



Commission for Energy Regulation  
An Coimisiún um Rialáil Fuinnimh

# Update on the Smart Meter Upgrade

## Information Paper

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*Regulating Water, Energy and Energy Safety in the Public Interest*

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Smart meters are the next generation of electricity and gas meter and are being rolled out across Europe and internationally. This new technology will replace older, mechanical meters and will make available new products and services to energy consumers. Smart meters will make the switching process easier and empower consumers to make the right choice for their energy needs. Smart metering will also enable the development of the smart grid and facilitate more flexible, reliable and better network planning in the future.

## Phased Approach – Submission to the CER

In early 2017, ESB Networks (ESBN) submitted to the Commission for Energy Regulation (CER) an updated delivery plan for the rollout of smart meters to energy consumers. This plan is based on a staggered implementation of the smart metering solution or ‘High Level Design’ (HLD)<sup>1</sup> and its associated functionality. The proposal put forward by ESBN attempts to limit the technical complexity associated the smart meter upgrade and also builds in more flexibility to the overall delivery of smart meters to consumers.

Following receipt of the proposal, the CER sought updated cost information from ESBN associated with delivering the HLD in this phased format. Updated cost information is important for the CER to consider in order to determine if the proposed approach represented value for money for energy consumers.

The CER also considered it prudent to engage with other project stakeholders including Gas Networks Ireland, electricity and gas suppliers, Sustainable Energy Authority of Ireland (SEAI) and consumer interest groups with a view to getting feedback on ESBN’s proposal.

Both the CER and ESBN engaged with the Department of Communications, Climate Action and Environment (DCCAE) in order to brief them on ESBN’s proposal.

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<sup>1</sup> <http://www.cer.ie/docs/000699/CER14046%20High%20Level%20Design.pdf>

# Phased Approach - Delivering the Smart Metering High Level Design

ESBN's proposed delivery plan reduces the technical complexity associated with delivering all of the functionality of the HLD at the same time by delivering the necessary IT upgrades and market changes required to cater for smart metering over 3 phases.

The **first phase (2019 – 2020)** will see ESBN delivering 250,000 smart meters to those consumers (or potentially communities) who request a smart meter and those meters which require replacement by ESBN.

Smart services such as time-of-use tariffs, smart bills, access to historical consumption information, etc. will be made available by suppliers at the end of this phase in Q4 2020. This is an important element of the new delivery plan as it brings forward many of the primary benefits associated with smart metering in particular enabling consumers to access the additional services smart metering provides.

The ability for a customer to request an updated meter reflects recent proposals from the European Commission contained in the 'Clean Energy for All Europeans' package of legislation.<sup>2</sup>

The **second phase (2021 – 2022)** will see an additional 1 million meters rolled out and will layer in additional functionality and make available a new form of smart prepayment (Smart PAYG) in the market in Q4 2022. This new model of prepayment will provide consumers with the opportunity to pay up-front for their energy without the need for an additional meter or device in the home.

Smart PAYG requires the ability to remotely disconnect and swiftly reconnect supply. This functionality assists suppliers and networks to manage the prepayment process for all customers. This feature will be activated in the second phase of the delivery plan, enabling ESBN to learn from developing EU and international approaches to enhancing security for the remote disconnect and reconnect features. ESBN will therefore not make this feature

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<sup>2</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:c7e47f46-faa4-11e6-8a35-01aa75ed71a1.0014.02/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:c7e47f46-faa4-11e6-8a35-01aa75ed71a1.0014.02/DOC_1&format=PDF)

available in phase 1. Rather a checkpoint review will be carried out by ESNB, in conjunction with all project stakeholders and to be approved by the CER, before phase 2 commences for a chance to perform lessons learned and allow ESNB to conduct more analysis on this element of functionality.

The **third phase (2023 – 2024)** of ESNB's delivery plan will commence following the completion of a second checkpoint review at the conclusion of phase 2. Following the review, a further 1 million meters will be rolled out.

Additional functionality will be made available by ESNB through a Home Area Network (HAN). This will allow consumers to access real-time data on their household energy usage via a device in their home.

The activation of the in-home channel by ESNB will also make gas smart services available to consumers by facilitating the pairing of the electricity meter with the gas meter.

The in-home channel and the associated functionalities will be delivered by ESNB in Q4 2024.

## Phased Approach – Costs & Benefits

The CER has a model developed to analyse the costs and benefits associated with the rollout of smart metering. It was developed following an extensive process of stakeholder engagement, review of literature and internal modelling. The model was designed to analyse the value of the original approach proposed to deliver smart metering in which all of the associated functionalities of the smart metering solution would be delivered at the same time. The model was updated to analyse the financial viability of the new 'phased approach'. The main assumptions relating to the phased approach were updated, alongside the revised programme costs associated with the phased approach, provided by ESNB.

The financial analysis showed that delivering the smart metering programme in a phased approach proves better value for the Irish energy consumer than the previous proposal; representing a € 13 million improvement in Net Present Value (NPV). This is due to two main drivers; namely:

1. **Earlier Roll-Out:** The functionality (in particular the offering of ToU tariffs) is turned on at an earlier stage. This brings forward the customer and generation benefits of reduced peak and overall electricity usage.
2. **Staggered investment:** The upfront costs of IT system updates/changes are phased over a longer time scale. This reduced the gap between upfront costs and the realisation of benefits.

The overall NPV for the Phased approach is -€36 million. Whilst this is negative it can be considered broadly neutral due to the scale of the €1.2 billion programme. In addition, the CER recognises that there are a number of unquantifiable benefits that smart metering could facilitate in the future (such as the ability to leverage smart grid benefits), which should be considered in the context of the decision to proceed with the upgrade to smart meters.

Additionally, the recent draft of new European legislation, referred to as the 'Clean Energy Package' is proposing to put in place an obligation such that that regardless of whether a national smart metering roll out is being pursued or not, customers should be able to request a smart meter and have one installed. In this context, the IT systems to support smart metering would have to be in place irrespective of a national smart metering rollout. In light of such, an alternative CBA run was conducted in which IT system costs were treated as sunk, i.e., they would be incurred irrespective of the extent of the rollout of smart meters.

This led to a €142 million improvement resulting in a positive NPV of approximately €106 million.

## Approving the Phased Approach

The CER has taken the time to consider the feedback received from key project stakeholders such as consumer interest groups, electricity and gas suppliers, SEAI, etc. and is encouraged by the positive feedback received to date.

In addition, the CER has conducted extensive analysis on the costs and benefits associated with ESBN's phased approach. The phased approach, it has been demonstrated, represents an improvement to the overall business case in contrast to the previous approach of delivering all of the associated functionalities of the smart metering solution at the same time.

The phased approach will deliver the smart metering High Level Design – albeit over a number of phases. The ability for ESBN and GNI to collect meter information and communicate with meters remotely will enable energy suppliers to provide a better standard of service, and a wider choice of services. There will be much more information readily available to empower consumers to make more informed choices about their energy needs and encourage more proactive engagement in the market.

The upgrade to smart meters will also streamline the switching process and make new, smart products (such as time-of-use tariffs and smart prepayment) available without the need for an additional meter or device in the home.

Upgrades from analogue to digital have already occurred in the communications and broadcasting sectors and consumers in the electricity and gas retail markets will now be in a position to avail of the benefits associated with this upgrade when smart meters are rolled out. Given that there is currently a requirement for an electricity meter replacement programme, with 700,000 meters nearing end of life, this presents a unique opportunity to upgrade the metering stock and systems for the benefit of consumers.

Having considered all of the above, the CER considers it prudent for the project to move forward with the phased approach. This is a significant milestone for the smart metering project. The project is now moving away from the preparatory stages (previously led by the CER) to the implementation stages. These stages will now be led by ESBN (and later GNI), with the CER's role focussed on coordination. Governance arrangements and work plans

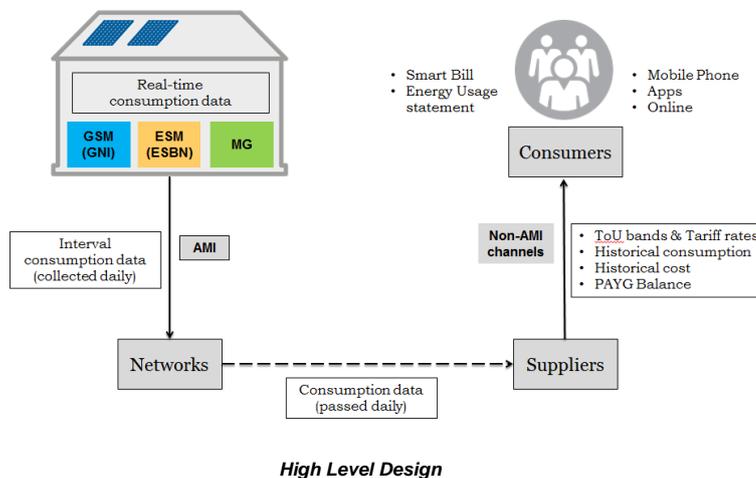
will now be recalibrated in the coming months to reflect the phased delivery and the move to the implementation stage of the project.

The CER looks forward to working closely with all stakeholders in order to make smart meters and all of the associated benefits available to energy consumer.

# Appendix

## What is a smart meter?

A smart meter is a meter capable of remote, two-way communication. The ability to retrieve data remotely is used to collect much more granular data (e.g. half-hourly) and to remotely reconnect or disconnect energy supply. This contrasts with traditional meters, which can only be read manually, through visual inspection.



Smart meters therefore have greater functionality than traditional meters. This corresponds to more, and better, information being available to customers about their individual energy usage. It also facilitates new types of tariffs, including for demand customers who also have micro-generation. This additional functionality therefore has relevance to policy agendas relating to competition, energy efficiency and renewables.

A smart metering system comprises a population of installed smart meters and a means of communicating with them. The means of communication also includes the facilitation to “broadcast” metering data within the home or premise in near real-time.

There is a difference between a smart meter, and devices with similar functionality installed on the customer’s side of the official “meter-of-record”. The key difference is that such devices are not used as a source of data for calculation of wholesale and network charges.

Smart metering system designs can be “thick” or “thin”. The distinction relates to how much information is held and processed on the meter itself, or in back-office systems once the “raw” data has been retrieved. The NSMP is a “thin” design. This choice affects cost and flexibility. It can also affect some aspects of customer experience. To illustrate, “thin” prepayment customers have their account balances updated less frequently and access their balance information from their Supplier (e.g. in a text message) rather than by looking at the meter.

Smart meters are also intrinsic to the development of the smart grid by making it easier to detect losses and facilitating better network planning.