Capability to support DSR

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Monitoring of consumption via a Consumer Access Device (CAD) or via DCC
Which Data will be Available?

No CAD required (Data retrieved via DCC)

Ad hoc or scheduled (at DCC) requests

Highest granularity of data - 30 minutes

Tariff information

Consumption data (and Export data)

Current Price

Instantaneous Active Power (elec - kW)

Prepayment Information

All of the above PLUS...

CAD required (Data not retrieved via DCC)

10 seconds updates (elec)

30 minute updates (gas)
Switching loads via an Auxiliary Load Control Switch (ALCS)
The Smart Metering Equipment Technical Specifications (SMETS) support up to five Auxiliary Load Control Switches (ALCS) – either in the electricity meter or HAN-connected.

Capability in SMETS allows the electricity supplier to:
- Set the calendar on the Electricity Meter that controls ALCS;
- Send ad hoc commands to the ALCS to change state;
- Send ad hoc commands to restore the switch back to calendar switching regime.

Possible uses:
- To replicate functionality of existing metering arrangements (mainly people with basic time-of-use tariffs and ‘night storage’ electric heaters);
- To offer new tariffs and services for Heat Pumps and Electric Vehicles. Consumer could be offered cheaper rate in return for control of when charging/heating occurs (with over-ride at a penal rate);
- To help supplier stay in balance (settlements); or to provide balancing services to National Grid and potentially participate in the capacity market from 2018.
Switching loads via alternative comms (could be via CAD box)
Switching loads based on tariff signals - TOU and block pricing
Configure a new tariff - Time-of-Use Tariffs

- Time-of-use tariffs: Meters are capable of maintaining a separate record (on ‘registers’) of consumption during different time bands.
- The price of each period is also held on the meter which allows the meter to calculate the cost of consumption and the meter balance.

Example – evening peak tariff

between 4 and 7pm weekdays; at all other times

Count on register 1

Count on register 2
Configure a new tariff: Block Tariffs with TOU

- Block Tariffs: In addition to maintaining resistors (for Time-of-Use), Meters are capable of maintaining additional ‘Block Registers’ to allow rising or falling block tariffs.

Example (contd.) – during the peak period (4-7pm) peak rate only kicks-in after 5kWhs have been used. No block registers are active during the off-peak period.

- between 4 and 7pm weekdays; if today’s peak consumption < 5kWh; increment Block Register 1
- if today’s peak consumption > 5kWh; increment Block Register 2

Note: This is for electricity; gas meters also support blocks but works slightly differently
Switching loads based on tariff signals - Load limiting/High-load alerts
Configure Load limiting:

(Electricity only and requires consumer consent): Capability to switch supply off (or increment a counter and send an alert) when an ‘instantaneous use’ threshold (kW) is crossed. Once supply is disabled immediately rearms such that consumer can re-enable Supply if their kW use has returned below threshold.

Potential uses:

- Supplier could offer a tariff where on certain winter peak days consumer accepts a maximum consumption of 2kW in return for an annual discount on their bill (supply set to ‘trip’ when > 2kW);
- Supplier could offer a discount if a customer does not exceed a given threshold in any month (where consumption over the threshold triggers an alert to the supplier which cancels the ‘bonus’ payment for that month but does not disable supply);
Switching loads based on tariff signals - Twin element meters
Other points
Additional points

- Maximum demand capability could be used to reward consumers for lower maximum demand (either at all times or during peak times);
- Other routes to load control are available;
- Interplay between gas and electric (e.g. possibility to choose which fuel to use for heating depending on price).
Additional slides
Remote Access via WAN using DCC

1. Consumer provides their address, and their consent to data access
2. DCC verifies consumer details and issues service request
3. Forwards command to meter to retrieve data
4. Response from meter contains requested data
5. Forwards data
6. Uses data to provide service to consumer

Consumer

Smartphone

Service provider

Cloud Storage / Analytics

Energy Supplier or Other DCC User

DCC

GB smart metering functionality
What is a CAD?

Minimum requirement: Any Device with a ZigBee SEP1.2 Interface and access to ZigBee features defined in the ‘Great Britain Companion Specification’

- Laptop dongles
- Energy displays
- Smart Energy Hubs/gateways
- Smart Appliances
Local Access via HAN using a CAD

1. Consumer provides their address, CAD ID and consent.

2. Service provider verifies consumer details and issues service request.

3. DCC forwards command to join a CAD.

4. CAD starts to receive consumption and tariff data.
Requirements on DCC ‘Other Users’

- Must buy a DCC Gateway Connection
- Must update IT systems to be able to talk to DCC
- Must meet applicable Security requirements
- Must complete User Entry Process Testing
- Must have a process for consumer consent and verification
- Must have appropriate Privacy arrangements
Overview of End-to-end system

**Smart DCC Limited**

The role of DCC is to provide communication services between smart meters and energy suppliers, network operators and other authorised DCC users. DCC is in a design and build phase with its services expected to start in 2016.

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**Energy suppliers**

**Electricity and gas network operators**

**Other DCC User – could be your business**