Critical requirements for smart metering regulation from municipalities

Policy Paper – May 2018

EDI-Net collected evidence that municipalities are restricted from or have limited access to smart metering data recorded in their buildings. Even in countries where metering roll-out is well progressed near-time utilisation of sub-hourly data is, in practice, often not possible to help achieve energy efficiency improvements. The barriers include, for instance:

- In Spain, sub-hourly metering data is only made available at the end of the month in one file.
- In the UK, "*transparent procedures*" on data exchange could not be enforced with complaints to settlement bodies.
- In Germany, interoperability with energy management systems is being limited.
- In France, getting permission to access metering data by more than one Local Authority department proves difficult.

Current activities on the European smart meter roll out do not take into consideration the effects on institutional organisation such as municipalities which are often provided with energy from multiple sources. Technical and procedural requirements are to be strengthened or introduced to enable cities to "*lead by example*" and fully utilise smart metering data:

- Clarify interoperability standards and strengthen the requirement
- Enforce the online interface for data and introduce requirement for an API
- Introduce and standardise requirements on physical interface
- Strengthen right to out-of-court dispute settlement
- Introduce obligation for smart meter operators to announce installation of smart meters
- Introduce obligation smart meter operators are required to reconnect any existing AMR
- encourage municipalities to have the provision of an API as part of the renegotiation of energy and water contracts

Project funded by the European Commission under the H2020 Programme, Call H2020-EE-2015-3-MarketUptake, GA-No. 695916

Smart meter requirements for public buildings

Current EU legislation and communication builds on a straightforward relationship between customer, meters and utility which does not apply in municipalities where centralised energy departments manage large and diverse portfolio of buildings often with their own energy contracts.

The winter package on energy 2016 (Clean Energy for all Europeans), makes immense progress on aspects of market participation such as trading flexibility and self-produced electricity[1] but the progress is not equally met for gas[2] and the secondary effects on 'plain and simple' energy saving behind the meter are not sufficiently considered, this includes water and various heat sources. These effects become more obvious the more metering points – often hundreds – need to be handled and are often run by different operators[3]. Moreover, even if the physical installation itself is handled by one operator, online platforms, data formats and business process vary across energy providers, the customers' access point to smart meter functionalities. As a consequence, municipalities will also be less able to implement policies and processes for supply side market actions (e.g. flexibility, demand response), the primary goal of smart metering, across a large number of buildings. Municipalities are a special case. They have not really been considered as such in European and national legislation to date.

Technical requirements needed

Clarify interoperability of data interface in article 19(3) of the proposal for common rules for the internal market in electricity: "*Member States shall ensure the interoperability of these smart metering systems as well as their connectivity with consumer energy management platforms.*"

Though the same paragraph also enforces "relevant standards" and "best practice" **it does not specify them**. More importantly, there is no procedure stated for consumers to complain about lack of interoperability or body to be addressed for such matters.

Energy managers must be enabled to use specialised energy management software capable of to detecting wastage across a wide portfolio of buildings and identify the most cost-efficient efficiency improvements. Otherwise any form of rule and notification automatisation will not be possible or more expensive staff needs to be employed to continuously ensuring maximum energy efficiency off. Such high level use cases are currently not being followed in national regulation and law. In Germany, such functionality would be explicitly forbidden.

[1] COM(2016) 864 final – Recast of directive for a common rules for the internal market in electricity

[2] COM(2016) 761 final – Recast of directive 2012/27/EU on energy efficiency

[3] In the majority of cases the operator of meters is the 'district service operator' (DSO). However, to avoid confusion, the document will refer to (smart) meter operators.

Enforce online interface and introduce API in article 24 (1) of the proposal for common rules for the internal market in electricity: "*Member States shall define a common data format and a transparent procedure for eligible parties to have access to the data listed under paragraph 1 of Article 23 [...]*".

It is not clear what the term "transparent procedure" entails. Does it refer to process of getting permission to download data or downloading the data itself? An opensource and clearly document API must be provided enabling (large) customers, including municipalities, to download large sets of data. Ideally, the API is standardised as well as the content of the database and format of data collected. Again, municipalities are a special case. Not only do they collect large amount of data for large amount of different building types they engage directly with the public. This public engagement can encourage others to adopt more energy saving attitudes and behaviours.

Introduce requirements on physical interface in article 20(e) of the proposal for common rules for the internal market in electricity: "*if final customers request it, metering data on their electricity input and off-take shall be made available to them, via a local standardised communication interface and/or remote access, or to a third party acting on their behalf, in an easily understandable format*".

Initiating processes for data access for hundreds of meters is an unnecessary administrative burden. Furthermore, efficient asset management often concentrated in small teams relies on reliable data particularly in buildings with consumption many times higher than the average household. Relying on multiple parties and communication channels increases the number of possible break-downs which have to be investigated. A problem that does not exist where own AMR infrastructure has already been deployed. Furthermore, the mandate M/441 on smart meters on European level does, explicitly, not standardise the solution: "*Data exchange with other systems e.g. systems for physical mater installation and meter asset management, though of importance to customers, meter operators and suppliers, are beyond the scope of this mandate.*"[4]

The interface should be located "before" the data enters the gateway. This is particularly relevant if the final smart meter (gateway) collects data from smart meters operated by any party other than the municipality. Data from each sub-meter should be accessible through the interface. **The smart meter should also provide the energy which is necessary to run the sub meters / consumption sensors.** In short, a smart meter gateway compliant with this requirement would need a multiple protocol interface and / or a European standardised interface (e.g. M-Bus).

Process requirements needed

[4] CEN/CLC/ETSI/TR 50572:2011, p20

Strengthen right to out-of-court dispute settlement in article 26 (formerly Article 3) defining the settlement procedure referencing a multitude of definitions from other directives.

Due to the lack of transparency on complaint procedures and the interdependency of local smart meter operators with the public body, most municipalities refrain from making public complaints and try to resolve issues locally. As with other matters in the Internal Market Directive, the phrasing seems to focus on end-consumers only.

Introduce obligation for smart meter operators to announce installation of smart meters.

Municipalities require hundreds of (smart) meters. Operators should be required to announce any changes to (any) metering enabling municipalities to check whether AMR installations will be effected and agree on further procedure. Grouping installation and optimising schedules to reduce costs on both sides should be obligatory for consumers above a certain share of total consumption in the grid. Any replaced meter within an AMR system has to be connected to the data collection hardware (e.g. M-Bus) and registered in the energy management software. The municipality's energy management authority will notice a new meter only after getting informed by a janitor or after own research due to missing consumption data.

Introduce obligation smart meter operators are required to reconnect any existing AMR

Organisations installing (smart) meters regularly disconnect AMRs when replacing an old meter. Generally, there is no technical reason. These organisations have no regard to the inflicted cost of having to send staff for fixing the issue and the energy efficiency losses which might occur in the mean time. **The settlement body should be empowered to handle such issues and be provided with standardised forms and cost sheets**.

Smart meters challenging existing AMR installations

Existing investments in AMR are at risk through current and anticipated practise from upcoming regulation

It is now widely acknowledged that frequent data measurements are crucial to reduce wastage of energy and water. Leakages and other defects can be detected more quickly. Buildings systems can be programmed to suit actual demand. Data can also be utilised to raise awareness and highlight waste to tap into the information available to staff present on site as realised in the EDI-Net project. For this

reason Leicester City Council, for instance, started introducing Automatic Meter Reading (AMR) systems in 2004 and monitor around 780 main meters alone.

Whenever suppliers install smart meters they regularly disconnect the customer access from the old meter and municipalities are no longer able to monitor the building unless they invest a second time. Municipalities having *"lead by example"* to increase energy efficiency of their buildings stock using ICT are confronted with having more and more difficulties to access the data they had already access to for years.

Other issues arise from poor definition of smart metering devices and standards, resulting in a roll-out of smart-meters which functionalities do not match the ability of existing AMR hardware. For instance, gas and water meters installed by suppliers often rely on batteries often limiting the frequency of data acquisition in benefit of range[5]. Any stakeholder having implemented an AMR has invested effort to provide a source of energy to ensure frequent data recordings and range. Hence, even if smart meters are installed, in certain aspects, they will remain less advanced than already existing AMR installed or widely available in the market. Therefore, smart meters should be able to connect to existing (sub-)meters, collect the data and communicate the complete data set, at least to a local interface.

A key issue is interoperability. As for electricity the proposed recast of the directive for a common rules for the internal market in electricity defines "*'smart metering system' as an electronic system that can measure energy consumption, providing more information than a conventional meter, and can transmit and receive data for information, monitoring and control purposes, using a form of electronic communication*"[6]. It further defines 'interoperability' and 'near-real time' among others. These definitions need to be adopted by the co-legislators to enter into effect.

Further detail can be found in the public deliverable *D4.1 Overview of smart metering in Germany, Spain and the United Kingdom* available on the EDI-Net website.

Author: Georg Vogt, empirica – Gesellschaft für Kommunikations- und Technologieforschung mbH

[5] Meters for electricity can feed on the source itself and sometimes choose PLC to transfer data

[6] COM(2016) 864, p53