



Central Management Systems – Manufacturers

This guidance note is to help you as a manufacturer gain approval for your CMS. We explain the technical considerations and steps you need to take to get your CMS approved.

Introducing CMS

Central Management Systems, also known as telemanagement, are the next step in remote dynamic street lighting control. Using a CMS the operator can choose exactly when to switch each individual street light on or off and/or by how much to reduce the lamp power. This allows any number of switching events and/or dimming levels. Currently only a single dimming level can be accommodated without a CMS. There are also other benefits such as lamp monitoring etc.

What are the Main Roles and Key Terms You'll Encounter?

Dynamic Data: This is data which uses the actual switching times of a representative sample of photocells contained in a Photoelectric Control Unit (PECU) array. The data recorded by a CMS is also dynamic data, as the actual events recorded are used in the calculation of consumption.

Currently customers can trade their electricity in two ways, either Non Half Hourly or Half Hourly. The main difference between the two is the use of dynamic data.

Half-Hourly (HH): HH data is the energy consumption of a customer in kWh, for each half hour of every day. HH uses dynamic data. In order to trade HH a Meter Administrator must be appointed.

Non-Half-Hourly (NHH): NHH does not use any dynamic data and instead uses an estimated number of annual hours for each type of photocell. Customers trading NHH cannot take advantage of dynamic data.

Meter Administrator (MA): is the qualified agent who provides the Half-Hourly consumption data into Settlement through their Equivalent Meter (EM). They manage PECU arrays and process CMS data.

Equivalent Meter (EM): the MA uses an EM to calculate and then pass the consumption information into Settlement. Suppliers use this information when calculating customers' energy bills.

- MA System (for example Lailoken or Lamp) + PECU Array = Equivalent Meter
- MA System (for example Lailoken) + CMS = CMS Capable Equivalent Meter

Customer: any organisation which purchases and operates an unmetered CMS in Great Britain. It maintains a detailed inventory of all its Unmetered Supply (UMS) equipment and provides regular updates to its Unmetered Supplies Operator (UMSO). The customer also appoints an MA.

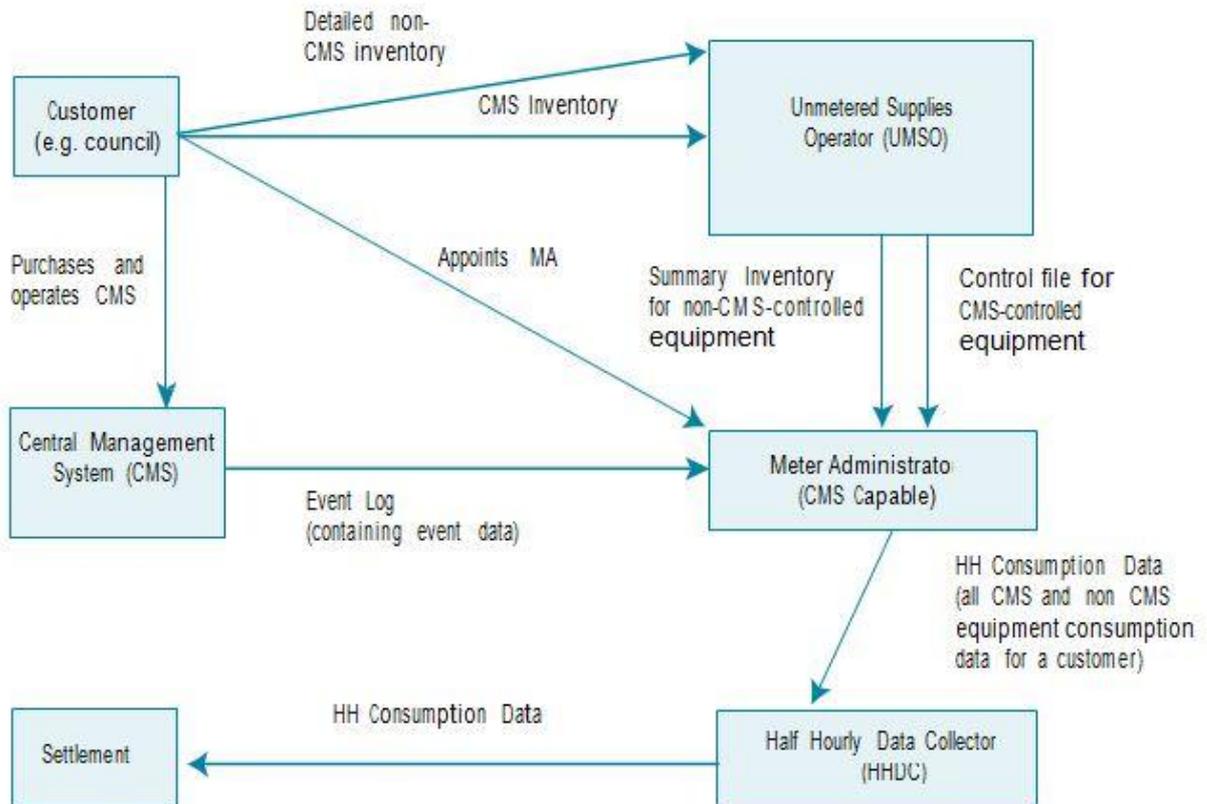
Unmetered Supplies Operator (UMSO): (a role within the Distribution Business) – is responsible for looking after all of the Unmetered Supplies on its Network. It makes new connections and decides what equipment is suitable for use as an Unmetered Supply. The UMSO provides a summarised inventory to the MA for non CMS equipment and also sends the control file to the MA for CMS-controlled equipment.

CMS Manufacturer: the developer/manufacturer (or licensed distributor) of any Central Management System.

Detailed Inventory: is a complete list of all the Unmetered Supplies that a customer is responsible for. The suggested format is defined in the [Operational Information Document](#). It includes the unique CMS Unit Reference which is the key to the events received in the Event Log File.

Overview of Unmetered Supplies Arrangements and CMS

Below is a simplified view of the interactions and data flows between the parties involved in Unmetered Supplies for CMS and non-CMS interactions.



What is the Approval Process?

A CMS needs the following approvals under the Balancing and Settlement Code (BSC) Unmetered Supplies arrangements:

Follow these three steps to get approval.

1. An appointed test agent (ELEXON) needs to approve each CMS for use under the BSC. You need to contact ELEXON to arrange for witness testing. [The Equivalent Meter Test Specification](#) makes the BSC requirements clear. You may want to carry out some testing in advance and submit this as evidence. ELEXON reviews and comments on this evidence, then carries out witness testing when you are ready. Contact the ELEXON [CMS coordinator](#) to discuss the testing requirements and to arrange witness testing.
2. After witness testing, you must carry out a further test with a CMS Capable Meter Administrator and demonstrate a successful 'end-to-end' process. This involves the successful generation of an event log file and its subsequent processing by an MA.
3. ELEXON publishes a list of all approved CMSs after the Supplier Volume Allocation Group (SVG) has approved them.

What Else Should Customers Do?

If a customer trades NHH they must contact their Supplier and Unmetered Supplies Operator (UMSO) to discuss switching to HH and then appoint a CMS Capable MA.

If a CMS uses mains-borne signalling, the Customer must seek the agreement of the UMSO to use it. BSC approval of a CMS (using mains-borne signalling) does not give the Customer a right to transmit signals over the local electricity Distribution Network.

If you have any questions about this aspect of the approval process, please contact the [CMS Coordinator](#) at ELEXON. We can then put you in contact with the relevant UMSO.

What is the Control File?

The UMSO sends the Control file to the MA. The Control file allows the MA to validate the information received from the CMS.

Control File Format:

Filename:	controlmmmmmmmyyyymmdd.log
	where:
	mmmmmm = Sub-Meter ID (alphanumeric)
	yyymmdd = date of inventory
	log = file extension with all characters in lower case
File header:	HMMMMMMYYYYMMDDVV
	where:
	H = header identifier, H
	MMMMMM = Sub-Meter ID (alphanumeric)
	YYYYMMDD = effective from date
	VV = version number
File body:	UUUUUUUUUUUNNNNNRRRCCCCCCCCCCCC
	where:
	UUUUUUUUUUUU = CMS Unit Reference (alphanumeric)
	NNNNN = Number of items
	RRR = Switch Regime (999 or 998)
	CCCCCCCCCCCC = Charge Code
File trailer:	TNNNNN
	where:
	T = trailer identifier, T
	NNNNN = total number of lines including header and trailer

The CMS Unit Reference is a 2-digit alphanumeric field. It uniquely identifies the equipment which the CMS controls.

The Number of Items in the file should be the same as in the Detailed Inventory and identifies the number of items associated with each CMS Unit Reference.

The MA maintains the Charge Code as the normal code for the lamp running at full load. The Switch Regime is set to '999' to indicate switched dusk-to-dawn equipment, or '998' to indicate continuous use with no dimming.

The CMS controllers for each item of equipment should be summed and provided as a row or rows in the file body. Each type of CMS controller has its own Charge Code and will be assigned a continuous Switch Regime of '998' and a CMS Unit Reference of 'Control ' (please note that is 'Control' followed by five blank spaces ' ' and not five underscores).

The format of the control file above differs from [BSCP520](#). This will reflect that current best practice is for six rather than five 'N's in the file format, which allows for CMS inventories larger than the 99,999 item limit of five 'N's.

What is the Event Log?

The CMS records the operational on/off switching times and the power levels for each unit. The MA can access this data as an operational event log, typically every day.

The event log includes the CMS Unit Reference, the time and date at which the load was switched, and the power level. The power level is expressed as a percentage of the circuit watts. The [Operational Information Document](#) defines this for the relevant Charge Code.

Structure of the CMS Event Log File:

Filename: `mmmmmmmyyyymmddvvv.log` where:
`mmmmmmm` = Sub-Meter ID (alphanumeric) `yyymmdd` = date to which the events pertain `vvv` = version number
`log` = file extension
with all characters in lower case

File header: `HMMMMMMYYYYMMDDVVV`
where:
`H` = header identifier, H
`MMMMMM` = Sub-Meter ID (alphanumeric) `YYYYMMDD` = date to which the events pertain `VVV` = version number

File body: `UUUUUUUUUUUHHMMSSPPP.PPI`
where:
`UUUUUUUUUUU` = CMS Unit Reference (alphanumeric)
`HHMMSS` = time in hours, minutes and seconds, in UTC throughout the year
`PPP.PP` = percentage of base power i.e. undimmed power level applied to the lamp, to 2 decimal places
`I` = information flag (alphanumeric)

File trailer: `TNNNNNNN`
where:
`T` = trailer identifier, T
`NNNNNN` = total number of lines including header and trailer

The information flag 'I' in the file body can provide further information about the operational event log data, for example omissions, errors, and so on. The BSC does not currently prescribe values for this information flag, so CMS manufacturers and MAs can agree on and specify its use and structure.

The format of the event log file above differs from **BSCP520**. This will show that current best practice is for seven 'N's and not five. This allows for more than 99,999 events in a day. This can happen in larger CMS inventories with multiple dimming levels or multiple on/off part night switching at night.

How Should Revisions to Event Data be recorded?

The CMS records significant or material events – any system instruction that results in changes to the power the lamp consumes – for example, on/off, full power/dimmed power, and so on. Minor consumption changes such as an increase from 79.99% to 80.00% should not be recorded as an event. Recording such minor event may result in thousands of events per lamp per day.

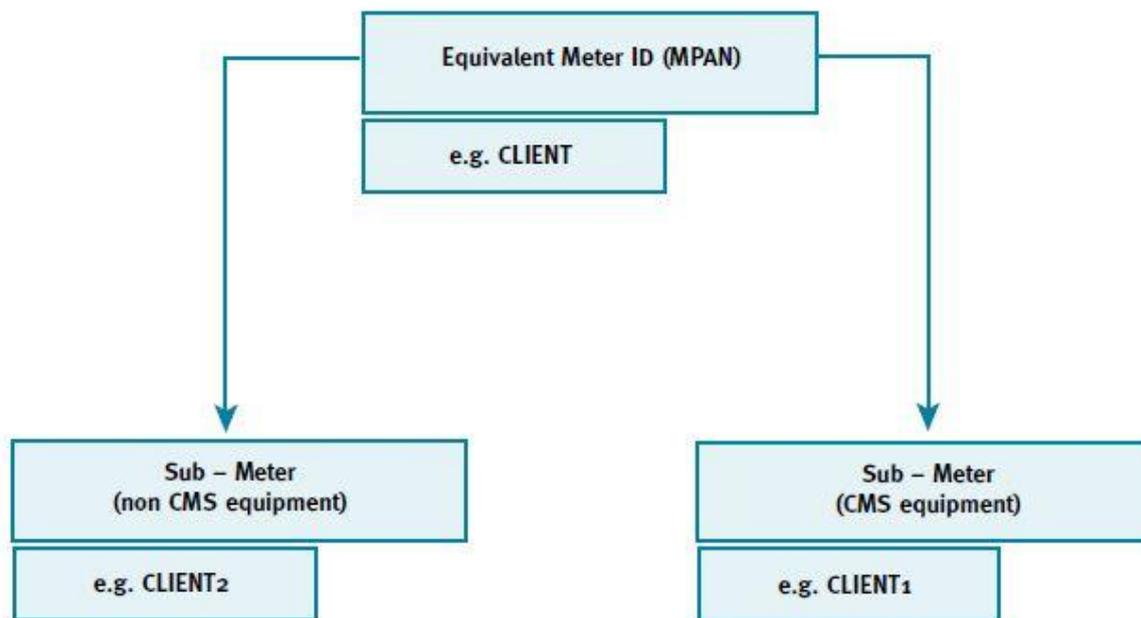
The upper limit for updating event data is 4 months. Operationally, we do not expect that data will be updated past 28 days. MAs and CMS operators will agree any updates beyond 28 days.

Any revision to previous data or unreported data shall be reported in a file with an incremental version number. This may occur after repairing a fault or re-establishing communications. Alternatively, it will be a complete refresh of the file. The CMS operator and the MA will agree the approach, and how to identify updated information.

What is a Sub Meter ID?

Using a sub meter allows customers to split their inventory. Consider a county which has CMS equipment and non CMS equipment on their inventory. Its Meter Administrator must calculate the load separately because of the different processes involved but will combine the results for the Data Collector and Supplier. The MA sums the total energy of each sub meter onto a single MPAN and the Supplier sends a single invoice to the customer.

The diagram below shows how the Meter Administrator's Equivalent Meter software will link customers' CMS and non-CMS inventory.



The MA, UMSO and CMS operator will agree the sub meter ID in the CMS, so it should be a configurable item.

HH data from each Equivalent Meter must be assigned to unique MPANs for each Distribution area. This applies even where the same Distribution Business manages two different Distribution areas. If a customer covers two different Distribution areas, they must use separate Equivalent Meter IDs (MPANs) for each area. In this instance, the MA cannot collect the resulting HH data onto a single MPAN.

What are the Requirements for an Audit Trail?

Under a generic BSC requirement, the CMS must record an audit trail. [Party Service Line 100: Generic Non Functional Requirements For Licensed Distribution System Operators and Party Agents](#) requires that the system must hold data for at least 40 months after the Settlement Day.

This consists of:

- The first 28 months of Settlement data must be able to support a Volume Allocation Run. Practically, this means that the data is available to the Meter Administrator upon request; and
- The remaining 2 months of Settlement can be supplied within 0 Business Days if requested.

Need more information?

References

We have published the full documents which this guidance summarises and clarifies information on the [BSC Website](#). The BSC takes precedence over this guidance.

- [BSCP520: Unmetered Supplies Registered in SMRS](#) – details the BSC requirements of the CMS
- [ELEXON Equivalent Meter Test Specification](#): details the ELEXON testing requirements for the CMS
- [BSC Section S: Supplier Volume Allocation](#)
- [BSCP520: Unmetered Supplies Registered in SMRS](#)
- [Party Service Line 100: Generic Non Functional Requirements For Licensed Distribution System Operators And Party Agents](#)
- [Operational Information Document \(OID\)](#)
- [New Charging Code Structure for Unmetered Supplies](#)

For all **CMS** enquiries, please contact:

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For further information please contact the **BSC Service Desk** at bscservicedesk@cgi.com or call **0870 010 6950**.

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