By e-mail to: energymarket@cma.gsi.gov.uk

Will Fletcher
Energy Market Investigation
Competition and Markets Authority
Victoria House
Southampton Row
London
WC1B 4AD

20 November 2015

Dear Will,

Supplementary Information on Time of Use Tariffs and Non Half Hourly Profiling

Further to your e-mail of 17 November, please find attached an overview of the how the current non-half hourly (NHH) systems and processes can support Time of Use (ToU) tariffs.

We would highlight that the NHH settlement systems and processes operated centrally and by Suppliers (and their Supplier Agents) are designed to use aggregated data. They are not applicable to individual Metering Systems (or consumers) and they rely on static standing data to notify switching times (except where meters use tele-switching that cannot be supported by smart Metering). This does not facilitate dynamic ToU Tariffs or critical peak pricing and precludes the use of many differing instances of different time of use tariffs.

This is because:

- Currently, only a small proportion of consumers on Profile Class 1 have dual-register meters which would have to be replaced or re-configured (if possible) to the required switching times.
- Meters for Profile Class 2 customers that have dual register meters would need a third register for peak ToU tariffs that do not have switched load associated. Suppliers would therefore need to fit a smart meter to allow for an aggregated 'static' ToU tariff, as trialled by British Gas.
- Once installed, Suppliers would need to establish standing data in settlement systems for each configuration of switched metering (by profile, switching regime/times, and distribution area) that had been installed. This is possible for configurations covering large populations of Metering Systems.
- However, if 'dynamic' ToU tariffs are required then the dynamic register switching times would have to be notified to central systems by each Supplier for each distribution area on a daily basis (e.g. number of Supplier IDs x distribution areas x number of dynamic ToU tariffs). If the number of configurations were to increase (e.g. driven by the Suppliers'/consumer's desire for variations in time of use tariffs), the number and size of the notified data files could increase to a level (perhaps thousands of flows daily) which would not be sustainable. Supporting dynamic ToU tariffs in this way would therefore require changes to various

settlement systems and processes operated centrally and by Suppliers to provide new infrastructure to notify these events.

- The notified configurations (which would, in theory, drive changes in consumer behaviour and consumption) would then need to be accounted for in the profiling process and be subject to spot checks or audits to ensure that the various flows noted above were correct. New processes would need to be established to deliver this assurance.

- If this potentially expensive 'interim' approach were put in place the profiling process would struggle to model load from new technologies. For example, Electric Vehicles could be connected/disconnected or charged/discharged at any time by individual consumers. Since notifications can only occurs for groups of consumers this could not be accurately accommodate by this approach.

If you require a view on potential costs in relation to the above it would be helpful to discuss the assumptions that might underpin such an assessment. Please let me know if you would like to discuss these assumptions or any aspects of our response (020 7380 4117, or by e-mail at adam.richardson@elexon.co.uk).

Yours sincerely,

Adam Richardson
Senior Market Advisor

List of enclosures

Attachment I – Time of Use Tariffs

Attachment 1 - Time of Use Tariffs

Ideally, to facilitate Time of Use Tariffs (ToU) half-hourly data from settlement metering would be required. However, the existing settlement processes can facilitate ToU tariffs to a limited extent. This note describes how this is achieved[1].

In Non Half-Hourly (NHH) settlement there is a process colloquially known as 'chunking' that allows the energy recorded on NHH Settlement, meters that are read periodically (e.g. quarterly), to be allocated to specific times of the day. To facilitate a Time of Use Tariff the Supplier would be required to fit the customer with a meter with at least two registers that is 'configured' to record energy at specific times of the day (note: these could be varied by both month and day-type depending on the meter capability). An example configuration is demonstrated in Figure 1.

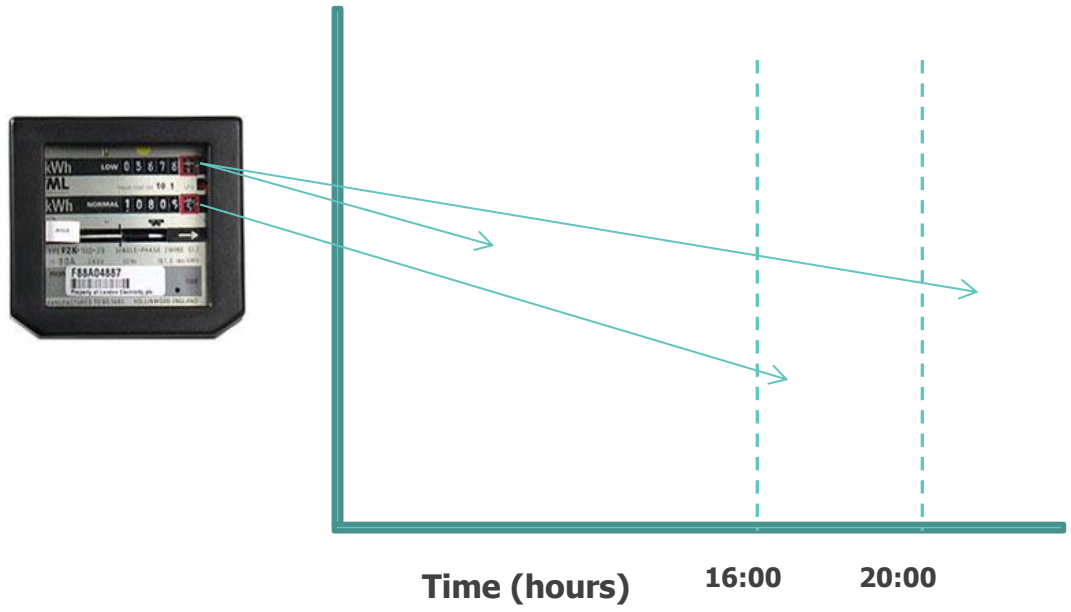

Figure 1.

In Figure 1 the meter register on which the energy is recorded are set to switch form on to the other at 16:00 hrs and 20:00 hrs. In a smart world this could be achieved remotely by programming (configuring) the meter remotely. Currently, this would be achieved with a timeswitch or could be achieved more dynamically using a Teleswitch (a device that sends signals, on a daily basis, that tells the meter when to switch).

The Supplier then sets up some 'standing data' in the settlement system that reflects that it has a population of meters 'configured' in this way. The Supplier would then have to register all his customers that have this configuration in the meter registration system that belongs to the Distribution business. These processes are represented in Figure 2.

---

[1] *Note that this process has existed since the start of the profiling arrangements but has only recently been used to facilitate time of use type tariffs*

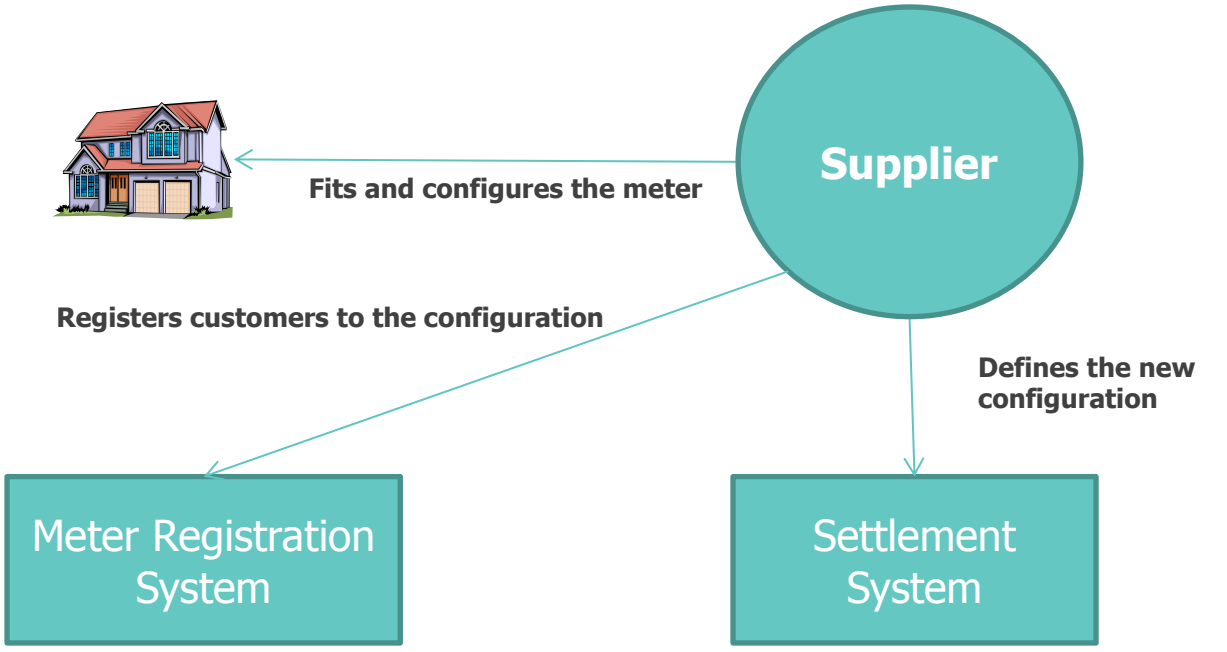

Figure 2

The Supplier can incentivise the customer to reduce his energy during the peak period through the tariff, price signalling or other arrangement. If the customer acts on the incentive then the volume of energy recorded on the customers meter register, that is active during the peak period, will reduce. The Supplier will schedule his customer's meters to be read by its agents. The meter reading data is then processed and aggregated for all the Suppliers customers on the new configuration (these are derived from the meter registration system data). This data is then submitted to the Settlement systems. The Settlement system processes will then be used to 'allocate' the meter advances[2] (the number units used between meter readings) for all the Suppliers customers, on the new configuration (defined in the standing data), to a load profile according to the times that each meter register is active. The process is represented in Figure 3.

[2] *The mechanism by which this is achieved uses 'profile coefficients' and annualised advances which are an extrapolation of the meter advance*

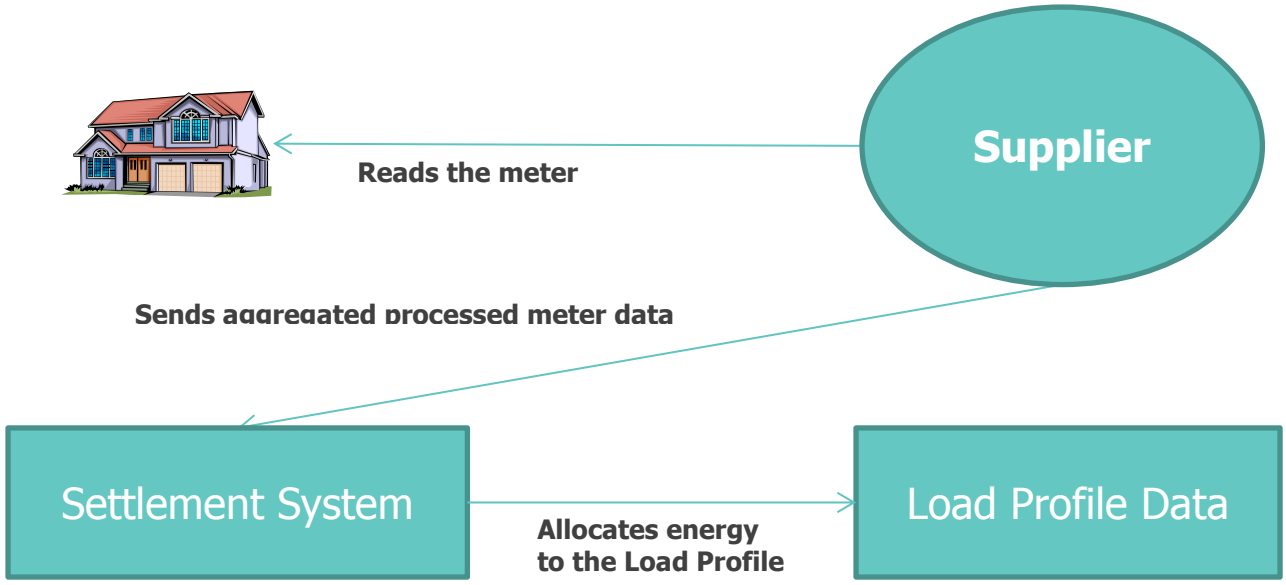

Figure 3

The customers will be billed on the actual meter readings taken from their settlement meter registers according to their tariff. If in aggregate the Suppliers customers have reduced their load during the peak period then this will be reflected in the volume of energy allocated, to that Supplier, during that period. Some of the energy may be 'shifted' to other parts of the day (not modelled below). An example of the allocation for the new configuration is shown in Figure 4.

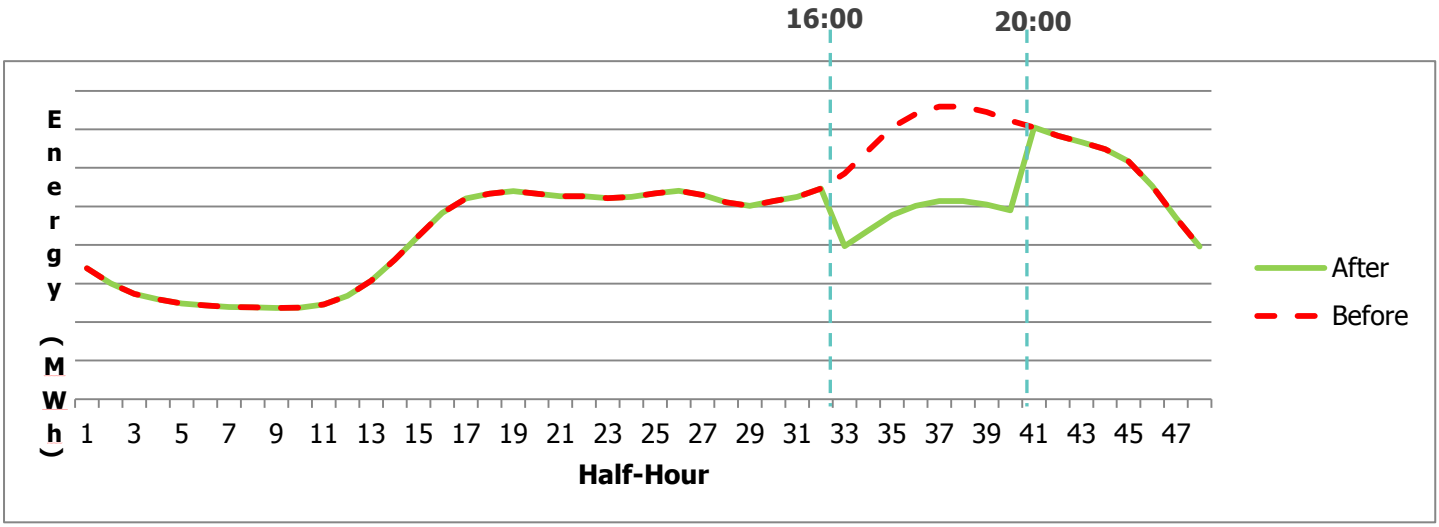

Figure 4

The meter configuration set up by the Supplier could be quite complex as they can be defined by month and day of the week or could be set remotely (e.g. by tele-switching the meter). The Supplier could benefit from such tariffs as it will not be required to purchase as much energy during the peak period. Additionally, there are benefits to everyone (GB plc) that could accrue as significant levels of customers react to such tariffs. For example, there would be both carbon savings and a potential reduction in peak generation requirements. Additionally, the wholesale price of electricity would also be likely fall during the peak periods.