

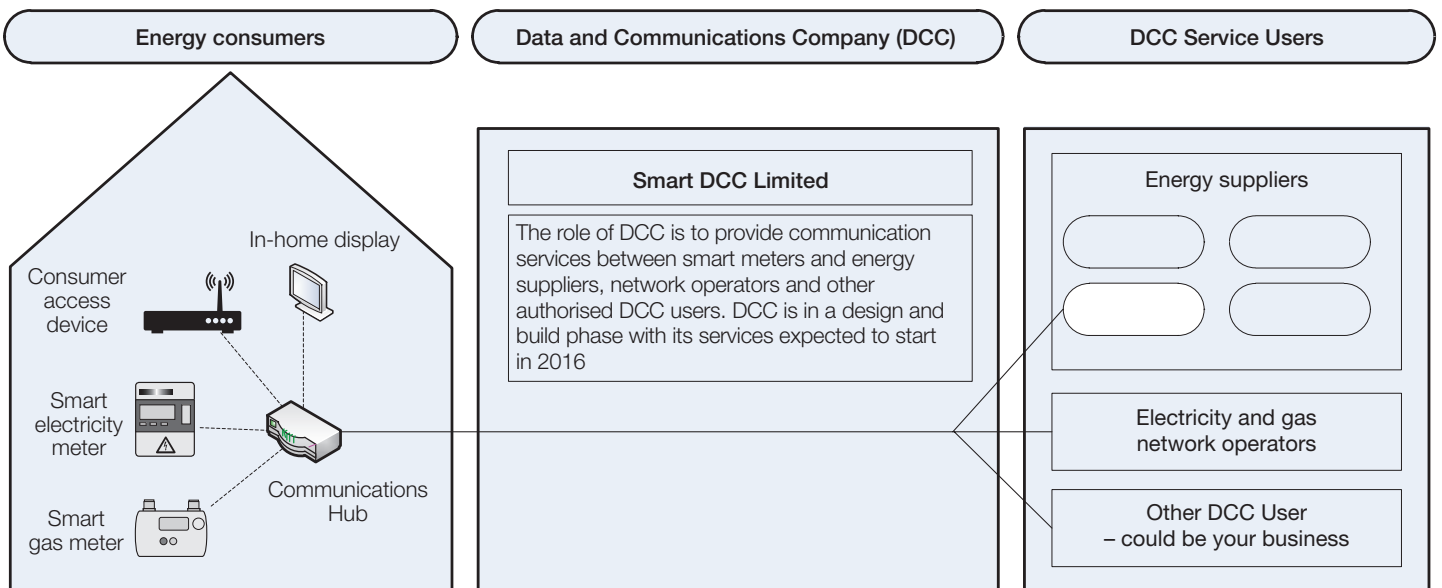


Smart Meters, Smart Data, Smart Growth

This leaflet explains how data from smart meters is expected to transform the market for energy services and how your business will be able to access this data.

The Great Britain smart metering rollout will create an unprecedented new platform for innovation in energy data – 53 million smart electricity and gas meters will be installed by energy suppliers in homes and small businesses by the end of 2020, each storing a consumer’s consumption and tariff information. This platform will support the development of a wide range of new technologies and services as well as empowering consumers to take energy saving measures, enabling customers to switch energy provider more smoothly and ending estimated bills.

The smart metering system:

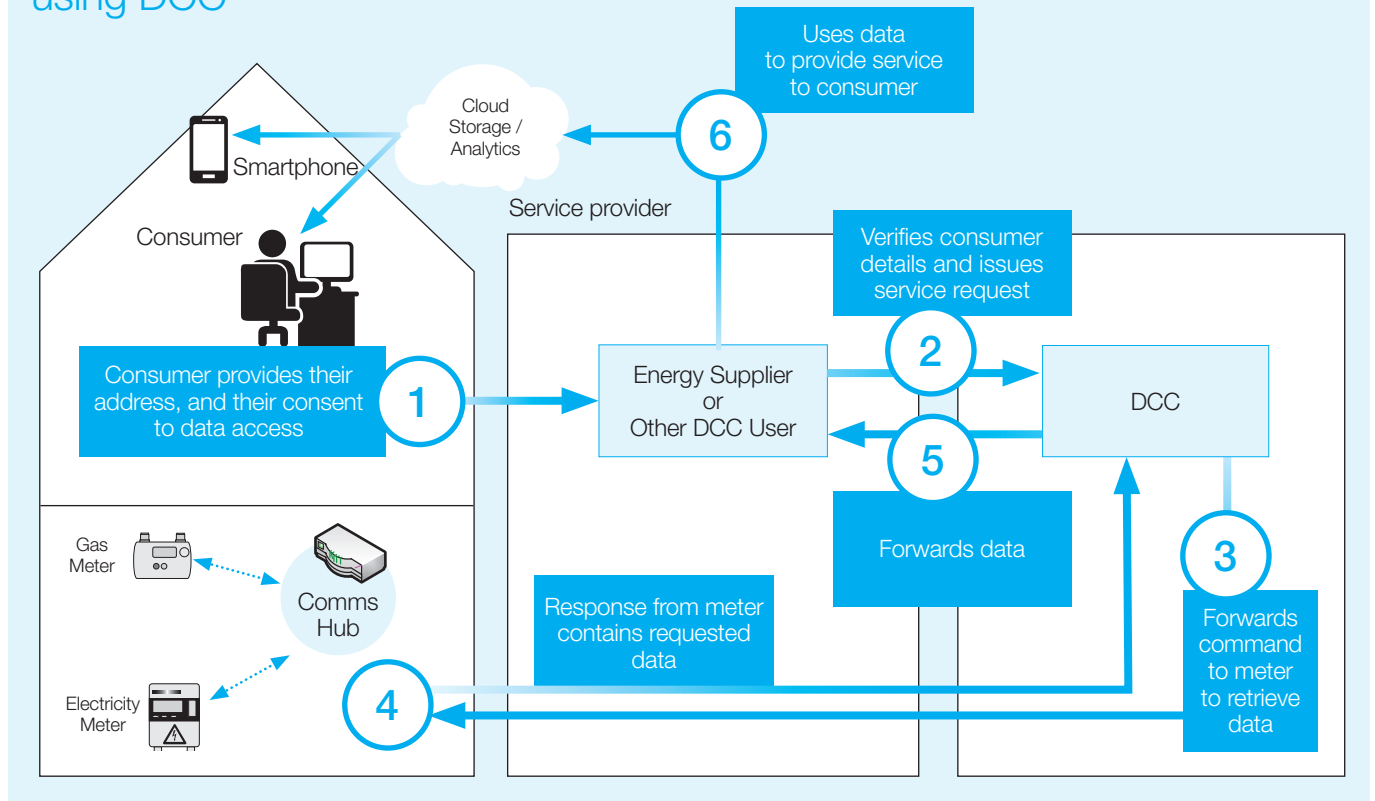


Data storage and system architecture

Under the smart meter rollout, consumption and tariff data will be stored in the smart meters in the consumer’s premises; DCC will not maintain a centralised database of consumption data.

This puts the consumer in control of their data, as they must give their consent to allow parties to access the detailed consumption and tariff information from their electricity and gas meters.

Remote Access via WAN using DCC



Accessing data via DCC

With the consumer's consent, your business will be able to retrieve data from smart meters using the communications infrastructure being managed by DCC. This route can provide access to half-hourly consumption and tariff information and will be available from the start of DCC Live Operations expected in 2016. To retrieve data via this route a business may either become a DCC User in its own right (for more information

on becoming a DCC User see page 4), or they may enter into a contractual arrangement with a business that is a DCC User. DCC Users will need to demonstrate that they meet regulated privacy and security requirements on an on-going basis. A DCC User will be able to send an ad-hoc request to retrieve data from a meter, or to set a schedule with DCC to send regular requests to retrieve data (for example, monthly).

Which consumption and tariff data will be available via DCC?

- The electricity consumption (kWh) or gas consumption (m³) in every half-hourly period for the last 13 months;
- For electricity, 3 months of half-hourly export data (kWh) and 3 months of half-hourly data on reactive energy imported and exported (kvarh);
- Daily electricity consumption (kWh) or gas consumption (m³) for the last 2 years;
- The current tariff information (including price, time-of-use matrix and switching times, time-of-use blocks and block thresholds);
- The conversion factor and calorific value (for gas).

DCC will also maintain an inventory which holds the meter identification numbers and meter point identifiers (MPxN) associated with a premises name/number and postcode.

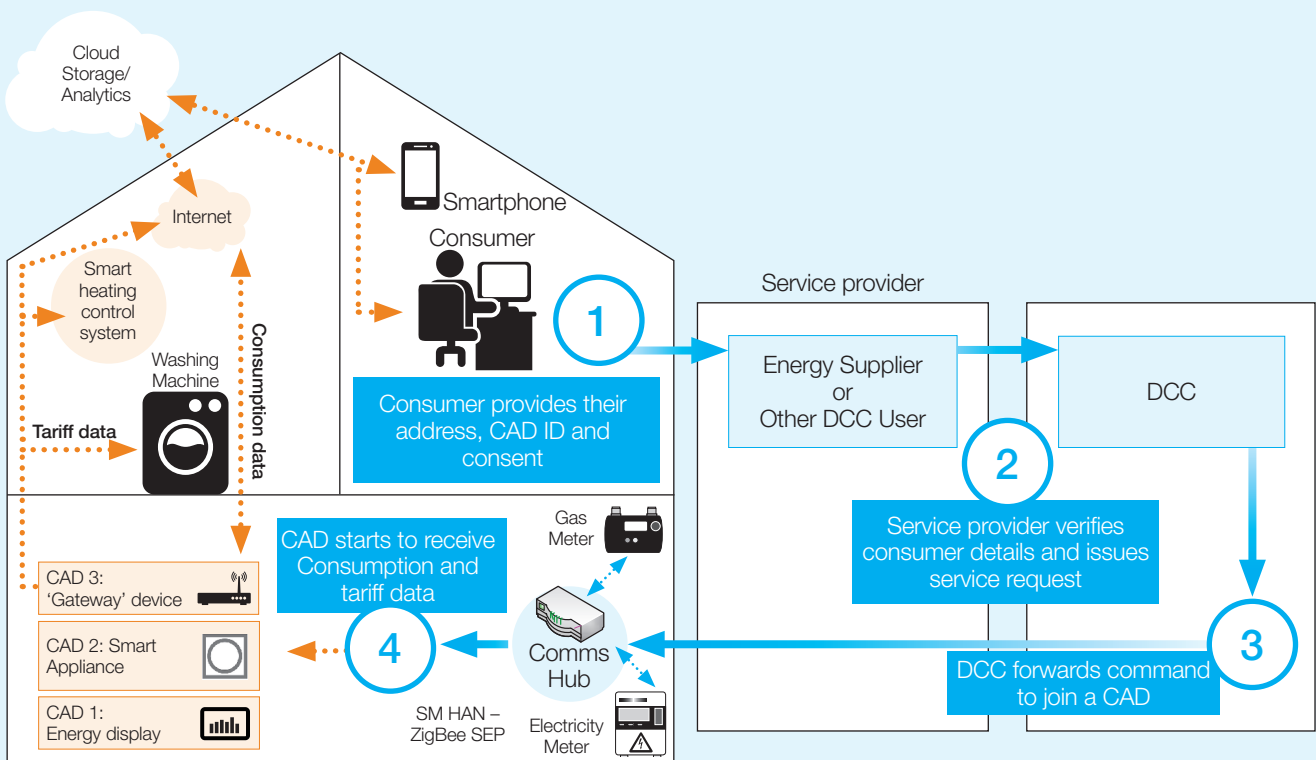
Accessing data via the Home Area Network

Smart Meters will establish a wireless ‘Home Area Network’ in a consumer’s home. This will be a local ZigBee wireless network (the SM HAN) which gas and electricity smart meters and in-home displays will use to exchange data. Consumers will also be able to pair other devices that operate the ZigBee Smart Energy Profile (SEP) to this network; such devices are typically known as Consumer Access Devices (CADs). The CADs being produced today are small boxes which connect to Wi-Fi routers to stream energy data, but the CADs of tomorrow could be anything from a tumble drier to a home automation hub. Smart Meters must support a minimum of 4 CADs; an In-home display (which

all consumers will be offered when they have a smart meter installed) is a type of CAD. The processes by which consumers can pair CADs to the smart metering system are described in the box below. These processes will be available from the start of the main installation phase in 2016; separate requirements are in place for earlier installations.

Once a consumer has paired the device to their HAN, a CAD will be able to access updated consumption and tariff information directly from their smart meter; a CAD can request updates of electricity information every 10 seconds and gas information every 30 minutes. A device only needs to be paired once.

Local Access via HAN using a CAD



The Government has also committed to introducing a means of allowing consumers to pair a CAD without needing the involvement of a DCC User; a consumer will be able to initiate pairing of a CAD by using a function on their smart electricity meter. We are working with ZigBee on the detail of this process which we expect to be available at the earliest opportunity in the main installation stage which is expected to start in 2016.

CADs and the smart ecosystem

To promote innovation, we have not set any further requirements for CADs. This means that businesses can provide CADs that, as well as operating ZigBee, also operate other communications protocols (for example, Wi-Fi and Bluetooth). Such CADs could forward data to other non-ZigBee devices within the home (for example, smart appliances) or via the internet (for example, for remote analysis or display on a smart phone).

This means that businesses who provide related services and products – such as smart heating systems or home automation controls – could access energy and tariff data from the smart metering system by building support for the ZigBee Smart Energy Profile into their hubs. The ability for devices to share data across different platforms is an important enabler of

the ‘Internet of Things’.

If a CAD is configured to return data to a business or to send data to another device (for example, a customer’s smartphone) the data will not go via DCC – it will be sent via an alternative communications system (for example, via Wi-Fi or via a consumer’s internet connection).

Box 1: Becoming a DCC User

The first step is to sign up to the Smart Energy Code (SEC); the Code is a multi-Party agreement which defines the rights and obligations of energy suppliers, network operators and other relevant parties involved in the end-to-end management of smart metering in Great Britain. Details about signing up to the SEC together with a SEC accession form are available here: www.smartenergycodecompany.co.uk/sec-parties/becoming-a-party-to-the-sec. Over 30 non-supplier and non-network businesses have already signed up; has your business?

Any SEC party can then go through the required steps to become a DCC User. To

ensure that communications between DCC Users and DCC are secure, DCC Users will pay DCC a one-off charge to install a DCC Gateway Connection and an on-going annual rental for a dedicated connection (in effect a “leased line”) to DCC’s systems. The actual charges levied will depend on a number of variables, and the latest indicative costs can be obtained by contacting DCC.

DCC Users will also need to ensure that their IT systems are capable of interfacing with DCC, and must meet specified security and privacy requirements which will be subject to audit. For more information on becoming a DCC User please see www.smartdcc.co.uk

Example Applications

Switching Energy Supplier

Actual consumption and tariff information from a consumer's smart meter rather than estimates will allow businesses offering switching services to show real time and accurate 'best deals'. Detailed consumption data will allow switching sites to recommend new time-of-use deals that are suited to a consumer's usage profile. Data held in DCC's smart meter inventory (address data, meter IDs and MPxNs) will help simplify and speed-up the switching process. Government has an ambition for next day switching, for which smart meters are a key enabler.

Smart Appliances

Tariff information from a consumer's smart meter combined with time-of-use tariffs will allow appliances to choose the optimal time to operate based on the upcoming prices and consumer preferences. For example, a consumer could set their tumble drier to have finished by 8am and programme it to turn on when the tariff is lowest. Most existing meters do not support time-of-use tariffs, but smart meters will allow such tariffs to be set remotely allowing customers to easily switch between time-of-use tariffs as their usage patterns change. The Retail Market Review leaves scope for such tariffs to emerge – more information on this is available on Ofgem's website.

Smart Heating Controls

Consumption and tariff information from smart meters will allow smart heating controls to tell consumers how much it will cost to make a change to their heating schedule. Use of actual historical data from smart meters could also help demonstrate that use of smart heating controls has led to savings. In the future more customers may have a choice between using gas or electricity to provide heat; historical data could be used to determine the cheapest heating option.

Example Applications

Energy Efficiency Information

Detailed consumption and tariff information could be used to provide a breakdown of spending on energy, including information on when energy was used and which larger appliances used it. Comparisons between households (your consumption versus a similar household) or between appliances (your tumble drier versus the most efficient model) could provide detailed advice allowing consumers to use energy more efficiently. Services using CADs could generate real-time energy efficiency alerts when appliances have been left on unnecessarily, or when spending is over-budget.

Assisted Living

Real-time electricity consumption data combined with machine-learning algorithms could give carers real-time alerts when a vulnerable person's energy consumption patterns differ from the norm, possibly indicating ill health. Any installation of a CAD has to be done securely and with a consumer's consent.

Further information

BEAMA Practical Guide – Consumer Access Devices, applications for data in the consumer HAN and wider market considerations, 2014, www.beama.org.uk;

Further information on ZigBee SEP is available at:
www.zigbee.org/zigbee-for-developers/applicationstandards/zigbeesmartenergy/;

Information on Ofgem's Retail Market review can be found at:
www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/retail-market-review;

More information on DECC's Smart Metering Programme is available at:
<https://www.gov.uk/government/policies/helping-households-to-cut-their-energy-bills/supporting-pages/smart-meters>

If you have any further questions or want to find out more about how your business could get involved in the Smart Metering rollout please email us at smartmetering@decc.gsi.gov.uk