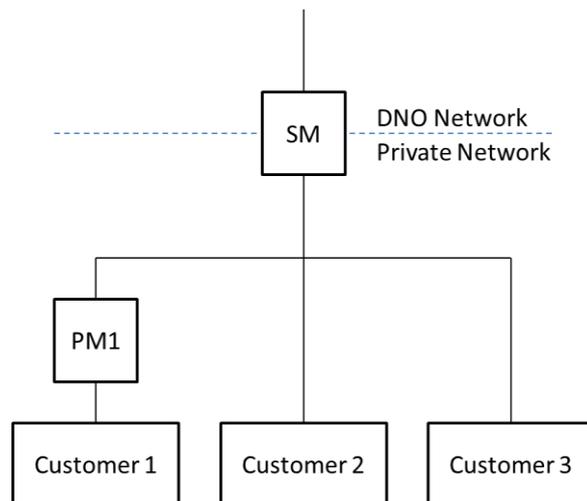


Figure 2 - competition in supply using difference metering

In order for difference metering to be used, all metering systems involved ('PM1' and 'SM' in this example) must be half hourly metering systems.

Under a difference metering approach, Settlements metering measuring customer 1's usage ('PM1') will be used in Settlement for their units under a separate MPAN. These units will also have flowed through the boundary meter ('SM') and so a correction is required to avoid double counting. This is made through differencing units used by customer 1 ('PM1') from units through the boundary ('SM'). For example, if customer 1 were to now be supplied by 'supplier A' using 'MPAN A' and customers 2 and 3 now supplied by 'supplier B' using 'MPAN B', the units in Settlement for the two suppliers would be as follows:

- *Supplier A Units = MPAN A = PM1*
- *Supplier B Units = MPAN B = SM - PM1*

This maintains Settlement accuracy by ensuring that units are counted in Settlement once and only once.

## Full Settlement Metering

In order for full Settlement metering to be used to facilitate competition in supply for customer 1, metering arrangements as shown in Figure 3 would be required.

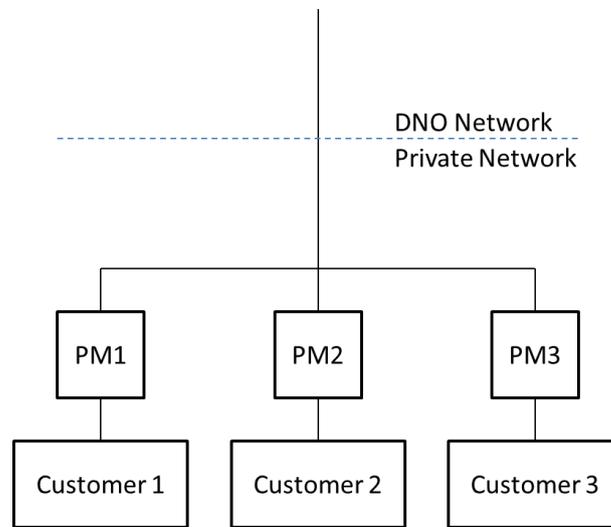


Figure 3 - competition in supply using full Settlement metering

The full Settlement metering solution requires each customer to have its own metering and its own supplier with no metering at the DNO to private network boundary. The Balancing and Settlement Code refers to such an arrangement as an 'Associated Distribution System'. Full Settlement metering can be used with either half hourly metering systems, non-half hourly metering systems, or a combination of the two, and is often used for connections such as blocks of flats, where the DNO to private network boundary is at the base of the building whilst each flat is separately metered – the rising mains within the building form a private network or 'Associated Distribution System'.

Under a full Settlement metering approach, Settlements metering measuring the usage of customer 1, customer 2 and customer 3 would be used in Settlement under separate MPANs, with the boundary meter (previously 'SM') no longer used.

Assuming the customers use the same suppliers as under the difference metering example, customer 1 would be supplied by 'Supplier A' using 'MPAN A', customer 2 would be supplied by 'Supplier B' using 'MPAN B' and customer 3 would be supplied by 'Supplier B' using 'MPAN C'. The units in Settlement for the two suppliers would be as follows:

- *Supplier A Units = MPAN A = PM1*
- *Supplier B Units = MPAN B + MPAN C = PM2 + PM3*

This maintains Settlement accuracy by ensuring that units are counted in Settlement once and only once.

## Shared Metering

In order for shared metering to be used to facilitate competition in supply for customer 1, metering arrangements as shown in Figure 4 would be required.

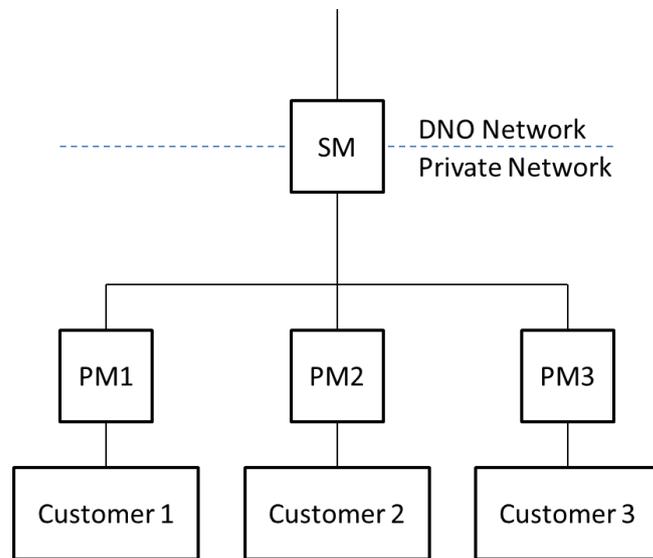


Figure 4 - competition in supply using shared metering

In order for shared metering to be used, all metering systems involved must be half hourly metering systems.

Under a shared metering approach, Settlements metering at the boundary (i.e. measuring the usage of all three customers) is used to determine the total units entered into Settlement, with non-Settlement metering measuring the usage of each individual customer being used to determine the proportion of the total units in Settlement which is allocated to each supplier. The means of allocation is agreed between the suppliers in question, with the most straightforward mechanism being simply proportional to the units used by each customer, with an adjustment made for the difference between the total of the private metering and the Settlement metering. This would ensure that the total units in Settlement always sum to the total metered by the Settlements metering.

Assuming the customers use the same suppliers as under the difference metering example, customer 1 would be supplied by 'Supplier A' using 'MPAN A', and customers 2 and 3 would be supplied by 'Supplier B' using 'MPAN B'. The units in Settlement for the two suppliers would be as follows:

- $Supplier\ A\ Units = MPAN\ A = SM \times ( PM1 / ( PM1 + PM2 + PM3 ) )$
- $Supplier\ B\ Units = MPAN\ B = SM \times ( PM2 + PM3 / ( PM1 + PM2 + PM3 ) )$

This maintains Settlement accuracy by ensuring that units are counted in Settlement once and only once.

## Use of System Charging Implications

Under all metering options, the DNO to private network operator boundary remains unaltered, and the only connection agreement is between the private network operator and the DNO, with the agreed capacity reflecting the agreed capacity at the boundary. Assuming each of the customers does not alter their usage in this process, this will remain appropriate, as units through the boundary will not change. Given the boundary arrangements have not changed, and usage of the DNO network has also not changed, total use of system charges should not change.

However, under each of the three metering options there will be multiple MPANs with metering data in Settlement. Under normal processes, the DNO would assign a tariff to each MPAN reflecting the type of customer connected and the voltage of connection, and then invoice the registered supplier of each MPAN accordingly based on data received through Settlement.

This results in several issues for use of system charging and associated administration:

1. **Assigning tariffs:** Depending on the tariffs which the DNO assigns to each customer, there is a risk that the DNO will be invoicing in respect of assets which are in fact private network assets. For example, a customer within a private network could be connected to the LV network whilst the DNO to private network boundary is at the HV/LV substation. If the DNO were to assign tariffs based on the voltage of connection of the customer, it would assign an LV network tariff to the embedded customer and so would be charging in respect of LV circuit assets which it does not own or operate.
2. **Losses within the private network:** Under the difference metering and full Settlement metering approaches, losses within the private network will not be accounted for in the units in Settlement. This issue is particularly prevalent if customers within the private network are at lower voltage than the boundary (i.e. if there is some transformation within the private network, and so corresponding transformation losses). The units in Settlement for a customer embedded within the private network will not reflect the flows at the DNO to private network boundary which that customer caused, because losses will have been incurred between the boundary and the customer metering.
3. **Fixed charges:** Where competition in supply is not in place, one fixed charge will be applied in respect of the one MPAN at the boundary. Where competition in supply is in place, fixed charges will be applied in respect of all MPANs.
4. **Agreed capacity charges:** Where competition in supply is not in place, one agreed capacity charge will be levied at the boundary, based on the capacity agreed between the DNO and the private network operator, formalised in a connection agreement. It is not clear what agreed capacity the DNO should charge in respect of MPANs which relate to connections to the private network where the DNO has no commercial relationship with the customer and so no basis on which to determine the agreed capacity.
5. **Excess capacity charges:** Where competition in supply is not in place, one excess capacity charge will be levied at the boundary if the aggregate usage of all customers connected to the private network (as measured by the boundary metering) exceeds the agreed capacity at the

boundary; if not, no excess capacity charge will be levied. Even if the agreed capacity issue detailed in the previous point can be overcome by allocating boundary capacity to individual end users, diversity of usage within the network is problematic for excess capacity charging, where there is a possibility that some (or all) users exceed their allocated capacity at certain times whilst the private network as a whole remains within its agreed capacity as a result of different users exceeding their allocated capacity at different times. Thus simply allocating boundary capacity between end users on the private network may result in excess capacity charges being applied where none would be applied in the scenario where competition in supply is not in place.

6. **Charging for export sites:** If one of the sites within the private network includes some generation which exports onto the private network, the units exported are likely to be used by other customers within the private network, and so will offset flows at the DNO to private network boundary. The import and export units for each customer within the private network will be seen separately in Settlement, and so the DNO will charge import units and (where applicable) credit export units. Generation credits at a given voltage are not the inverse of demand charges at that voltage, and so the total use of system charge for customers connected to the private network will be different if the import and export from each customer is charged separately to that which would have been charged had all usage been charged at the boundary.
7. **Charging for reactive power:** Under the difference metering approach, reactive units metered at customer connections will be deducted from reactive units metered at the boundary. Such differencing will not accurately reflect reactive power flows at the boundary.
8. **Sites with multiple feeders:** there are complications for the difference metering arrangements where a private network has multiple feeders, each with a Connection Agreement, Agreed Capacity, and possible different voltages. Under this scenario it may not be clear to which of the multiple feeders the differencing should be applied.

## Part B: Code Specific Details

### 4 Solution and Legal Text

A working group should discuss potential solutions. These could include (but not be limited to):

1. Invoice only the boundary supplier;
2. Invoice all suppliers with a correction to fixed charges and some form of capacity allocation; or
3. Invoice all suppliers as if the customer were connected to the DNO network, with the private network operator able to 'claim' some use of system revenue back from the DNO in respect of private network assets.
4. Invoice the private network operator direct.

#### Option 1 – Invoice only the boundary supplier

Under this approach, the DNO would continue to invoice use of system charges only to the supplier registered to the boundary MPAN in Settlement. In order to invoice all units, this solution requires the

DNO to either receive or be in a position to calculate gross units at the boundary, where Settlement will only show net units (i.e. with units used by embedded customers having been differenced from the boundary MPAN).

This solution has the advantage of the DNO only invoicing in respect of the boundary, being where its responsibility ends. However, it results in the boundary supplier being invoiced use of system charges in respect of units which it has not supplied (i.e. the units used by embedded customers for whom another supplier is responsible). The solution is only compatible with the difference metering option as it relies on a 'principle' supplier being in place, where the full Settlement and shared metering options treat all suppliers of customers connected to the private network equally.

#### **Option 2 – Invoice all suppliers with a correction to fixed charges and some form of capacity allocation**

Under this approach, the DNO would invoice use of system charges to both the boundary supplier and the supplier of embedded customers (under the difference metering approach) or the suppliers of all embedded customers (under the full Settlement or shared metering approach), based on units received through Settlement, using the tariff which the DNO would apply if the customers were connected at the DNO to private network boundary. In this way, units would be charged once and only once.

A solution would be needed to the issues raised at the end of the 'Why Change' section. This could be achieved for fixed charges by applying discounted fixed charges which ensure that the total of fixed charges applied for the site is equivalent to the fixed charge which would be applied had there only been a single boundary MPAN, and through some means of capacity allocation for capacity charges.

#### **Option 3 – Invoice all suppliers as if the customer were connected to the DNO network, with the private network operator able to 'claim' some use of system revenue back from the DNO in respect of private network assets**

Under this approach, the DNO would invoice the supplier of both the embedded customers and the boundary supplier use of system charges as if those end customers were connected direct to its network. As a result, the DNO would have recovered some use of system charges in respect of assets on the private network, to which the private network operator should be entitled, and so the private network operator would be eligible to claim back a portion of use of system revenue from the DNO.

#### **Option 4 – Invoice the private network operator direct**

Under this approach, the DNO would invoice use of system charges direct to the private network operator only based on total units at the boundary, with no charges applied to the units recorded in Settlement against MPANs which relate to customers connected to the private network or against the boundary MPAN if applicable. The private network operator may then directly pass through the DNO's charges to customers connected to the private network or recover those costs through another means (e.g. included in the lease for each customer).

In order to invoice all units, this solution requires the DNO to either receive or be in a position to calculate gross units at the boundary, where Settlement will only show net units (i.e. with units used by embedded customers having been differenced from the boundary MPAN).

This solution has the advantage of the DNO only invoicing in respect of the boundary, being where its responsibility ends, and avoids the issues presented in option one where the boundary supplier is being

invoiced use of system charges in respect of units which it has not supplied (under the difference metering approach). Unlike option one this option is also compatible with all metering approaches.

### Legal Text

The working group should develop legal text once a solution has been agreed.

## 5 Code Specific Matters

### Reference Documents

DCP 158<sup>1</sup> and DCP 158A<sup>2</sup> previously sought to resolve this issue. Both were ultimately rejected by Ofgem, with its decision notice citing concerns over the increased administrative burden the change would create, and a lack of engagement from private network owners in the development of the solution. Whilst Ofgem rejected DCP 158, it stated support for the intent of the change. With increasing numbers of customers seeking competition in supply on private networks, it would now be appropriate for a working group to consider the options for resolution of the issues identified.

Elexon’s guidance on the metering arrangements for competition in supply<sup>3</sup> provides more detail on the difference metering, full Settlement metering and shared metering Settlement options.

## 6 Relevant Objectives

DCUSA Charging Objectives	Identified impact
<input type="checkbox"/> 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	None
<input type="checkbox"/> 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)	Positive
<input type="checkbox"/> 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	Positive

<sup>1</sup>[DCP158 - DNO DUoS re EDNOs](#)

<sup>2</sup>[DCP158A - DNO DUoS Re EDNOs](#)

<sup>3</sup><https://www.elexon.co.uk/documents/training-guidance/bsc-guidance-notes/third-party-access-to-licence-exempt-distribution-networks/>

<input type="checkbox"/> 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	Positive
<input type="checkbox"/> 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.	None
<input type="checkbox"/> 6 that compliance with the Charging Methodologies promotes efficiency in its own implementation and administration.	Negative
<p>Charging Objective one: no impact.</p> <p>Charging Objective two: better met, as the change will ensure that competition to supply customers connected to private networks is not distorted by the application of inappropriate use of system charges in respect of some or all customers connected to private networks.</p> <p>Charging Objective three: better met, as the change will ensure that the charges faced by multiple suppliers supplying customers on a private network are broadly equivalent to the charges faced by a single supplier supplying the private network operator on an equivalent site without competition in supply.</p> <p>Charging Objective four: better met, as DNOs are seeing increasing volumes of requests to facilitate competition in supply on private networks. Without the change and the regulatory clarity it seeks to create, there is a risk of a divergence in application of the common charging methodologies across DNO licensees.</p> <p>Charging Objective five: no impact.</p> <p>Charging objective six: perhaps not as well met, as the change may introduce additional complexity into the charging arrangements. This is considered necessary to ensure cost-reflectivity is maintained.</p>	

## 7 Impacts & Other Considerations

Depending on the solution developed, there may be a need for parallel changes to the Balancing and Settlement Code to ensure that DNOs either receive directly, or are able to calculate, the data needed to charge in line with the solution to this change.

## Does this Change Proposal impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

This change does not impact on any SCR currently in progress, nor is it expected to impact on the likely imminent SCR to be launched following Ofgem's consultation 'Getting more out of our electricity networks by reforming access and forward-looking charging arrangements'<sup>4</sup>

## Does this Change Proposal Impact Other Codes?

BSC	<input checked="" type="checkbox"/>
CUSC	<input type="checkbox"/>
Grid Code	<input type="checkbox"/>
MRA	<input type="checkbox"/>
SEC	<input type="checkbox"/>
Other	<input type="checkbox"/>
None	<input type="checkbox"/>

## Consideration of Wider Industry Impacts

This issue has been discussed on several separate occasions by the Distribution Charging Methodologies Development Group, which has led to this change being formally raised.

## Confidentiality

This change is non-confidential.

## 8 Implementation

The implementation approach will depend on whether a change to the calculation of charges is needed, or whether the intent can be met by simply amending the way in which charges are applied. If the latter is the case, it should be implemented as soon as practicable.

## Proposed Implementation Date

If no change to the calculation of charges is needed – as soon as practicable.

If a change to the calculation of charges is needed – 1 April 2021.

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<sup>4</sup> <https://www.ofgem.gov.uk/publications-and-updates/getting-more-out-our-electricity-networks-through-reforming-access-and-forward-looking-charging-arrangements>

## 9 Recommendations

*The Code Administrator will provide a summary of any recommendations/determinations provided by the Panel in considering the initial Change Proposal. This will form part of a Final Change Report.*