



Reflecting on Corporate Strategy Mid-term review discussion paper

The SmartGridIreland collaborative network commends the ongoing consultation process conducted by the Utility Regulator regarding Corporate Strategy and is appreciative of this opportunity to comment on those matters relevant to the SmartGrid concept and network outlook.

There is significant change within the energy sector at this time and it is indeed prudent to conduct such a review mid-period. The recent economic situation has had an impact on energy materials pricing on a global scale which highlights the critical matters of energy independence, security of supply and the knock-on effect to domestic and industrial customers in the price that they are paying today and will pay in the future. We have also seen an increase in the technology focus in the overall energy sector, particularly in potential Information and Communications Technology areas, which have added to a growing overall global complexity.

These topics are indeed reflected in the consultation document background which highlights for example –

Unstable prices

Competition in retail and wholesale sectors

Sustainability

Security of supply

Harmonisation of strategy

EU factors

Technology advances

Accordingly we have endeavoured to comment appropriately on strategic, policy, technology and other developments which have occurred since the original corporate strategy inception. We have detailed below the rationale for the final comments but would state that we consider the corporate strategy does not display the level of vision at macro-economic level to facilitate Northern Ireland being an exemplar of technology leadership in the energy sector. We understand that the Regulatory Authority has a duty-of-care to protect the interests of consumers but feel that these positions are not mutually exclusive. Earlier implementation of the technology advances will reduce capital expenditure and operational costs to the benefit of consumers and we are disappointed at the projected time lines as the RP5 route is too slow. We have noted the Ofgem initiatives as a creative model and referenced these mechanisms such as Low Carbon Network Fund “to try out new technology, operating and commercial arrangements.” Accordingly this assessment should review and extend the vision of a low – carbon electricity energy network for Northern Ireland; this requires greater scale and scope and a schedule much accelerated beyond that envisaged.

1.0 Strategic Energy Framework (September 2010)

The Strategic Energy Framework document from September 2010 outlines the Minister’s view of the role of energy in the commercial and economic life of the region with particular mention of “Maximising our natural renewable energy sources” as represented in the target that Northern Ireland will seek to achieve 40% of its electricity consumption from renewable sources by 2020. The



Minister states in the foreword the desire to guide market participants and encourage increased levels of renewable energy and provision of the associated new infrastructure necessary to improve security and diversity of energy supply, and support economic activity while at the same time contributing to reduced carbon emissions.

The companies represented in the SmartGridIreland network consider the technologies embodied within the Intelligent Energy network as a critical enabler for a cohesive solution and note that in section 5 of the document (Developing our Energy Infrastructure) it states “we must also plan for a smart grid to deliver more efficient management of the electricity transmission and distribution networks.”

We consider this network view further reinforced by the accompanying references to future additional loads such as electric vehicles and heat pumps – “smart grid technologies will be available to enable this and minimise the amount of costly new infrastructure needed”

2.0 Smart Zone Pilot proposal SGI (November 2010)

In November 2010, SGI submitted to DETI a proposal for an end-to-end Smart Zone Pilot to analyse and test the potential technologies, including smart metering, on a cost-benefit basis with a view to evaluating those which could reduce and optimise future electricity infrastructure investment. At this time the stakeholders are in discussion about a metering trial of scale and the related consumer engagement. The ancillary parts of the proposal have so far not progressed further at this time. We would highlight this as a missed opportunity to get real experience and learning combined with investment appraisal on a value-for-money basis. This is a particular concern for the network as timely action would have significant benefit and it seems that it is a timing issue rather than funding as NIAUR has stated in the RP5 Strategy paper (August 2010)

“The form and structure of a possible smart grid for the network in NI is yet to be decided, but the Utility Regulator proposes a trial during RP5 and a level of funding may be required.”

We note following reference from the Electricity Directive (2009/72/EC) which explicitly obliges Member States to assess the roll-out of intelligent metering systems as **a key step towards the implementation of Smart Grids.**

In the Demand Side Vision document referenced later, it states that -

- interest in microgeneration is growing in NI, and in particular small renewables due to the renewable incentive schemes offered by Government.
- the NI smart metering trial specification assumes an ability to interact with microgenerators.
- any roll out of smart meters needs to consider the potential needs of EV charging systems. Both regulators are keeping a “watching brief” on this area and are cognisant that the smart metering design may have to cater for EVs, but the exact requirements have yet to become clear.

Accordingly this reinforces the case for a suitable smart zone trial to help determine the impact of microgeneration and additional loads such as EV and heat pumps on the distribution network. We would highlight again the electrification of heat is a mechanism for alleviation of fuel poverty caused by oil-based space heating.

3.0 NIE submission RP5 (January 2011)

NIE have in the interim submitted their RP5 proposal for the period 2012-2017 and this has inclusions which are related to the aforementioned policies and proposals in relation to infrastructure and technology. It is the network view that the technology proposals therein will have no adjudication before mid 2012 and even later implementation if they are deemed to merit appropriate funding. Accordingly this delay would be perceived to have detrimental impact on current and future technology and infrastructure planning and thus will hinder any accruing benefits or alleviations of real problems that we face today such as integration and management of distributed renewable energy sources. This will affect not only the medium term large scale players such as wind farms and aggregate biomass, but also the many ongoing applications for sub 250 KW devices spread across the network and jeopardise the 40% SEF target. We would comment also that there is no provision at this time for any smart meter trials of scale or communications infrastructure tests. Communications would be perceived as the critical backbone of any future intelligent electricity network and it is quite clear today that this is an area of technology difficulty given the wide range of performance criteria, the extent of the disparate rural network and the learning from activities in other regions. We observe also that related to this would be the significant matter of future network data and hardware security which does not appear to be addressed in any specific programme. These points also emphasise that the focus alone on RP5 as potential solution is quite inward looking, grid focused and reliant on NIE. There is a wider agenda in relation to the future interface with consumers, prosumers and other participants eg Electric Vehicle infrastructure planning, in the period up to 2017.

4.0 Ofgem activities (ongoing 2011)

The network notes also the recent initiatives from the national regulatory authority OFGEM in their activities on several fronts:

4.1 Low carbon network fund - The Fund allows up to £500m support to projects sponsored by the distribution network operators (DNOs) to try out new technology, operating and commercial arrangements. There is no comparable scheme in Northern Ireland although this is recognised by NIAUR who mention in the RP5 Strategy paper last year "To ensure sustainability in electricity supply, low carbon initiatives including electric vehicles, micro-generation, and smart metering are at the forefront of government policy...The Utility Regulator will consider the introduction of a Low Carbon Network fund as part of RP5." As per earlier comments regarding the Smart Grid pilot, this provision should be fast-tracked well before the RP5 time scale. The potential value of a similar fund in Northern Ireland would be in region of £8M.

4.1.1 We note that OFGEM is in process to move from the RPI-X revenue formula with one based on Innovation, Incentive and outputs. Ofgem have stated that a new “fit for purpose” framework is needed as RPI-X :

4.1.2 Focused on the short term

4.1.3 Focused on Ofgem, rather than customers

4.1.4 Limited innovation

4.2.4 Is biased towards capex

Ofgem view is that the RIIO price controls will “facilitate the cost-effective delivery of government renewables targets and security of supply.” And that Smart Grids will play an important role in addressing the challenges ahead.

4.3 In March 2011 Ofgem produced a report by Frontier Economics (**How to deliver smarter grids in GB**) which was the basis for the establishment, in association with DECC, of a Smart Grid Forum “to bring together key opinion formers, experts and stakeholders in the development of GB smart grids to provide strategic input to help shape Ofgem’s and DECC’s thinking and leadership in this area..”

The initial Smart Grids Forum work programme includes four critical activities –

Reducing uncertainty

Benefit evaluation methodology

Refining a vision for future networks

Minimising lost opportunity

This indicates the importance that Ofgem gives to the potential of this emerging technology and we do not see any equivalent body in place in Northern Ireland. It is generally accepted that every grid is unique so a passive policy of copying from fast movers is not automatically transferable and can result in inappropriate applications and ultimately higher costs. Thus future consumers will be disadvantaged by continuation of similar passive policies.

4.4 Ofgem has stated clearly in open fora that they are promoting innovation. To this end they have published on 2nd September 2011 “Decision and Further Consultation on the Design of the Network Innovation Competition” on how they intend to engage with the non-regulated bodies to promote innovation and provide funding similar to Low carbon Network Fund.

In this they state that they are currently implementing the new RIIO regulatory framework for the gas distribution and electricity and gas transmission sectors. Many elements of this new framework will encourage innovation, such as the focus on outputs and the longer-term, incentive-based price control which will reward innovation.

And that they go on to say that they recognise that research, development, trials and demonstration projects - the earlier stages of the innovation cycle - are speculative in nature

and yield uncertain commercial returns, even within the new framework they have created. Therefore they are establishing the Network Innovation Competition (NIC) as part of a time-limited package of measures to encourage the required step change in the level of innovation in the energy networks. They are designed to ensure that customers' money is spent addressing the key issues the energy network companies face as they consider what they should do to facilitate the transition to the low carbon economy and to ensure that learning is disseminated widely. This learning should benefit customers by improving the companies' ability to deliver environmental outputs efficiently and effectively. Under the NIC, partial funding for projects will be awarded annually through a competitive bidding process

In summary we consider these collective initiatives which promote and incorporate a much wider industry input an appropriate method to address the insularity to which we referred earlier at 4.0 in the context of RP5 submission.

5.0 International Energy Agency (April 2011)

As additional context we would reference the recent International Energy Agency report titled "Smart grids Technology Roadmap" which states that widespread deployment of smart grids is critical for a secure, cost-effective and clean energy future. This was published in April 2011 at the Clean Energy Ministerial which brings together ministers with responsibility for clean energy technologies from the world's major economies.

"We need to see a much more aggressive investment in large-scale regional pilots in order to deploy smart grids at the scale they are needed," said IEA Executive Director Nobuo Tanaka, speaking at the launch in Paris on 4 April. "In addition to funding regional pilots, governments need to establish clear and consistent policies, regulations and plans for electricity systems that will allow innovative investment in smart grids. It will also be vital to gain greater public engagement. This can be done by educating all relevant stakeholders – but especially customers and consumers – about the need for smart grids and the benefits they can offer."

With reference to this review we note that the IEA emphasises that Government, private sector and customer and environmental advocacy groups must work together to define electricity system needs and determine smart grid solutions. Regulatory and market models - such as those addressing system investment, prices and customer participation - must evolve as technologies offer new options over the course of long-term incremental smart grid deployment. Accordingly there is an opportunity presented now for Regulators and consumer advocates to engage in system demonstration and deployment to ensure customers benefit from smart grids. Building awareness and seeking consensus on the value of smart grids must be a priority, with energy utilities and regulators having a key role to justify investments

6.0 European Commission (April 2011)

In the “COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS” adopted on 12 th April last (headed – **Smart Grids: from innovation to deployment**) the Commission states that :

- The benefits of Smart Grids are widely acknowledged. Smart Grids can manage direct interaction and communication among consumers, households or companies, other grid users and energy suppliers. It opens up unprecedented possibilities for consumers to directly control and manage their individual consumption patterns, providing, in turn, strong incentives for efficient energy use.
- Improved and more targeted management of the grid translates into a grid that is more secure and cheaper to operate.
- Smart Grids will be the backbone of the future decarbonised power system. They will enable the integration of vast amounts of both on-shore and off-shore renewable energy and electric vehicles while maintaining availability for conventional power generation and power system adequacy.
- Moreover, the deployment of Smart Grids provides an opportunity to boost the future competitiveness and worldwide technological leadership of EU technology providers such as the electrical and electronic engineering industry, consisting mostly of SMEs.
- Finally, Smart Grids provide a platform for traditional energy companies or new market entrants such as ICT companies, including SMEs, to develop new, innovative energy services while taking due account of data protection and cyber-security challenges. That dynamic should enhance competition in the retail market, incentivise reductions in greenhouse gas emissions and provide an opportunity for economic growth.

The document points out that Smart Grids can make an important contribution to the new strategy for smart, sustainable and inclusive growth, including the objectives proposed under the flagship initiative for a resource-efficient Europe and Europe’s energy and climate goals, which are at the heart of the internal market for energy. The Third Package provisions and especially Annex I.2 of the Electricity Directive (2009/72/EC) explicitly oblige Member States to assess the roll-out of intelligent metering systems as **a key step towards the implementation of Smart Grids** and to roll out 80% of those that have been positively assessed. Smart Grids are also identified as a way for Member States to meet their obligations to promote energy efficiency. In addition, the Energy End-Use Efficiency and Energy Services Directive (2006/32/EC), for which the Commission is currently analysing the need for revision, calls for metering that accurately reflects the final customer’s actual energy consumption and provides information on actual time of use. The European Council of February 2011 recognised the important role of Smart Grids and invited Member States, in liaison with European standardisation bodies and industry, ‘to accelerate work with a view to adopting technical standards for electric vehicle charging systems by mid-2011 and for smart grids and meters by the end of 2012’

The Commission goes on to say that grid operators and suppliers are expected to carry the main investment burden and comments further that unless a fair cost sharing model is developed and the right balance is struck between short-term investment costs and long-term profits, the willingness of grid operators to undertake any substantial investment might be limited.

In the section **2.3. Regulatory incentives for Smart Grids deployment** the Commission states “Above all, Smart Grids are a necessary enabler for providing added-value services to customers. Regulatory incentives should encourage a network operator to earn revenue in ways that are not entirely and necessarily linked to additional sales, but are rather based on efficiency gains and lower peak investment needs, i.e. moving from a ‘volume-based’ business model to a quality- and efficiency-based model. “Article 10(1) of the Energy Services Directive obliges Member States to remove such volume-based incentives.

Annex I.2 of the Electricity Directive requires Member States to define, no later than 3 September 2012, an implementation plan and timetable for the roll-out of smart metering systems. The document states that given the relationship between Smart Grids and smart meters, such implementation plans would also need the development of Smart Grids, and should thus address the required regulatory incentives for the implementation of Smart Grids. The European Commission will actively monitor Member States’ progress, and provide guidelines on key performance indicators by the end of 2011. If insufficient progress is being made in the course of 2012, the Commission will consider introducing stricter regulation for the implementation of Smart Grids.

The document comments that, “Smart Grids deployment in the Member States should also proceed at a similar pace as large differences between national energy infrastructures would prevent businesses and consumers from reaping the full benefits of Smart Grids. Permitting procedures for the construction and renewal of energy grids have to be streamlined and optimised, and regional regulatory barriers and resistances must be tackled”. This is particularly relevant in the context of the SEM on the island of Ireland where, considering current and future interconnectivity, we have a potential interface of three regulatory regimes.

There is also mentioned the Electricity Directive’s obligations on Member States to facilitate switching within strict deadlines as well as to ensure consumer access to consumption and billing information which are conducive to Smart Grids deployment. Following is an extract, “Developing Smart Grids in a competitive retail market should encourage consumers to change behaviour, become more active and adapt to new ‘smart’ energy consumption patterns. This is a crucial precondition for the successful transition towards the efficiency-based business model described above. Demand response is at the core of the new model. It requires (almost ‘real-time’) interaction between utilities and consumers’ energy management”.

The Commission emphasises that a continued R&D effort towards advanced electricity network technology is necessary. European Electricity Grids Initiative (EEGI) was established under the SET Plan to accelerate the deployment of smart grids technologies in view of the 2020 targets. Its main emphasis is on innovation at system level, and it will clarify technology integration and business cases through large-scale demonstrations and R&D projects for Smart Grids. Projects and investments must now aim for ‘real life’ demonstration and validation, solving system integration

issues and demonstrating the business cases. They must also demonstrate how consumers can benefit most from the introduction of these systems.

7.0 Demand Side Vision 2020 (May 2011)

In this document, based on policy goals of competitiveness, security of supply and sustainability, the Regulatory Authorities recognise the potential which demand side management has to deliver significant economic and environmental benefits to the All-Island market. They state that realisation of this potential will require a high level of co-ordination between stakeholders and policymakers across a broad range of areas including energy efficiency, smart metering, large-scale demand side response, new forms of electric demand, aggregation of distributed generation and storage.

Smart metering is identified within the high value category as core to the recommendations in terms of the demand value it can potentially deliver directly from domestic and small business customers. Smart meters that incorporate the future needs of smart appliances is seen as an integral part of any national roll-out programme and it is recognised that both the meter and any Home Area Network should be developed as open source to allow for future devices as far as is possible. It goes on to say that any roll out of smart meters needs to consider the potential needs of EV charging systems, both regulators are keeping a “watching brief” on this area and are cognisant that the smart metering design may have to cater for EVs, but the exact requirements have yet to become clear.

It accepts that significant demand response has the potential to impact on distribution networks and needs to be considered in the development of SMART grids. The Regulatory Authorities will consider the impact of demand participation on distribution networks and the value of dynamic demand.

So we have in this document the encapsulation to some extent the ethos of Smart Grid – the balance of the “fluctuating equilibrium” of generation and load.

8.0 CER/SEAI/ESB Meter Trial Results (May 2011)

Commission for Energy Regulation (CER) published the results of its smart metering trial in 10,000 homes and businesses. This program assessed how smart meters affected electricity consumption, as well as the business case for a national rollout. The CER noted that smart meters and smart grids also will help Ireland roll out more wind power and electric vehicles.

CER is considering these results. In August 2011, CER will launch a consultation on the design of a national smart meter rollout program. A decision on a national rollout, and its design, is expected in October.

The outputs from this exercise have quantified some of the factors indicated above and additionally have highlighted issues in relation to communications technology, technical performance and potential benefits from increased consumer engagement. Additionally it is generally considered that the next logical step would be to incorporate demand side managements and the related enabling technology.

9.0 British-Irish Council (June 2011)

On 20 June 2011, at a meeting of the British-Irish Council, Ministers from the British Isles, Ireland, The Channel Islands and the Isle of Man signed up to a deal to cooperate on exploiting the major wind and marine resource in and around the islands. The states involved agreed to co-operate in the All Islands Approach to energy resources across the British Islands and Ireland. This will encourage and enable developers to exploit commercial opportunities for generation and transmission, facilitate the cost-effective exploitation of the renewable energy resources available, and increase integration of markets and improve security of supply.

Smart technologies and communications will be critical enablers for realisation of the export/import model of this regional “Supergrid”.

10.0 Joint Research Centre (July 2011)

The European Commission, Joint Research Centre report results from a request from Directorate-General for Energy (DG ENER) to start a data collection effort to develop a catalogue of Smart Grids projects in Europe and to carry out a qualitative analysis of their results. The analysis carried out contributed to the drafting of the Commission Communication “Smart Grids: from innovation to deployment”, adopted in April 2011. The report was published in July 2011 and following are extracts:

The uneven distribution of projects and the different pace, at which Smart Grids are being deployed across Europe, could make trade and cooperation across national borders more difficult and jeopardize the timely achievement of the EU energy policy goals.

The increased complexity of the electricity system requires multidisciplinary consortia to share competencies and reduce risks. Collected projects highlight the trend towards a fruitful cooperation between different organisations, which brings together network operators, academia, research centres, manufacturers and IT companies.

Most Smart Grid benefits are systemic in nature as they arise from the combination of technological, regulatory, economic and behavioural changes.

Current regulation in EU Member States generally provides network owners/operators with the incentive to improve cost efficiency by reducing operation costs rather than by upgrading grids towards a smarter system. The regulatory incentive model should be revised in order to accelerate the investment potential of network owners/operators and to encourage them to move to a more service-based business model. Regulation should also ensure a fair sharing of costs and benefits in the set-up of service-based market platforms. Network owners/operators are expected to sustain the majority of upfront investments whereas several players might get benefits when market platforms become operational.

Consumers’ awareness and participation is crucial for the success of Smart Grid projects. Most projects highlight the need to involve consumers at the early stages of project development, to give consumers the freedom to choose their level of involvement and to ensure data privacy and protection. It is imperative to ensure that consumers have trust in and understanding of the whole Smart Grid process and receive clear tangible benefits. To differing extents, consumers will be able to reap numerous potential benefits: energy savings, the reduction of outages, more transparent



and frequent billing information, participation in the electricity market via aggregators, and a better business case for the purchase of electric vehicles, heat pumps and smart appliances.

Addressing interoperability, data privacy and security is a priority requirement for making the ICT infrastructure truly open and secure and reducing transaction costs among Smart Grid users.

Summary

Within the commentary and extracts it is evident that there has been a heightened awareness of the potential benefits and technology issues in the recent past. These have implications as illustrated for the policy objectives of competitiveness, security of supply, sustainability.

Accordingly the SmartGridIreland network suggests that the ongoing mid-term review take cognisance of the changed and changing environment around energy by consideration of appropriate actions post response that complement a long term collective and dynamic vision.

To this end we would propose a regime review based on the Ofgem model now taking shape with localised equivalents which reflect the importance of technology applications in the Northern Ireland framework–

SmartGrid Stakeholders Forum

Low Carbon Network Fund

Review of revenue formula to promote innovation

Focus on future consumer needs rather than perception of regulatory wants

Include economic agenda as part of the society agenda.

Review of current business models to consider future scenarios of Energy Services companies with wider services provision, options on meter supply and operation, cost sharing of infrastructure and innovation investment.

We feel that it is important to proceed in timely manner with implementation of a smart meter pilot of scale incorporating EV, microgeneration and demand management trials. This should address communications and meter technology issues, consumer engagement for sustainable behaviour as pre-cursor to smart meter roll-out.

We recommend the next phase should be planning and implementation of an “end-to-end” all island smart meter pilot to establish and trial issues related to the wider applications, provide factual data for investment decisions and promote all-island deployment harmonisation. This would involve the wider industry and SEM stakeholders and could be funded from future RP5 allocation and ESB equivalent where applicable. This would also be appropriate vehicle around which to construct policy and standards in relation to the security of the overall island-wide network.

There are EU funding schemes within Strategic Energy Technology Plan / European Electricity Grids Initiative which are dedicated to Smart Grid trial and developments. Facilitation of appropriate method whereby regulated bodies, Government and industry could collaborate may find an access mechanism for this finance resource to contribute to a funding cocktail which will reduce overall cost to region and consumers.



The sections of this response 1-10 articulate the commercial, social and legislative rationale which has been developed by regional, national and EU organisations for an increasing priority of the Smart Grid agenda.

Willie Donaghy

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Executive Director ,SmartGridIreland
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IEA Press release http://iea.org/press/pressdetail.asp?PRESS_REL_ID=409

IEA Roadmap (full) http://www.iea.org/papers/2011/smartgrids_roadmap.pdf

IEA Roadmap (short) http://www.iea.org/Papers/2010/SmartGrids_Roadmap_Foldout.pdf

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Smart Grids: from innovation to deployment

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0202:EN:HTML:NOT>

JRC study <http://ses.jrc.ec.europa.eu/images/stories/deliverables/jrc%20report%20-%20smart%20grid%20projects%20in%20europe.pdf>

Network Innovation Competition

<http://www.ofgem.gov.uk/Networks/nic/Documents1/NIC%20Consultation.pdf>

All Islands approach http://www.decc.gov.uk/en/content/cms/news/pn11_050/pn11_050.aspx

Demand Side vision 2020 http://www.allislandproject.org/en/overview_1.aspx?article=185b17f5-e666-4943-8237-f2bdbd3df33f