

Dublin Energy Laboratory,  
Dublin Institute of Technology  
Kevin Street  
Dublin 8

Mr Gary Martin  
The Commission for Energy Regulation,  
The Exchange,  
Belgard Square North,  
Tallaght,  
Dublin 24.

4<sup>th</sup> August 2010

Dear Mr Martin,

We appreciate the opportunity to comment on the CER's recent consultation paper 'Consultation on Possible National Rollout Scenarios for the Smart Metering Cost Benefit Analysis'. We would like to address a number of the issues raised in the paper which are summarised in the proceeding section (Appendix A: Substantive Questions - *Consultation on Possible National Rollout Scenarios for the Smart Metering Cost Benefit Analysis*).

Yours sincerely,

Dublin Energy Laboratory,  
Dublin Institute of Technology  
<http://dublinenergylab.dit.ie/dublinenergylab/>

Contact: Keith Sunderland  
w: 00-353-1-4024882  
m:00-353-86-8688902  
e: [keith.sunderland@dit.ie](mailto:keith.sunderland@dit.ie)

Question	Yes	No	Comments
<b>Section 2.0 - Objectives</b>			
<p><b>Q1.</b> 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? Have you any other suggested objectives? If so give details.</p>			<p><i>Our group would agree (broadly) with the stated objectives. However, the objective pertaining to supporting renewable and micro generation needs to be further clarified. In particular, has the Commission any ideas on how the smart meter technology could be used to incentivise the uptake of micro generation technologies? For instance, could a ToU tariff be applied to micro generator technologies where depending on the time of day, more or less spill payment could be offered? Currently, only ESBCS are involved with supporting spill payment and perhaps application of smart metering could be used to coerce the other suppliers could be encouraged to instigate such remuneration packages...</i></p>
<b>Section 3.0 - Ownership, Display and Provision of Information</b>			
<p><b>Q2.</b> 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"> <li>• What granularity of data do suppliers require to carry out their business: interval reads, daily reads, and monthly reads?</li> <li>• 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?</li> </ul>			<p><i>Currently in Ireland, meters are read 6 times a year, (highest frequency in Europe) whereas in Germany readings are taken every three years [1]. The approach in Ireland suggests that the data acquired by the DSO is very accurate and up-to-date but then again German systems are synonymous for being efficient and consistent. The real question is how little data needs to be acquired to ensure embracement (and accuracy) whilst keeping costs to a minimum. In the UK, 15 minute consumption data is available day+1 to both consumer (if requested) and the energy supplier. The ERGEG report [1] states that 13 countries in Europe have stipulated</i></p>

<ul style="list-style-type: none"> <li>• How frequently do suppliers want to access data?</li> <li>• What service levels are required around the various information sets that are required by the suppliers?</li> <li>• Do suppliers want to hold all historical data on their customers or are they happy to access historical data from a centralized portal?</li> </ul>			<p><i>metering intervals in the range of 1 minute to 1 day. For the sake of accuracy and with respect to modelling and profile development (to maximise load/gen balance efficiencies), we think 15 minute data is required.</i></p> <p><i>Our group is not directly involved in the energy supply market, but we would think that the optimal approach would be in line with the proposed UK model. The UK Government propose to have a Central Communications Model [2]. This model requires suppliers to be responsible for all metering services but a communications provider will be organised nationally.</i></p>
<p><b>Q3.</b> 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"> <li>• What information set should Customers be provided with?</li> <li>• 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?</li> </ul>			<p><i>Utilising both the web portal in conjunction with the IHD would create the most synergetic approach. In order for the perceived benefits that smart metering could deliver requires a cultural shift towards energy awareness. Therefore from an educational perspective both mediums could emphasise the collective benefits attainable from energy awareness and both the IHD and web portals provide media embraceable amongst all social demographics. As with Q2, We would therefore advocate that a separate entity (communications provider?) is employed to provide the data for the consumer so as to remove over reliance on energy supplier.</i></p>
<p><b>Q4.</b> Respondents are invited to submit their views on the required frequency and detail of billing. In particular:</p> <ul style="list-style-type: none"> <li>- Do you have a view on the likely requirement for monthly billing of</li> </ul>			<p><i>If billing was orchestrated through the web portal, the over head of billing would be significantly reduced. Therefore monthly billing is feasible. If the IHD had the facility of illustrating (over fixed periods) cumulative units consumed, the consumer would be empowered to</i></p>

<p>customers?</p> <ul style="list-style-type: none"> <li>- Do you have a view on the type of information relating to energy usage that should be contained on bills?</li> <li>- Also, for the purposes of such informative billing what granularity of data are the suppliers likely to require?</li> </ul>			<p><i>control/evaluate their own incurred costs and then the context of the bill shifts to becoming more of a summary provision.</i></p> <p><i>Customers should have at hand:</i></p> <ul style="list-style-type: none"> <li>• <i>ToU prices</i></li> <li>• <i>Durations associated with peak time demand (similar to phone bills)</i></li> </ul>
<p><b>Q5.</b> Respondents are invited to comment on the viability of the “Thin Prepayment” solution. In particular:</p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• 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?</li> <li>• Do Suppliers think that an occasional loss of the communications channels to the prepayment meter will cause difficulty?</li> <li>• 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</li> </ul>			<p><i>The viability of the “Thin Prepayment” solution is linked with the assurance that customers have adequate time prior to credit running out. This therefore suggests that both an IHD and SMS technologies should be used. We would advocate that if possible, the smart meter technology could be used in this context to limit energy (for example to essential services) before complete disconnection. In the context of SMS text messaging, there would need to some provision that sending alerts is not chargeable to recipients – so as to avoid the potential for the lack of phone credit presenting a problem.</i></p> <p><i>Data loss should not pose a major problem as long as it is intermittent and of minimal frequency. One of the advantages in the use of smart metering is that validated modelling of consumer profiles will ensure greater accuracy should cost extrapolation be required.</i></p> <p><i>The IHD is essential for this option to work</i></p>

prepayment” solution?			
<p><b>Q6.</b> Respondents are invited to submit their views on how smart metering data can be made available dynamically in the home. In particular:</p> <ul style="list-style-type: none"> <li>• Do respondents feel that internet enabled technology could meet customer requirement for consumption information or will it be inadequate?</li> <li>• Do respondents view the In Home Display (IHD) as an essential feature of their future product offerings?</li> <li>• 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?</li> <li>• Do suppliers intend to offer products in the market that would feature load management or demand response by the customer?</li> <li>• What in your view is the high level minimum functionality for an IHD?</li> </ul>			<p><i>Successful embracement of smart metering will involve high level communication between the energy supply companies and the consumers. Therefore both an IHD as well as the web portal are required. Indeed, when smart meters are rolled out there will also be the need of a media campaign to facilitate the change of mind set required amongst Irish consumers such as the media campaign associated with the regulation of the current electrical contracting sector with respect to safety (e.g. Safe Electric) [3].</i></p> <p><i>Both the web portal and IHD technologies are required with the IHD being an essential item to facilitate communication. The IHD should facilitate real-time monitoring (through a CT) of the demand profile of the installation at the very least. With regard to accumulated customer profile information, perhaps day + 1 summaries would be sufficient – at least at roll-out of the smart meter technologies. Profile information could be accessed through the web whereas the IHD would be used to indicate price/tariff levels associated with load connection (real time) through the display via colour coding, alarm signalling.</i></p> <p><i>Ownership of IHD and meter technologies depends on how roll-out is instigated and associated costs aligned. It is therefore reasonable to expect that if ownership/responsibility of the smart meter and IHD was</i></p>

			<p><i>the customers, there would be a faster response/engagement with respect to technology application associated with a “value for money” expectation. However, as in the Netherlands, where there have been discussions about changes in the market system pertaining to data collection, validation, etc. These discussions revolve around whether these responsibilities should be shifted from the DSO to the Energy supplier. This could present for the consumer an opportunity to save on associated costs but at the same time - as discussed in Q3 - may reduce flexibility making the consumer more dependent on the energy supplier.</i></p> <p><i>If demand management/response is a possibility the capability of two way communication between the customer and the supply company through the IHD and potentially the web portal - is required. This introduces complexity into the management of the overall system and whilst this is the aspiration of a smart grid economy, it may be too complex a consideration at the onset of the roll-out of smart metering.</i></p> <p><i>With regard to functionality, if one looks to the UK and its recent consultation response [2], included in the list is:</i></p> <ul style="list-style-type: none"> <li><i>• Remote provision of meter reads/information (for defined time periods)</i></li> <li><i>• Two-way communication between the meter and energy supplier (including upload/download facility)</i></li> <li><i>• HAN based on open standards and protocols (facility real-time display reads)</i></li> <li><i>• Load management facilities</i></li> </ul>
--	--	--	---

			<ul style="list-style-type: none"> <li>• <i>Support for a range of TOU tariffs</i></li> <li>• <i>Exported electricity measurement</i></li> <li>• <i>Capacity to communicate with a measurement device within a micro generator</i></li> </ul> <p><i>The above list represents what should be the minimum functionality that the Irish market should explore. Whilst I recognise that some of these aspirations may have associated complications, failure to be pre-emptive could imply higher costs in the future.</i></p>
<b>Q7.</b> Respondents are invited to submit any comments or views on the issue of data ownership or data security relating to smart metering.			<p><i>CER should own the data and should be available through the Irish Social Science Data Archive in UCD for academic purposes.</i></p> <p><i>As the data represents consumption patterns by the consumer, it should be made available to them (or their agents) as well as the specified energy agent. That said, the individual data set shouldn't be used as a marketing tool for outside parties. Therefore, data security should apply and be managed by the data collection body.</i></p>
<b>Q8.</b> 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><i>There should be acknowledgement of the diversity of needs required by consumers – particularly those with special needs. Indeed, how does the Disability Act (2005), relate to service provision and resource allocation? Therefore exploration into the types of needs with respect to ergonomic considerations, visibility of displays, use of audible messaging/readings etc should be engaged. Such research should commence immediately. Therefore, when the public are eventually informed of the roll-out of smart meter technologies, a</i></p>

		<p><i>section on this correspondence could be used to identify customer needs. From this feedback, a series of adaptations on the metering technologies (based on this research) can be allocated accordingly.</i></p> <p><i>As per suggestion in [2], there is therefore need for open standards to ensure interoperability between different commercial solutions.</i></p>
<p><b>Section 4.0 - Smart Metering System Functionality Scenarios</b></p>		
<p><b>Q9.</b> Respondents are invited to comment on the core smart metering functionality as outlined in Scenario A. In particular:</p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• How many or what flexibility is required in relation to the number of Time of Use (ToU) registers on the electricity meter?</li> <li>• 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.</li> </ul>		<p><i>Scenario A (Core Smart Metering) when aligned with the list provided in Q6 compares well, but it needs to be more explicit and progressive in functionality and should indeed be more synergised with scenario B or even C as the starting point. There is of course a need to ‘crawl before walk’ logic in progressing these systems, but given the time scales involved, there is scope for mandating a more ambitious target.</i></p> <p><i>As indicated in Q2/3, a separate entity (communications provider?) should be employed to provide the data for the consumer so as to remove over reliance on energy supplier.</i></p> <p><i>With regard to ToU data, until more detailed modelling can be implemented, the provision of the day rate/night rate/peak rate should suffice for the bedding in period. From analysis of consumer behaviour the range of ToU options can be extended.</i></p> <p><i>Meter readings should remain the primary function of the meter. All other information/messaging/incentivisation</i></p>

<p><b>Q10.</b> 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>			<p><i>should be directed to/from the IHD and/or Web Portal.</i></p> <p><i>If a separate entity (communications provider?) is employed to provide the data for the consumer so as to remove over reliance on energy supplier it should be possible that one metering technology be used for all utilities. This would however be dependent on who pays for the technology. If the consumer pays, then it should be quite simple to use one meter as a central hub. If not, then bilateral agreements between utilities need to be explored.</i></p> <p><i>The logistics involved in data recording/validation is already available when one considers the mobile phone networks. Indeed, if possible the roll out of a national smart metering campaign should be coordinated with any national roll out of broadband. This would increase the penetration of broadband particularly in rural areas and also minimise the cost of the national rollout of smart metering.</i></p>
<p><b>Q11.</b> Respondents are invited to give their views on the additional functionality scenario B. In particular:</p> <ul style="list-style-type: none"> <li>• Is one way communication between the Meter and the IHD sufficient? If not what are the additional requirements that would drive two way communications?</li> <li>• What are respondents' views on the issue of the communications protocols to be used</li> </ul>			<p><i>See Q9. In general there should be two way communications between the meter and the IHD. Consumer empowerment will therefore be facilitated at the earliest opportunity. The smart meter market is already developing across Europe. This means that appliances/devices will be available (if they aren't already) where two way communications between meter and IHD can encourage demand response. Ireland inc. should be chasing this market as opposed to waiting for</i></p>

<p>in the home?</p> <ul style="list-style-type: none"> <li>• What data should be provided to an In Home Display or equivalent from the meter?</li> </ul>			<p><i>the market to come to it.</i></p> <p><i>As per Q9, scenario B could represent the starting point in the development of this smart metering market with sufficient scope and infrastructure to provide for scenario C and D.</i></p> <p><i>With respect to prepayment option, once way real time communication between the energy supplier and the meter/IHD is sufficient as other than credit/debit transactions, the potential for engagement of customers is somewhat limited.</i></p> <p><i>The adopted communications protocol will need to be open (or indeed specifically developed to ensure interoperability and freedom of choice with respect to system procurement options.</i></p>
<p><b>Q12.</b> 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>			
<p><b>Q13.</b> Respondents are invited to give their views on the additional functionality scenario C. In particular:</p> <ul style="list-style-type: none"> <li>• What are the additional requirements in terms of smart metering and associated benefits to support the smart home?</li> </ul>			<p><i>The smart home is – at this stage – quite aspirational in the Irish context. That said, as per Q11, by the time smart metering technologies are rolling out in Ireland, the European market will be maturing and as such greater opportunities for synergetic approaches to energy management between the customer and energy supplier</i></p>

<ul style="list-style-type: none"> <li>• What devices should be allowed to join the HAN?</li> <li>• Will there be any special metering or control requirements for Electric Vehicles?</li> <li>• What is your view on what HAN standard should be used?</li> <li>• Is the technology too immature to progress with the functionality described in Scenario C.</li> </ul>			<p><i>should be prevalent.</i></p> <p><i>Indeed, our consensus is that this option is actually the most appropriate since:</i></p> <ul style="list-style-type: none"> <li><i>a) The marginal cost now is low when compared to a dedicated future roll-out, and</i></li> <li><i>b) It offers the greatest opportunities for the development and deployment of domestic demand management technologies.</i></li> </ul> <p><i>In relation to the additional requirements, our consensus would be that the interface hardware/protocol between the meter and the home must be as flexible as possible to allow as wide a range of demand management/display/micro-generation technologies to be employed.</i></p> <p><i>There is an acknowledgement of the arduous task ahead to get to scenario C, but an awareness of what is happening elsewhere could result in opportunistic gains being made. This is only possible however, if an open minded approach is embraced.</i></p>
<p><b>Section 5.0 - Implementation Issues</b></p>			
<p><b>Q14.</b> Respondents are invited to give their views on the high level implementation timelines outlined above. In particular:</p> <ul style="list-style-type: none"> <li>• Do you agree with the indicative timetable?</li> <li>• Do you agree with following an accelerated deployment or taking a more</li> </ul>			<p><i>Given the current economic climate, the role out time line seems appropriate. As with previous opinions however, I feel that the lead-in time should prioritise the acceleration from scenario A to scenario B as the commencement position.</i></p> <p><i>With regard to micro generators, the current situation</i></p>

<p>phased approach in line with a scheduled meter replacement programme?</p> <ul style="list-style-type: none"> <li>• How should the metering arrangements for Micro generators and Electric Vehicles be dealt with before full roll out?</li> <li>• Should there be priority areas or priority customer categories for early roll out?</li> </ul> <p><b>Q15.</b> Respondents are invited to give their views on the need for customer awareness and education work programme as outlined above. In particular:</p> <ul style="list-style-type: none"> <li>• What would be the nature and timing of such customer awareness education and promotion relative to the programme timelines?</li> <li>• Where should responsibility reside for the development and execution of such an awareness programme?</li> </ul>			<p><i>where a ‘temporary’ metering arrangement (i.e. before the introduction of smart metering) should suffice as long as it has the facility to incorporate import/export measurement. I would advocate that all micro generator installations should be provided with the Elster smart meter (as indicated in information papers [4-6]) with consent from the consumer/provider) so that research and analysis can be explored.</i></p> <p><i>The approach used in the regulation of the electrical contracting sector with respect to safety [3] should be considered. This approach involved round table discussions with all stake holders including the Safety Supervisory Bodies (SSBs) and the Electro Technical Council of Ireland (ETCI) prior to the introduction of the current media campaign (Safe Electric). This collaborative process is further enhanced by educational programme developments with regional Institutes of Technology (IoTs) such as the current work on a generic Verification and Testing Modules. This latter point, in my opinion, is very important. Education is core to any cultural shift and as the introduction of Smart Metering requires engagement by all parts of society if it is to be successful and worthwhile.</i></p>
---	--	--	---

## REFERENCES

- [1] ERGEG, "Status Review on Regulatory Aspects of Smart Metering (Electricity & Gas) as of May 2009," C. o. E. E. R. ASBL, Ed., ed: European Regulators Group for Electricity & Gas, 2009.
- [2] DECC, "TOWARDS A SMARTER FUTURE: GOVERNMENT RESPONSE TO THE CONSULTATION ON ELECTRICITY AND GAS SMART METERING," DECC, Ed., ed, 2009.
- [3] CER, "(CER/07/ 203) Vision for the Regulation of Electrical Contractors with respect to Safety - A Decision Document," CER, Ed., ed, 2007.
- [4] CER, "(CER/09/024) SMART METERING PROJECT PHASE 1 - INFORMATION PAPER," ed, 2009.
- [5] CER, "(CER/09/118) SMART METERING PROJECT PHASE 1 - INFORMATION PAPER 2," CER, Ed., ed, 2009.
- [6] CER, "(CER/09/186) SMART METERING PROJECT PHASE 1 - INFORMATION PAPER 3 ", ed, 2009.