Sections 1 through to 7.4 are not impacted by CP1338

Appendices 8 through to 8.3.5 are not impacted by CP1338

8.4 Guide to Complex Sites

'Complex Site' means; any site that requires a 'Complex Site Supplementary Information Form' to enable the HHDC to interpret the standing and dynamic Metered Data relating to SVA MS for Settlement purposes to be provided to the HHDC in addition to the D0268 'Half Hourly Meter Technical Details'.

The primary electronic data flow between the HHMOA and HHDC for Half Hourly Meter Technical Details is the D0268. In the case of Complex Sites, this data flow alone is insufficient to accurately describe to the HHDC how to allocate the various channels of data that should be utilised in Settlements, therefore the D0268 is supplemented with the 'Complex Site Supplementary Information Form'.

The HHMOA should identify a Complex Site by providing a 'Complex Site Supplementary Information Form' in addition to the D0268 data flow to the HHDC and Supplier and indicating in the D0268 data flow that the site is complex. The 'Complex Site Supplementary Information Form' shall be sent no later than the sending of the D0268 or preferably in advance of the D0268 data flow. This action shall alert the HHDC to expect a 'Complex Site Supplementary Information Form' from the HHMOA containing details of how to configure the data collection requirements and passing of information to the HHDA and Supplier. The 'Complex Site Supplementary Information Form' should be sent electronically or by any other method agreed.

It is the responsibility of Suppliers to manage and co-ordinate their Agents to achieve compliance and to intervene should any issues arise.

The Supplier should identify to the HHMOA which MSIDs relate to the Import energy and which MSIDs relate to the Export energy.

Where the Complex Site is subject to Shared Meter Arrangements, one D0268 data flow and therefore one 'Complex Site Supplementary Information Form' is required. The D0268 'Complex Site Supplementary Information Form' shall be sent by the HHMOA to the HHDC and the Primary Supplier. The Primary Supplier shall decide whether this information shall be copied to the Secondary Supplier(s) and provide this information if required.

In many cases, a Complex Site shall meet the conditions required to apply for a Metering Dispensation as described in BSCP32 'Metering Dispensations'. Where Complex Sites use MS which are not fully compliant with the relevant CoP, a Metering Dispensation should be applied for via BSCP32. Once a Dispensation has been granted, the information shall be available for all future Suppliers, so that they shall have the ability to understand the metering configuration at the Complex Site. As part of the dispensation application process, the Supplier shall need to submit a simplified schematic diagram of the Complex Site connection arrangements and the proposed metering points, as required in BSCP32.

This Appendix 8.4.1 to 8.4.8~~7~~ provides a non-exhaustive list of Examples of Complex Sites and non-Complex Sites. These examples illustrate the need to create rules that accurately describe the aggregation necessary to derive the total energy for a customer. The aggregation

rule contains terms that define each metered quantity at each Meter Point and form part of the total energy. The HHMOA is required to define the terms in the aggregation rule relative to the data.

~~The following aggregation rule can be applied to all Complex Sites.~~

~~(Feeder A Active Export – Feeder A Active Import)+(Feeder B Active Export – Feeder B Active Import) + (Feeder n…~~

~~Simplified to (AAE – AAI) + (BAE – BAI)~~

~~Feeder A Feeder B to feeder n……~~

~~Where AE = Active Energy Export~~

~~AI = Active Energy Import~~

The HHDC is required to establish gross energy for the site for each Settlement Period. This is achieved by applying the aggregation rule to the metered data values. If the resultant value applied to the rule is positive, the site is Exporting, and the Import value is zero. Conversely, if the result is negative, then the site is Importing, and the Export value is zero. Where the resultant is zero, the site is neither importing nor exporting and both values shall be zero. ~~The number of mathematical terms in the aggregation rule is dependent on the number of feeders.~~

When the HHMOA indicates Complex Site on the D0268 data flow, the HHMOA is required to provide all the information necessary, via the 'Complex Site Supplementary Information Form', for the HHDC to aggregate correctly. As part of the supplementary information, the HHMOA is required to provide a schematic diagram of the MS.

Form BSCP514/8.4.8 'Complex Site Supplementary Information Form' provides a means for the HHMOA to convey the information necessary for correct aggregation. BSCP514/8.4.8a gives an overview of the data source and BSCP514/8.4.8b shows the information needed to collect that data.

Where meter channel data is missing, incomplete or incorrect, the HHDC should attempt to use the associated check data indicated on BSCP514/8.4.8a.

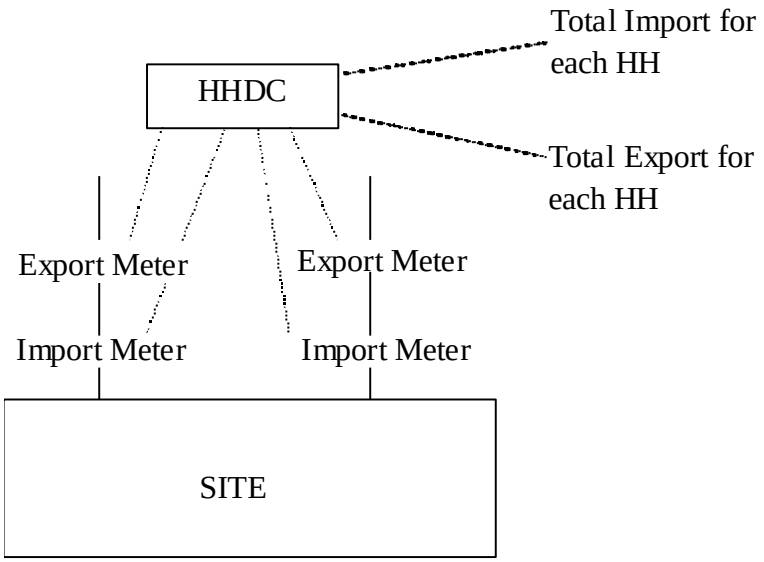
Where duplicated Outstations are provided, two sets of BSCP514/8.4.8a shall be provided each clearly indicating primary and secondary Outstations.

8.4.1 Off-site Totalisation

This example is an example of a non-Complex Site where multiple feeders exist.~~enter a Complex Site,~~ E~~-e~~ach feeder is normally equipped with Code of Practice compliant Meter(s). The HH data is collected and summated off-site by the HHDC and then submitted for Settlement as a single set of HH data.

Where both Import and Export Meters are present, the Export Meter shall be totalled in the same way as Import metering so that both calculations are gross.

For this reason, the netting of Export energy from Import energy should not be carried out. The BSC also states that there must be only one HHMOA for a MS that measures both Export and Import active energy.



No. of Import MSIDs = 1

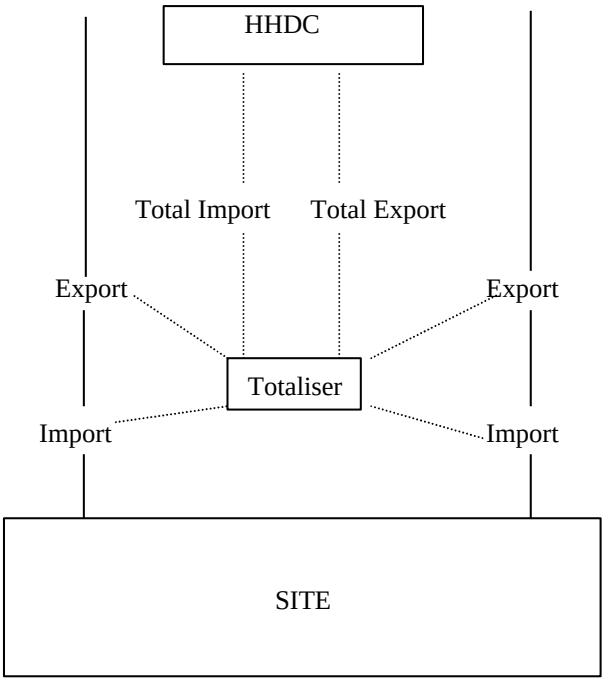
No. of Export MSIDs = 1

An alternative would be for each Import or Export Meter to have its own MSID. In this case, totalisation would be carried out by the HHDA as opposed to the HHDC, and the example above would have 2 Import MSIDs and 2 Export MSIDs. This arrangement would be more desirable since it is not a Complex Site and so would not require a Metering Dispensation.

8.4.2 On-site Totalisation

This is an example of a non-Complex Site, where totalisation is possible by intelligent Outstations, this is permitted provided Import and Export data are provided separately to the HHDC and then on to the HHDA for Settlement. In this example, two streams of data are sent from the on-site totaliser to the HHDC, one set of HH data for total Import and one set of HH data for total Export.

Netting of Exports and Imports shall not be permitted at site.



No. of Import MSIDs = 1

No. of Export MSIDs = 1

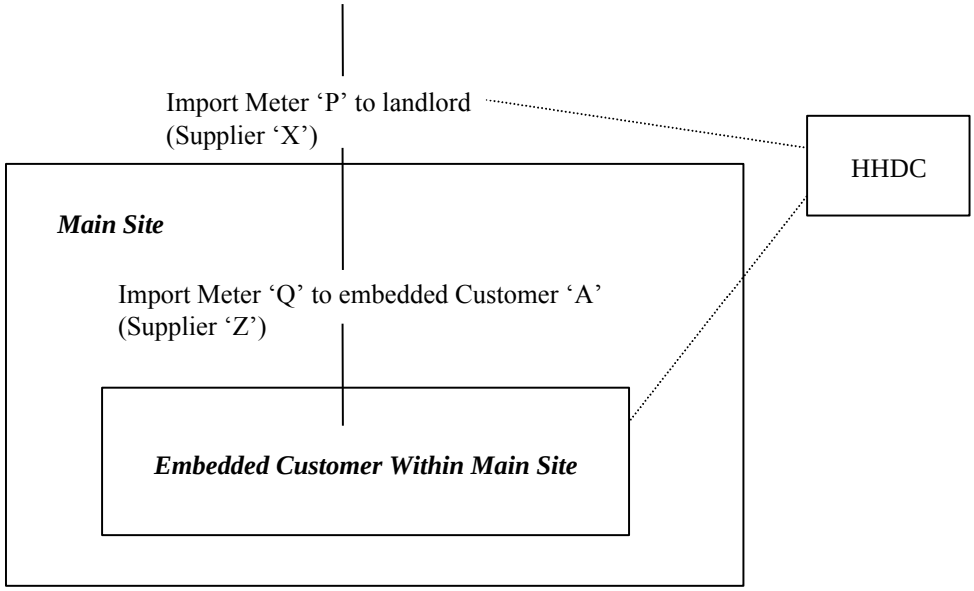
8.4.3 Embedded Customers within a Private Network

An example is where Customer 'A' within an industrial site takes energy directly from the landlord's internal network, but has a separate Supply contract with a licensed Supplier. The energy consumption of the landlord's network supply is determined by the netting of the Meters at the point of connection to the Distribution System and the individual Customer 'A' Meter.

This arrangement results in two distinct MSIDs. When traded in SMRS, to ensure the proper allocation of energy traded within the Settlement processes, **both the landlord's supply and the Customer 'A' supply shall have the same HHDC and HHMOA,** the same HHMOA being necessary for the processing of related D0268's. Different Suppliers and HHDAs would be acceptable.

A Metering Dispensation for each arrangement should be obtained before further MSIDs are created in SMRS for this type of customer.

The applied Line Loss Factors (LLFs) shall not take account of losses within the private network and should be left to the landlord and Customer 'A' to come to a mutual agreement. However, each traded MSID should have Voltage General or site Specific LLFs applied in the normal way for Settlement purposes.



Landlord energy for Supplier 'X' = Meter 'P' – Meter 'Q' HH data: 1 Import MSID

Customer 'A' energy for Supplier 'Z' = Meter 'Q' HH data: 1 Import MSID

No. of Import MSIDs = 2 (1 MSID for embedded customer and 1 for the landlord or Main site)

No. of Export MSIDs = 0

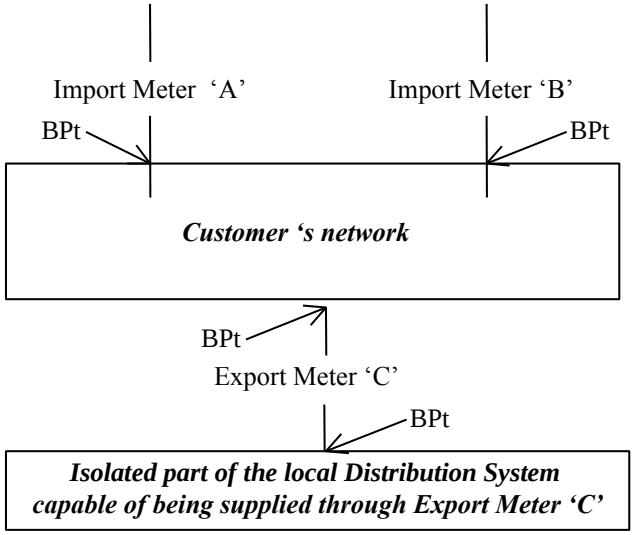
8.4.4 Feed Through Sites at the Same Voltage with no Embedded Generation

This is where a customer's network takes supply from the local Distribution System and feeds out from the customer's network at the same voltage to another part of the local Distribution System. In this example there is no embedded generation on the customer's network, and the isolated part of the local Distribution System is either incapable of being fed from any other source than via the customer's network, or would only be supplied from a different source (such as a restricted capacity feed from the main Distribution System) under abnormal conditions.

In this case, line losses within the customer network do not have to be considered since the feed into, and then out of, the customer network are assumed to have insignificant losses.

In this example, since there is no embedded generation, there is considered to be no Export. Import is derived as HH data:

Import Meter A + Import Meter B - Export Meter C.



BPt = Boundary Point

Import to the Customer's network = Import Meter 'A' + Import Meter 'B' – Export Meter 'C'

This is acceptable in SMRS since there is no on-site generation and an Export type Meter, Export Meter 'C', is measuring feed-through energy as opposed to embedded generation Export.

No. of Import MSIDs = 1

No. of Export MSIDs = 0

Export Meter 'C' may have its own MSID allocated if it is also acting as a demand Meter to another customer, although this would be dealt with separately for Settlements.

8.4.5 Feed Through Sites at Different Voltages

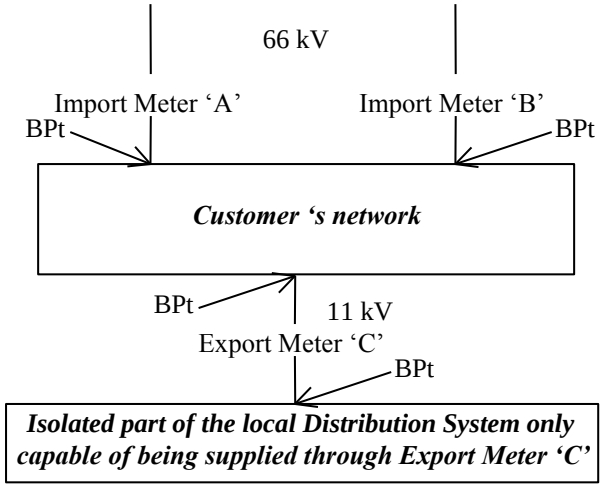
An example is where a factory takes supply at 66kV from the local Distribution System, and an 11kV feeder leaves the Complex Site to supply adjoining premises as part of the local Distribution System. In this example there is no embedded generation within the customer's network.

Voltage specific line losses can be applied to the HH data from Import Meter 'A', Import Meter 'B' and Export Meter 'C' to compensate for the losses incurred in the customer's network for passed through energy.

Totalisation would have to be carried out off-site by the HHDC, and after adjustment for line losses, Import is derived as HH data:

Import Meter A + Import Meter B - Export Meter C.

Since there is no embedded generation, there is considered to be no Export.



BPt = Boundary Point

Import to the Customer's network = Import Meter 'A' + Import Meter 'B' – Export Meter 'C'

This is acceptable in SMRS since there is no on-site generation and an Export type Meter, Export Meter 'C', is measuring feed through energy as opposed to embedded generation Export.

No. of Import MSIDs = 1

No. of Export MSIDs = 0

Export Meter 'C' may have its own MSID allocated if it is also acting as a demand Meter to another customer, although this would be dealt with separately for Settlements.

8.4.6 Feed-Through Sites with Embedded Generation

Where a customer's network has a feed through arrangement and has embedded generation within the Complex Site, the Complex Site demand and the true Export has to be determined.

It is assumed that the network supplied through Export Meter 'C' is connected to the local Distribution System through Import Meter 'A' so that customers connected to the isolated part of the local Distribution System preserve system time, i.e. both parts of the Distribution System are in synchronisation (Export generation protection shall prevent 'island generating').

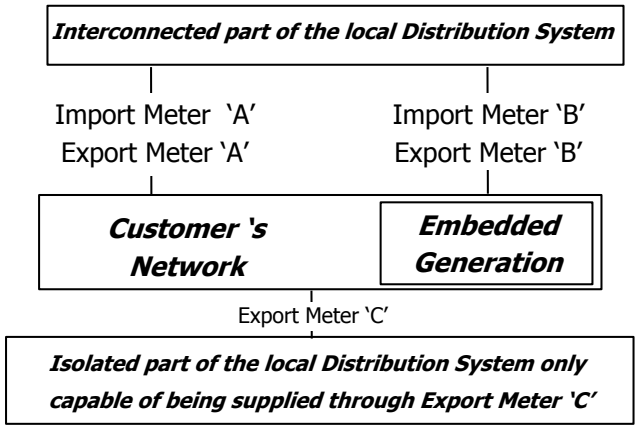
For any time period, for Settlement purposes, Customer's total demand or total generation is derived from the Algorithm:

TCUST = (Export 'A' – Import 'A') + (Export 'B' – Import 'B') + (Export 'C')

If TCUST is positive then the Complex Site is a net Exporter.

If TCUST is negative then the Complex Site is a net Importer.

Both Total Import and Total Export may be non-zero for any HH Settlement Period.



Import to the Customer's network = Import Meter 'A' + Import Meter 'B' – Export Meter 'C'.

There is embedded generation. Export Meter 'C' can be getting its energy from either Import through 'A' / 'B' or from generation. By definition there may be at least 1 Export MSID.

No. of Import MSIDs = 1 or n

No. of Export MSIDs = 0 or n.

Export Meter 'C' may have its own MSID allocated if it is also acting as an Import Meter to another customer, although this would be dealt with Separately for Settlements.

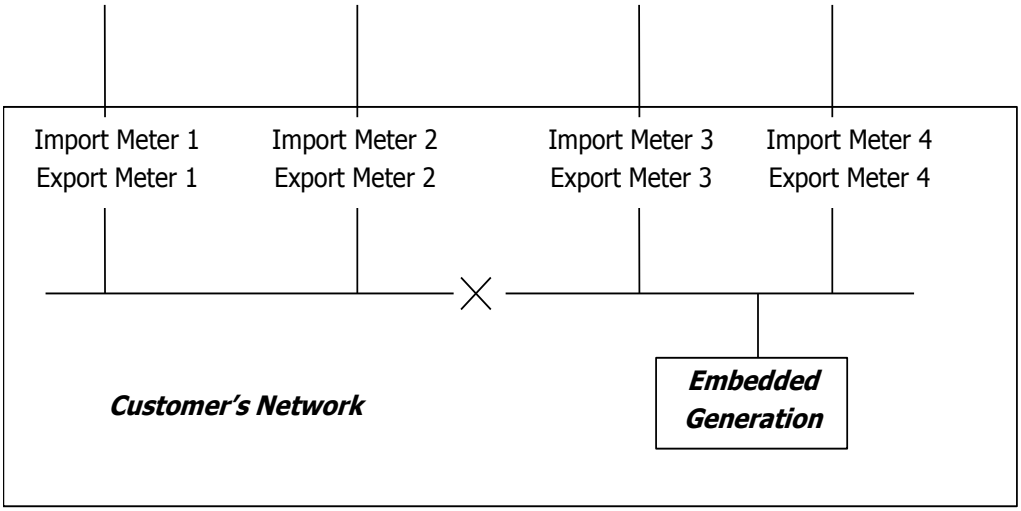
8.4.7 Separate Meter Points for Export and Import

In this example a customer is connected to a Distribution System via an intake busbar, with each feeder into the factory being separately metered, and with a section of busbar on two feeders having embedded generation connected.

In this case, each Import and Export Meter must either provide separate sets of HH data into Settlement, or if totalisation is achieved either on-site or by the HHDC, Import and Export HH data must be totalled separately and separate.

Import and Export sets of HH data provided to Settlement. Export HH data must not be netted off Import HH data, or vice versa.

Since this is an extension of the single feed Import / Export arrangement, this does not have to be considered as a 'Complex Site'.



Where totalisation is used:

No. Import MSIDs = 1

No. Export MSIDs = 1

Where totalisation is not used:

No. Import MSIDs = 4

No. Export MSIDs = 4

8.4.8 Network Flows Impacting Settlement Meters

In some cases it is possible for electrical flows (either on the distribution system or the customer's own network) to be recorded by the Settlement Meters unintentionally. These will usually appear as additional Imports and Exports and usually on different feeders. The diagrams below illustrate this principle. It should be noted that these flows may occur under exceptional circumstances only. It would not be reasonable to regard all multi feeder sites as Complex Sites in anticipation that such flows may exist at some point in the future.

Figure 1 shows an example where a distribution network flow passes through Settlement Meters M2 (as Import) and M1 (as Export). This is in addition to any flow from the distribution system to the customer. Therefore if this site was not considered a Complex Site then the resulting addition of Import Meter readings would not be correct because of the presence of distribution flows through Settlement Meters.

The aggregation rule for such a site might be:

Import = (M1 AE + M2 AE) – (M1 AI + M2 AI)

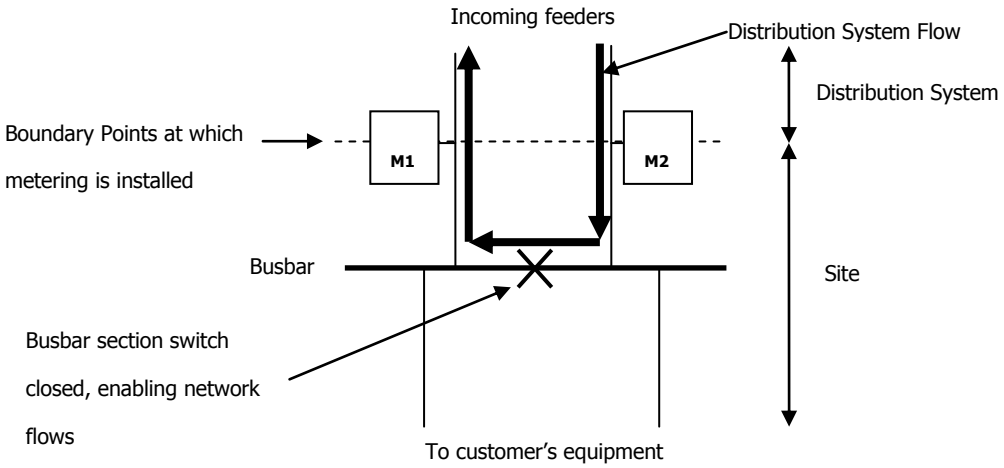


Figure 1. Distribution Network Flows

Similarly Figure 2 shows an example where the customer is generating a flow which passes through Meter M2 as Export and back into its system via Meter M1 as Import. Exports as well as Imports are accounted for in Settlements therefore it is necessary to apply aggregations to both the Import MSID as well as the Export MSID.

The aggregation rules for such a site might be:

Import MSID = (M1 AE + M2 AE) – (M1 AI + M2 AI) and
Export MSID = (M1 AE + M2 AE) – (M1 AI + M2 AI)

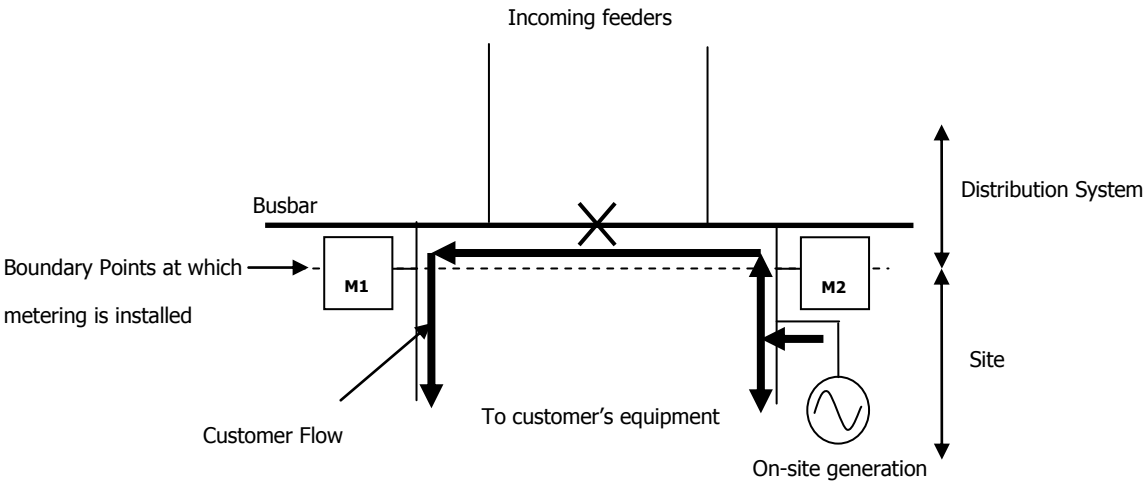


Figure 2. Customer Network Flows

8.4.8 Complex Site Supplementary Information Form

BSCP514/8.4.8a **Complex Site Supplementary Information Form** **Page 1 of 2**

From HHMOA To HHDC Metering System ID Site Name	Metering System Arrangement Description
Aggregation Rule ~~(b – a) + (d – c) + (f – e)~~	

	Import	Export	Import	Export	Import	Export
Main	Ref: ~~a~~ Page Description *Feeder 1 kWh*	Ref: ~~b~~ Page Description *Feeder 1 kWh*	Ref: ~~c~~ Page Description *Feeder 2 kWh*	Ref: ~~d~~ Page Description *Feeder 2 kWh*	Ref: ~~e~~ Page Description *Feeder 3 kWh*	Ref: ~~f~~ Page Description *Feeder 3 kWh*
Check	Ref: ~~1~~ Page Description *Feeder 1 kWh*	Ref: ~~2~~ Page Description *Feeder 1 kWh*	Ref: ~~3~~ Page Description *Feeder 2 kWh*	Ref: ~~4~~ Page Description *Feeder 2 kWh*	Ref: ~~5~~ Page Description *Feeder 3 kWh*	Ref: ~~6~~ Page Description *Feeder 3 kWh*
	Form BSCP514/8.4.8b		Form BSCP514/8.4.8b		Form BSCP514/8.4.8b	

Signature_____ Date_____

Name_____

BSCP514/8.4.8b Complex Site Supplementary Information Page 2 of 2

From HHMOA	Metering System Arrangement Description
To HHDC	
Metering System ID	
Site Name	
Feeder Name	

	Import	Export
Main	Ref: **kWh** MSID Outstation ID Channel Number Comms Address Meter ID Pulse Multiplier Meter Register Constant CT Ratio VT Ratio	Ref: **kWh** MSID Outstation ID Channel Number Comms Address Meter ID Pulse Multiplier Meter Register Constant CT Ratio VT Ratio
Check	Ref: **kWh** MSID Outstation ID Channel Number Comms Address Meter ID Pulse Multiplier Meter Register Constant CT Ratio VT Ratio	Ref: **kWh** MSID Outstation ID Channel Number Comms Address Meter ID Pulse Multiplier Meter Register Constant CT Ratio VT Ratio

Signature_____Date_____

Name

Appendices 9 through to 10.2 are not impacted by CP1338