



Electricity Supply Board

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30th July 2010

CONSULTATION PAPER
Possible National Rollout Scenarios for the Smart Metering Cost
Benefit Analysis CER10082

Dear Gary,

ESB Customer Supply (ESBCS) welcomes the opportunity to respond to this important first consultation on the strategic objectives and key issues/questions regarding the functionality of a smart metering solution. We have taken the option of responding to the consultation by answering the questions summarised in Appendix A. While some of the attached comments may be applicable to both, electricity and gas, they specifically address the electricity smart metering

If you have any questions or queries please contact me for clarification.

Yours sincerely,

Jim Wynne,
Smart Meter Project Manager
ESB Customer Supply.



Customer Supply

ESB Customer Supply Response to the Consultation on Possible National Rollout Scenarios for the Smart metering Cost Benefit Analysis

Reference	CER 10082
Date Published	11th June 2010
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Responses to Substantive Questions

Question	Yes	No	Comments
Section 2.0 – Objectives			
<p>Q1. Respondents are invited to submit their comments on these stated objectives of the National Smart Metering Programme. In particular, do you agree with the objectives outlined for the Irish National Smart Meter Programme?</p> <p>Have you any other suggested objectives? If so give details.</p>	Yes	No	
Section 3.0 - Ownership, Display and Provision of Information			
<p>Q2. Respondents are invited to submit their views on the granularity of data that should be available from smart metering systems and how this data should be made available to energy suppliers. In particular:</p> <ul style="list-style-type: none"> • What granularity of data do suppliers require to carry out their business: interval reads, daily reads, monthly reads? 			<ul style="list-style-type: none"> • Suppliers will require individual profile data for all their customers. The level of detail of data to be extracted and the frequency with which meters are read will vary according to the mode of operation (i.e. prepayment or credit) and the type of tariff the customer has chosen. <p>For example, as now, suppliers will need regular meter readings to provide accurate bills. For many credit customers, meter readings every billing period i.e. one or two month, are likely to be sufficient for billing purposes. Where suppliers offer innovative tariffs, such as those based on time of use, they will need more detailed consumption information.</p>

			<p>Suppliers will need 2 separate approaches for receiving data, each having a different level of granularity of data.</p> <ul style="list-style-type: none">○ The 1st approach, as in the current process involves receiving monthly or two-monthly meter readings. This needs to operate exactly like the current market message process.○ The 2nd approach involves the provision of highly granular data by 30 minute interval by day by MPRN for all their registered MPRNS. <p>Suppliers can then load this data into their relevant data environments to support billing, presentation of the data to customers and the development of competitive or behaviour changing tariffs for customers.</p> <p>Every supplier may have different time period which could change from time to time so the Meter Data provider should provide the raw data. The alternative of aggregating data into time periods within the meter and collecting only the time-period reads would limit the flexibility of ToU tariff design. Any changes would require a change to be implemented in each meter. This adds complexity to the operation of the Smart metering system. Additionally, linking in (potentially changing) customer requirements in terms of data required for billing when defining functional requirements for smart metering may also be overly complex.</p> <p>Similarly, if some meters were to be polled for ½ hourly data on a daily basis while others were to be polled for register data on a less frequent basis and this schedule were to continually change as customers changed supplier or tariff, this would add operational complexity and also create significant operational risk. It would be much more straightforward for the Meter Data Collector to collect ½ hourly data for all customers and leave it to the suppliers to process the data according to their requirements.</p>
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<ul style="list-style-type: none"> • Do suppliers have a view on whether data is pushed to them at defined frequencies or would they prefer to pull/access data from a web portal as required? • How frequently do suppliers want to access data? • What service levels are required around the various information sets that are required by the suppliers? • Do suppliers want to hold all historical data on their customers or are they happy to access historical data from a centralized portal? 	Y		<ul style="list-style-type: none"> • This will need to be defined at the detailed design stage and flexibility will be a key requirement. Linked to the previous answer, both push and pull approaches will be required for the different levels of granularity of data. • The frequency of access required will vary with the type of data – consumption, reading, historical, event etc i.e. granularity of data and frequency of access to that data are closely linked. As outlined above, ideally the reads should be available daily so that near-real-time data can be made available to customers. Again flexibility is a key requirement with frequency of data access needing to be defined at the detailed design stage. • Ideally the reads should be daily so that near-real-time data would be available to the customer via the supplier through the internet. • Suppliers will hold their own data on their own customers and will make it available to customers in accordance with their requirements
<p>Q3. Respondents are invited to submit their views on how smart metering data should be made accessible to energy customers. In particular:</p> <ul style="list-style-type: none"> • What information set should Customers be provided with? 			<ul style="list-style-type: none"> • There is tremendous scope for suppliers to provide different customers' with different information sets in ways that suit them. Any roll-out plan should embrace the opportunity and look to provide functionality that supports the development by suppliers of products and services that are tailored to changing customer needs over time. <p>Consumer research shows that consumers find information in monetary terms easier to understand than units of energy For this reason data should be provided to customers via their supplier, incentivising the provision of value-added information and analysis (for usage monitoring and energy saving) rather than just raw data which would be unusable by most customers.</p>

<ul style="list-style-type: none"> • Should suppliers provide data directly to their customers or would it be preferable that the data is accessible from a web portal provided by the network company / meter data collector? Or are there any other options that should be considered? 			<p>Information might be presented to customers by a variety of means, which should be appropriate to their needs. The physical means of presentation of information to customers should be agreed between the supplier and the customer and be flexible, for instance it should take account of their level of technical sophistication or special needs they may have.</p> <p>It is worth noting that different mechanisms may have different time lags associated with them; these might range from displays with direct feeds with almost real time display, to Web display which may result from batch processes hence might show yesterday's consumption, or output on paper statements.</p> <p>There should be minimum standards of information offered, but it is important to recognise that mandating services can compromise competition and innovation.</p> <p>Instantaneous energy usage information (the raw data) could be allowed to be accessed via the local interface and this can then be processed to display an instantaneous hourly energy cost (information) to the customer.</p> <ul style="list-style-type: none"> • Data should be provided to customers via their supplier, incentivising the provision of value-added information and analysis (for usage monitoring and energy saving) rather than just raw data which would be unusable by most customers. <p>Provision of data to customers by suppliers will also allow the information to be integrated with tariff information enabling the supplier to present a wide range of further information on energy expenditure etc.</p> <p>A significant percentage of customers may be dual fuel customers and providing access via a supplier will allow total energy usage (gas and electricity) to be integrated into the one usage and analysis – more effectively promoting the energy efficiency objective.</p>
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<p>Q4. Respondents are invited to submit their views on the required frequency and detail of billing. In particular:</p> <p>- Do you have a view on the likely requirement for monthly billing of customers?</p>	<p>Y</p>		<p>Historically the customer billing frequency was determined as the best compromise between maintaining cash flow, and the number of meter readers and the associated cost. The second factor and limitation is obviously removed with remote reading.</p> <ul style="list-style-type: none"> • Monthly billing should be optional as a value-added service from suppliers and should be more of a feature driven by customer requirements <p>No single solution is appropriate for changing customer behaviour and energy suppliers should have the flexibility to deliver a variety of tailored services to meet their customers' changing needs. Given sufficient flexibility, suppliers could provide information in a way that best suits the needs of their customers outside the constraints of a bill format and its associated frequency.</p> <p>ESBCS is of the view that more cost effective approaches are possible, avoiding the additional operational and system costs that would arise from a requirement for monthly billing and receipting and associated contact management .</p>

<p>Q5. Respondents are invited to comment on the viability of the “Thin Prepayment” solution. In particular:</p> <ul style="list-style-type: none"> • The availability of meter reading data to agreed service levels is important for the operation of a “thin meter” prepayment solution. What service level do suppliers require for the thin prepayment solution? • Do Suppliers believe that the “thin Prepayment” solution is workable? Specifically do Suppliers believe they will be able to provide sufficient access to credit balances to Customers without any display on the meter? • Do Suppliers think that an occasional loss of the communications channels to the prepayment meter will cause difficulty? • How do respondents feel customers should be kept up to date on their balances? For example, do respondents see the provision of an In Home Display (IHD) as an essential part of a thin prepayment” solution? 			<p>This PPM is currently in trial, hence ESBCS are not yet in a position to respond with a final view in relation to this solution</p>
<p>Q6. Respondents are invited to submit their views on how smart metering data can be made available dynamically in the home. In particular:</p>			<p>There are numerous possible ways to provide homeowners with energy feedback. What is more difficult to determine is in what way, and for whom, the feedback can be most suitable. Careful consideration of possible feedback techniques is a crucial precondition for actually achieving a more sustainable society through smart metering. The challenge of feedback is making energy more visible and more amenable to understanding and control.</p> <p>It is important to note that there should be a choice of how information is displayed to consumers as requirements will be different for different types of customers e.g. early adopters etc and a dedicated unit may not always be appropriate – there may well be scope for using devices that people are already familiar with such as TVs, mobile phones, or computers to display energy</p>

<ul style="list-style-type: none"> • Do respondents feel that internet enabled technology could meet customer requirement for consumption information or will it be inadequate? • Do respondents view the In Home Display (IHD) as an essential feature of their future product offerings? 			<p>consumption information.</p> <p>Smart meters should be able to provide one-way communications of real time usage and profile data to an In-home Display provided by suppliers as appropriate to the customers' requirements, using a standardised technology. The connecting link need not be built into every smart meter but can be added as a "plug-in" option</p> <ul style="list-style-type: none"> • Depending on the level of understanding and control of energy consumption by consumers, direct and indirect feedbacks have been found in pilots in other countries, to be complementary as follows: <ul style="list-style-type: none"> ○ Web based services work better for mid-term targets and goals; however, the starting point for energy awareness and readiness to take action remains that consumers first need to see immediate, instantaneous and continuously what is happening to consumption, without having to switch on an optional feedback device first ○ Direct displays work better for rapid tactical energy consumption decisions; ○ Bills work better for longer term strategic decisions. • Most manufacturers have carried out field trials and formed customer groups to determine the most appropriate and effective way to present information. The issue, though, is one of behavioural change, and therefore it is unwise to be prescriptive or singular in describing a solution <p>Provision of real-time consumption data to customers, is more expensive to provide and the speed of its deployment and therefore any potential benefits for carbon savings would be expedited if supported in a cost benefit analysis. This could</p>
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<p>• If an IHD is a requirement which of the following should be responsible for providing and maintaining the IHD and what are the reasons for your preference: The Customer; The Supplier; or Network company?</p>			<p>provide a strong incentive to expedite deployment of real time devices, and provide a stronger platform for supplier-led energy efficiency propositions (including innovative tariffs) to customers.</p> <p>Whilst supportive of the technology, ESBCS does not support a mandatory roll out of real time devices. We believe that a market led approach to deployment of real time devices is preferable to a blanket solution. In addition, there continues to be execution risk with the provision of meter-to-IHD communications functionality. Resolving this issue could delay execution of the project and/or increase costs</p> <p>The Smart Meter Pilot will be key to understanding how these devices are used by consumers and to assessing the potential for consumer demand reduction.</p> <ul style="list-style-type: none"> • If justified, they should be provided, where requested by the customer, by suppliers. However: <ul style="list-style-type: none"> ○ It would be counter-productive to prescribe that a dedicated display must be provided, there will be customers who refuse to take a display, and many who will derive little benefit after an initial period of novelty interest. Mandating such provision would leave suppliers with an obligation that could not sensibly be fulfilled and would result in unwarranted cost. ○ Mandatory IHDs would add considerably to the cost of the programme but would be inefficient in the delivery of benefits compared to a more targeted provision of IHD's – holiday homes, extremely low usage customers, etc would all be issued with IHD's to no effect. ○ Suppliers may choose to provide a separate display solution to consumers i.e. in home display (IHD), Energy Monitors (EM) etc. ○ Similarly, consumers may make their own decisions about using a display unit and the type of unit they prefer.
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<ul style="list-style-type: none"> • Do suppliers intend to offer products in the market that would feature load management or demand response by the customer? • What in your view is the high level minimum functionality for an IHD? 			<ul style="list-style-type: none"> ○ This physical presentation of information might use the data from the local metering system interface via dedicated devices in the customer's home such as a dedicated display, or a customer's PC with a suitable dongle. <ul style="list-style-type: none"> • Suppliers are likely to offer products in the market that would feature load management or demand response by the customer. These are likely to be provided via the internet, not via the Smart meter. • It is important to set out minimum standards for customer access to a defined set of metering system data via the local communications interface. This will preserve and encourage innovation and competition in the provision of services using this information (e.g. energy services). <p>To this end, a prescribed amount of data should be offered to customers. This data would be read only from the metering system as there should be no rights to amend the data within the metering system.</p> <p>There are complexities to be considered such as a new tenant rights to see data relating to previous tenant's consumption. Such complexities need to be taken into account when considering prescribing data provision.</p> <p>Read only, controlled access and locally provided data would include:</p> <ul style="list-style-type: none"> ○ Presentation of real-time information on electricity consumption. ○ Presentation of historical information on consumption so consumers can compare current and previous usage. <p>To facilitate consumer understanding, usage information should be displayed in Euro and cents as well as kilowatts and kilowatt hours. The pricing information needed to provide "Euros and cents totals" need not be delivered via the smart metering system</p>
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<p>Q7. Respondents are invited to submit any comments or views on the issue of data ownership or data security relating to smart metering.</p>			<p>An approach will be required to ensure data ownership and security are addressed appropriately in the overall design of the smart metering system.</p> <p>The security of the smart metering system will be fundamental to its successful operation. All aspects of the system must be secure to protect against unauthorised access, denial of service and other threats and to protect the integrity and privacy of customer data. This means that all access to data must be controlled across the end-to-end smart metering system. The end-to-end system covers all equipment, attached devices, communication links and connections from every customer through Network Operators and suppliers</p> <p>Robust arrangements are required to ensure that consumers can have confidence that security and data privacy are integral parts of the rollout of smart metering</p> <p>One of the key questions for the programme is to determine who has rights to access the data - and for what purpose. Consumers will require clear information about their rights with respect to their consumption data, for example access to data, the right to rectify certain data and to consent to the disclosure of data.</p> <p>Measures will be required to address issues including:</p> <ul style="list-style-type: none"> • Identifying requirements to ensure that smart meters are appropriately protected from physical and electronic tampering; • Identifying requirements to ensure devices cannot be used as a 'back door' into the metering system, including the use of encryption to protect the WAN communications and meter interfaces; • Requiring secure communications to prevent eavesdropping, interception and modification of data; • Establishing a robust security framework and operating arrangements for Data Management ,
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			<p>including management of robust authentication and access controls;</p> <ul style="list-style-type: none"> • Ensuring that robust authentication and access control mechanisms are used • Requiring stringent security assurance and testing. <p>There are practical issues to be addressed e.g. As the Meter Data Provider companies have no direct consumer relationship, all access should be through Supply companies who are already familiar with good security and access arrangements through existing online account technologies</p>
<p>Q8. Respondents are invited to submit any comments or views on whether specific data provision and accessibility requirements for vulnerable customers need to be considered as part of a smart metering solution? If so, give details.</p>			<ul style="list-style-type: none"> • These consumers will benefit from the real time information that smart meters deliver – not only to take advantage of opportunities to reduce wasted energy consumption and so save money, but also from a vastly improved ability to accurately budget for energy expenditure. <p>These consumers will have the same general needs as other customers, e.g. for physical ease of access and simplicity of use. Energy suppliers already have an obligation and experience in taking these customers needs into account and providing suitably tailored solutions.</p> <p>The use of large text displays, symbols, and speaking displays / audio messages are potential means of making display data more accessible to vulnerable or disabled consumers. The market should be encouraged to provide appropriate displays, under a flexible standards, rather than specifications being set centrally.</p>

Section 4.0 - Smart Metering System Functionality Scenarios

Q9. Respondents are invited to comment on the core smart metering functionality as outlined in Scenario A. In particular:

- Do you agree with this core functionality? Are there any functions you feel should not be in the core scenario or are there any functions missing?

Y

- The smart meter should possess basic two-way communication functionality including the ability to support the provision of Automatic Metering Reading, Half-hourly profile data as well as support for Disconnection, Prepayment, Firmware/Upgrades and Micro-generation. In addition, there should be a potential for the meter to support one-way upload of real-time usage and profile data to “smart energy devices” (such as IHDs or PCs or an “energy box”) that can provide demand management and other customer services. The meter itself does not need to conduct extensive processing but merely record usage data and provide it to other devices and to the data processing centre.

The core functionality represents a high level basis from which development of a more detailed functional specification should follow.

- Some additional requirements includes:
 - A full review of the current market message schema needs to be conducted to understand all changes/additions likely to arise from smart metering.
 - Our suggested process changes identified in our response to Question 2 above, identifies some changes need to the Scenario A proposal, for example, the need for high volume analytical capability.
 - Open and non-proprietary protocols and standards to support smart metering communications (in particular in-home) in order to support innovation
- As outlined in response to Q2 above, it would be much more straightforward for the Meter Data Collector to collect ½ hourly data for all customers and leave it to the suppliers to process the data according to their requirements.

- How many or what flexibility is required in relation to the number of Time of Use (ToU) registers on the electricity meter?

<ul style="list-style-type: none"> • Apart from the current meter reading is there any requirement to display further information on the meter? Please bear in mind that meters are not easily accessible to all customers. 			<p>As mentioned above, having the ToU registers in the meter introduces operational complexity and, potentially, inflexibilities. As every supplier will have their own particular tariffs, tariff periods, peak periods, “boost periods” it will be expensive and impractical for ESNB to customize each meter to the particular suppliers’ requirements and will complicate the change of supplier process. Furthermore as suppliers will be changing their tariff offerings on a frequent basis there is likely to be a significant effort needed to keep the meter periods up to date as they could be changing as the product offerings change. Each transaction will have an associated transaction cost. The Meter data provider should provide raw profile data which can be processed by suppliers in accordance with their particular tariff structures and made available to customers.</p>
<p>Q10. Respondents are invited to submit their views on the whether you think that leveraging the communications module in the electricity meter as a hub for Gas metering is a good idea or would you rather see a separate communications hub in the home to support gas metering?</p>			<ul style="list-style-type: none"> • Leveraging the communications module in the electricity meter as a hub for Gas metering is a good idea which is likely to create significant economies of scale and so improve the potential for the programme to deliver net benefits.

<p>Q11. Respondents are invited to give their views on the additional functionality scenario B. In particular:</p> <ul style="list-style-type: none"> • Is one way communication between the Meter and the IHD sufficient? If not what are the additional requirements that would drive two way communications? • What are respondents' views on the issue of the communications protocols to be used in the home? • What data should be provided to an In Home Display or equivalent from the meter? 	Y		<ul style="list-style-type: none"> • One-way communications between the meter and IHD is sufficient. See also Q12 response • Ideally there should be a single standard in-home communications protocol. In the interim, external dongles on the meter will probably be required to support different protocols. • The IHD should receive: <ul style="list-style-type: none"> ○ Real-time information on electricity consumption. ○ Historical information on consumption so consumers can compare current and previous usage. ○ Usage information must be displayed in Euro and cents as well as kilowatts and kilowatt hours. This reinforces the necessity for the supplier to be the provider as only the supplier will have information on applicable tariff structures and rates
<p>Q12. Respondents are invited to give their views on the additional functionality scenario outlined in section 4.3.2 above. In particular is their any additional functionality required to support the "thin prepayment" solution?</p>			<ul style="list-style-type: none"> • If IHD is used in Pre-payment scenario for acknowledging re-energisation or for requesting balance then communications need to be 2-way. Minimum for IHD for pre-payment is that we can send the balance daily to the meter

<p>Q13. Respondents are invited to give their views on the additional functionality scenario C. In particular:</p> <ul style="list-style-type: none"> • What are the additional requirements in terms of smart metering and associated benefits to support the smart home? • What devices should be allowed to join the HAN? • Will there be any special metering or control requirements for Electric Vehicles? • What is your view on what HAN standard should be used? • Is the technology too immature to progress with the functionality described in Scenario C. 			<ul style="list-style-type: none"> • The lack of HAN standards and the immaturity of the technologies indicate that the Smart metering systems should not be designed to incorporate these. These will develop over time, be implemented in only a small proportion of homes and therefore should be considered separately from the Smart meter roll-out. • It is not appropriate or possible to regulate appliance manufacturers on which appliances may or may not have embedded wireless devices. Any effort to do so is likely to be by-passed by manufacturers in any event. • EV-specific services are likely to be delivered through alternative communication infrastructure (such as the car itself) and will not necessarily require special metering or control functionality. • Demand management and control of appliances should be implemented via the internet rather than the Smart meter and should be considered separately from the smart meter rollout
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Section 5.0 - Implementation Issues

Q14. Respondents are invited to give their views on the high level implementation timelines outlined above. In particular:

- Do you agree with the indicative timetable?
- Do you agree with following an accelerated deployment or taking a more phased approach in line with a scheduled meter replacement programme?
- How should metering arrangements for Micro generators and Electric Vehicles be dealt with before full roll out?
- Should there be priority areas or priority customer categories for early roll out?

Y

- The indicative timeline looks reasonable. Delivering a robust system which adds real value is more important than a shorter timescale.
- There is little value in accelerating a mass roll-out.
- While no customer categories should be discriminated against, greater value will come from some customers than others e.g. those interested and capable of demand management, those with Electric Vehicles and those with micro-generation. These customers should be prioritised in the roll-out together with those who need meter replacements anyway.

