

CONSULTATION RESPONSE TEMPLATE

NAME OF RESPONDENT	Airtricity
CONTACT DETAILS	Emeka Chukwureh (Regulatory Analyst) emeka.chukwureh@airtricity.com Kevin Middleton (Energy Efficiency Manager) kevin.middleton@airtricity.com
TYPE OF COMPANY	Energy Supply
INTEREST IN DSM	Developing Energy Services

SECTION 2

QUESTION 1: Do you agree with our characterisation of the four types of benefits that demand side management can provide?

ANSWER: The four types identified form a good working taxonomy of benefits that can be derived from demand side management. However none of them specifically deals with the benefits that are anticipated to come from sources such as new forms of electric demand and storage, namely 'valley filling'.

'Valley filling', or overnight charging, may have aspects addressed under static peak reduction and flexible measures. However it will not be full captured under either of those as it may exist not necessarily to alleviate peaks or respond to system conditions, but as a new component of the demand profile that by its nature may find itself being 'fit' into overnight periods.

QUESTION 2: Are there other cost savings which you believe demand side management can deliver?

ANSWER: The cost savings identified pretty much address those feasible from the electricity value chain.

There may be other cost savings derivable from the broader energy 'ecosystem'. For example, electric heating and electric vehicles may shift cost from the natural gas and vehicular fuel value chains to the electricity value chain, but may achieve an overall energy cost reduction. Micro generation and storage may imply news costs at the consuming end, but achieve greater reductions in the external costs of emissions. District heating provides a good example of addressing energy as a bundled service.

However the focus of this paper is on the electricity system. In addition the difficulty in networked systems with aligning incentives at the various activities of locating, creating and harvesting value across the chain, whereby benefits may be reaped at stages and by agents different from those bearing the costs to create them may

become an even greater hurdle to get across for the energy 'ecosystem'.

QUESTION 3: Are there additional studies and reports (to those listed in **Error! Reference source not found.**) which you are aware of and believe we should review?

ANSWER: No. There are innumerable studies and reports available but for the purposes of context and potential initiatives, the international research completed is more than adequate. Ireland's electricity market is unique and in that sense, should develop its own demand side initiatives.

QUESTION 4: What other insights do you have from your experience of demand side management adopted internationally?

ANSWER: A form of demand side management where active/reactive power metering was employed at consumer sites allowing power factors to be determined was implemented in New Zealand. By requiring consumers to maintain power factors above certain thresholds distributors were able to reduce current levels on their networks, delaying infrastructure investment. While not necessarily resulting in changes to the demand profile, it enabled the demand side make a contribution to network operations.

QUESTION 5: Are you aware of other quantitative findings from international experience which you believe are important for us to capture and consider?

ANSWER: The Energy Demand Research Project (EDRP) running in GB which "seeks to better understand how consumers react to improved information about their energy consumption over the long term" will be a useful study to consider. The final results from the study are expected in spring 2011.

QUESTION 6: Do you agree with our identified drivers of future value for demand side response/management? Are there any additional drivers we should consider?

ANSWER: The identified drivers of future value for DSM pretty much cover the landscape as generally understood.

However there might be value in delving down beyond the 'Supply' stage of the value chain to the consumer level, particularly to the large energy users, where there might be drivers at more granular levels. These might be lower energy costs for data centre and decisions weighing off investments in some form of onsite generation against projected costs of 'grid' supply.

While the benefits of putting in 'hard' solutions are better quantifiable, improved consumer understanding allied with practicable incentives may drive demand side participation from the grassroots.

SECTION 3

QUESTION 7: Are there any other aspects of current demand side activity in Ireland which should be captured?

ANSWER: The demand reduction benefits of Community Energy Savings Programmes such as Dundalk 2020

should also be captured. Northern Ireland's Sustainable Energy Programme quantifies lifecycle energy savings and carbon emission reduction and results of past years performances could provide useful data in estimating demand reduction attributable to national energy efficiency initiatives.

QUESTION 8: Do you agree with our high level assessment of the potential for demand side management in Ireland by 2020?

ANSWER: At a high level, the rationale behind the estimated flexible demand in capacity for the island in 2020 looks sound. Given the differences between minimum and maximum estimated flexible demand capacity for each sector, the assessment provides a useful theoretical picture. However, caution should be exercised if it is intended to use these figures as a basis for economic assessment of introducing measures, as uptake of DSR opportunities will be highly variable and dependent on customer perception of value and possible impacts on personal comfort or business risk.

SECTION 4

QUESTION 9: Do you agree with our definition of each individual demand side measure?

ANSWER: In a broad sweep, yes. However we would add that fuel substitution can also be considered a subset of DSM. For example, anecdotally residential electric cooking loads would be a major contributor to daily peak demand. If so, replacing electric hobs with gas-fired versions would lead to reductions in the daily system peak demand.

QUESTION 10: Is our description of the current policy baseline for each demand side measure accurate and complete. If there are omissions please point them out.

ANSWER: Yes, the current policy baseline descriptions are accurate although the Northern Ireland energy efficiency agenda is now driven by the Northern Ireland Sustainable Energy Programme (the renamed NIEEL).

The DCENR currently is also going through a consultation on its own National Energy Retrofit Programme which is likely to shift the responsibility for delivery of energy efficiency programmes from the SEAI to energy supply and energy service companies.

Although the Energy Saving Trust and the SEAI are primary educators in their respective jurisdictions, energy supply companies all have their own education programmes through their websites and customer service teams.

The results of the ROI smart metering trials and knowledge that may be obtained as well from the smart metering trials in GB should be fed into the evaluation of behavioural changes that occur as a result of the use of smart meters and TOU tariffs. Airtricity's parent, SSE, is involved in the GB programme.

Existing policy gaps relating to Renewable Energy Feed In Tariffs (REFIT) and energy trading arrangements create barriers to growth in the micro-generation market. Incumbent energy suppliers are the main beneficiary of micro-generation energy feedback making it less attractive to competing energy suppliers to support the uptake of this technology.

QUESTION 11: Do you agree with our categorisation of different types of “market issue” and typical remedies for each?

ANSWER: In general we agree with the categorisation of ‘market issues’, with their suggested remedies.

In addition, we might suggest an issue with the market design philosophy. The market was designed and implemented under a contextually valid world view where a few centralised, thermal plants met the essentially static system load. Distributed generation, variable generation, interconnection, alignment with other markets, and demand side management are all putting, and will increasingly do so, considerable strains on this market design. However at present they are being addressed at the ‘edges’ of the subsisting market, by disaggregated rules changes.

To address this issue, it is necessary to re-philosophise the market design in light of new, impending and growing market realities, and plot a pathway (or pathways) to evolve the current market according to a framework that accounts for the various noted phenomenon, including DSM. This is essential as there are multiple interactions and feedback loops between each of those phenomenons, as well as in combination, in a networked system.

QUESTION 12: Do you agree with our identified barriers and enablers for each of the specific demand side measures we have identified?

ANSWER: In general, yes. Additional comments follow below.

Energy Efficiency

The incidence of split incentives that exists in landlord/tenant relationships, say over investments in insulation, may likely be mitigated by the prospect of tenants moving to more energy efficient properties in order to improve their comfort and reduce their energy bills. Landlords, faced with potential loss of rents and difficulties in finding new tenants may become motivated to improve the energy efficiency of their properties. This of course will be aided by greater education around building energy ratings.

Behavioural Change – Education

As an enabler for behavioural change through education, the participation of industry, particularly energy supply and energy service companies, should be cultivated as they have built bases of knowledge and experience serving energy consumers. Input into the work of the various government agencies in this area should be very useful.

Home and Office Automation

Other barriers to home and office automation could be inflexibility of pre-existing wiring and control systems and the trend away from storage devices (like immersion water heaters) to instantaneous water heaters that have zero standby losses but present large loads when switched on (often running at peak demand times). Also, common water heating controls allow for overnight ‘charging’ of hot water cylinders (and therefore generally already operate off peak) but many have a manual boost button which, if activated, is highly likely to run across the peak.

QUESTION 13: Do you agree with our identified market issues for each specific demand side measure and our

proposed remedies to address these?

ANSWER: In general we agree with the market issues identified and the proposed remedies but also make the following comments.

Energy efficiency market issues could also find remedies in establishment of a 'Green Fund' for capital loans, tax relief for green investments or economies of scale through co-ordinated roll out of technologies.

The imperfect information market issue associated with smart metering might be better remedied by also completing behavioural response trials to dynamic TOU pricing and then cross referencing the positive outcomes from those trials with the customer demographic profiles so a staged smart meter roll out programme can be properly targeted at those customers that are more likely to engage with the technology successfully. Clearly understanding the relationships between smart meter functionality, benefits (physical and/or financial) derived from meter functionality, flexibility in being able to add future functionality modules and technology compatibility before roll out will be key to programme success.

Targeting renewable heat pump technologies for home heating (lower cost, split, air to air systems with no heat storage aspect) specifically at replacement of on-peak, electric resistance or fan heating where no central heating boiler system is in use, could provide a significant reduction in on peak demand. A survey of homes and offices would provide a useful picture of what equipment is running during peak-demand times, what could be controlled, reduced or replaced.

Industry co-ordinated trials should be undertaken on emerging fuel cell CHP technologies which have the potential to supply all of the hot water and electricity needs of a typical household. Running at up to 85% efficiency, with little associated green house gas emissions, combined with bi-directional metering and a REFIT that better reflects the variable wholesale electricity supply price, these units have the potential to supply up to twice the energy used by the homes they serve. Economies of scale in supply could make fuel cells economic in the near future.

QUESTION 14: What are your views on the likelihood and effectiveness of the identified policy options addressing the specified market issue and delivering the desired change?

ANSWER: The likelihood and effectiveness of the policy options should deliver the change required for each market issue although for some issues, achieving the desired results may be more challenging. For example education campaigns are likely to be costly unless targeted carefully and carry significant risks of achieving only short term responses. Shifting ingrained attitudes may be best achieved by providing incentives, creating competitive environments for delivering measures, targeting early adopters and creating a ground swell of appetite for change.

QUESTION 15: Are there any unintended undesirable consequences that any of the options might create elsewhere?

ANSWER: The potential for unintended consequences is rife given the scope of changes anticipated to be delivered through DSM measures. Some will be positive, reinforcing desired results. Other will be negative, needing mitigation measures. Some of these may well migrate from other parts of the energy 'ecosystem', such as effects of fuel switching. It is important then to well understand any initiatives put forward, but even more so

to ensure that monitoring and measuring are being conducted frequently as changes are being driven.

To itemise a few, care must be taken when considering peak load control methods that adequate understanding exists regarding how loads can be scheduled back on without running the risk of overloading local distribution network assets.

Due consideration should be given to the potential for energy efficiency to be compromised as a result of demand side management activities, for example increasing overall energy use due to changing demand on space and water heating systems for those that have heat storage aspects (such as storage space heaters and immersion storage water heaters that have energy losses associated with them).

SECTION 5

QUESTION 16: Do you agree with our identified specific demand side measures and our assessment of the different types of benefits each demand side measure provides?

ANSWER: Yes, the demand side measures and the benefits of each are consistent with the thrust of the consultation paper.

QUESTION 17: Are there any additional demand side measures that we should individually identify and assess? If so, what type of benefit(s) is it felt they provide?

ANSWER: Replacement of on demand and across peak electric heating with storage heaters (which arguably would charge overnight when a higher percentage of renewable generation is scheduled on) would shift load away from peaks. Replacement of electric cooking appliances that would normally contribute to peaks with gas appliances would reduce winter peaks.

QUESTION 18: Have we identified all of the relevant criteria for assessing the individual and comparative merits of the demand side measures?

ANSWER: Yes. Ultimately, the comparative merits must contribute directly or otherwise to efficiencies, the benefits of which would accrue to customer. In other words, policy impacts are desirable but lowering costs for energy users will be the spur dictating the uptake of several of the DSM measures.

QUESTION 19: What are your views about our approach to high level assessment of different demand side options?

ANSWER: The high level assessment of the different demand side options looks sound and well aligned with other government energy industry, carbon emission reduction and renewable energy objectives. Understanding more definitively, what the demand side options would achieve, who stands to benefit from the initiatives and how much value can be released to end use customers will be critical in choosing to pursue the right opportunities first.

QUESTION 20: Do you agree with our assessment of each demand side measure against each of the identified factors?

ANSWER: Yes, each demand side measure has been reasonably assessed against the identified factors.

QUESTION 21: Do you agree with our overall assessment of the relative merits of the different demand side options?

ANSWER: Yes, given the lack of information available relating to the nature of the electrical loads in some sectors and what response might be available from these, the relative merits of the demand side options at a high level are valuable.

QUESTION 22: Do you have any comments on our high level assessment of the benefits of different demand side measures?

ANSWER: No.

SECTION 6

QUESTION 23: Do you agree with our assessment of the relative priorities of different demand side options in developing a 2020 Demand Side Vision?

ANSWER: Yes, the high value measures are either committed to, well funded, low cost, able to be implemented quickly and/or able to deliver significant impacts. Medium value measures are less certain, slower to implement and needing policy or rules changes to support them.

QUESTION 24: What alternative views do you have on relative (merits and) priorities?

ANSWER: Home and office automation has the potential to be easy to implement and due to the multiplicity of sites and loads available for control, may, be of higher value than initially thought.

QUESTION 25: Do you agree with our proposed high level 2020 Demand Side Vision as described above?

ANSWER: The description captures the salient elements for increasing the participation of the demand side in the Irish electricity system.

QUESTION 26: What alternative vision would you put forward?

ANSWER: None.

QUESTION 27: Do you agree with our proposed policy pathways for implementation of the identified different

policy options for realising our proposed 2020 Demand Side Vision?

ANSWER: In general, yes. On the more ambitious roll out of energy efficiency measures, funding mechanisms can easily be adopted and roll-out channels in the form of energy supply and energy service companies are capable of accelerating the implementation of energy efficiency measures.

QUESTION 28: What alternative policy pathways would you propose based on your previous comments and responses?

ANSWER: Accelerated trial evaluation of micro CHP fuel cell technologies with a view to achieving economies of scale in commercial supply and application of these technologies.

SECTION 7

QUESTION 29: Do you have any additional view or comments you feel are important/useful for us in (a) establishing a Demand Side Vision for 2020; (b) identifying associated policy development and (c) determining policy pathways?

ANSWER: Our views and comments have been covered in previous responses.

QUESTION 30: Are there any final comments industry stakeholders wish to make about this consultation and the proposed next steps in the consultation process?

ANSWER: Airtricity, as it has done in the energy supply space, intends to play an active role in the unfolding demand side programme in the All Island Market. We look forward to the publication of the follow-on documents.