Trans Atlantic Consumer Dialogue

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Resolution on Smart Grids[1]

With the development of more flexible energy supply and demand (smart grids) come new opportunities for EU and U.S. citizens, but as with any new technology, increasingly sophisticated functionality can result in unintended consequences.

In the context of the rollout of smart meters in parts of the EU and US, TACD calls on EU and US governments to consider the following recommendations, which are important for ensuring that consumers' interests are well-served by the implementation of smart grids:

- The cost-benefit assessment should cover potential risks to consumers of the new technology in addition to social, environmental, and consumer benefits.
- A strategy should be developed and implemented which identifies and delivers the maximum benefits to consumers and tax payers
- The costs and benefits of rollouts to consumers and tax payers should be publically reported on a regular basis to ensure value, efficiency, and accountability.
- Deployment of smart meters should be particularly carefully considered, as these are being rolled out before many questions relating to standards, regulatory requirements and data privacy and security and their relationship to smart grids as well as consumer benefit have been answered;
- Social equity should be closely scrutinized, especially if consumers need smart appliances, broadband access or micro-generation to realize expected benefits
- Consumers' expectations of the functionalities of smart grids should be well-understood and fulfilled.
- Consumers should not bear the risk that energy savings do not materialize as the utility predicts nor the cost of meter replacement due to premature obsolescence.

THE NEED FOR A COMPREHENSIVE ASSESSMENT OF THE BENEFITS AND RISKS FOR CONSUMERS

Much of the debate to date on smart meters and smart grids has been industry-driven, focused on technical requirements and functionality. But little consideration has been given to risks of the technology, the cost to consumers and tax payers and the impact of smart metering on the consumer experience of the energy market. Included in these risks is the failure to realize the potential benefits that would in fact motivate consumers' uptake of the new products and services, including enticing consumers to actively engage with their energy consumption. In this context it is important to consider the ability of different customer groups to engage in these new opportunities.

[1] To be read in conjunction with the TACD resolution on privacy and security related to smart meters, INFOSOC 44-11, June 2011

The investment risks of meter obsolescence, poor performance, or inadequate energy savings should not be borne solely by consumers. Safeguards are also needed to ensure that consumers are protected from any detrimental impact from new functionality. In this context it is important to consider:

- The ability of different customer groups to engage in these new opportunities (e.g. vulnerable consumers picking up costs, but not sharing in benefits because they cannot invest in smart appliances or home interfaces that require broadband)
- The creation of opportunities (e.g. new tele-care services) for vulnerable consumers, including better targeting of social assistance.
- Safeguards necessary to ensure that consumers are protected from any detrimental impact from new functionality (e.g. data protection and privacy issues, remote disconnection)
- Is the cost of the functionality worth the social and environmental benefits?
- Who should pay where the benefit of the function is for society not the individual?
- What steps will be taken to help consumers navigate what will become an increasingly complex energy retail market?
- Social equity of smart grid and meter investments should also be closely examined. Key questions include the following:
    - Who will be the winners and losers from smart meter investment and pricing options?
    - Do all consumers have discretionary load that they can shift to lower cost off peak rates?
    - Do some customers live in property types or parts of the country where it won't be possible to install a smart meter but they will still be expected to pay for rollout?
    - What choices and rights do these consumers have?

Consumer backlash in the Netherlands and in California highlights that consumer engagement and acceptance of smart meters is essential for the success of any rollout and that consumer views need to be at the heart of the decision making process. If consumers do not feel the added value of smart meters or if they feel the demand management as envisaged as intrusive or too costly, they will rightly resist the rollout.

SMART GRIDS VERSUS SMART METERS

The term "smart grid" has been used as a catch-all for a variety of concepts and solutions. We would like to see a smart grid developed as defined by European Regulator's Group for Electricity and Gas (ERGEG) in its recent consultation paper: "an electricity network that can cost efficiently integrate the behaviour and actions of ***all users*** connected to it—generators and consumers and those that do both— in order to ensure economically efficient, sustainable power systems with low losses and high levels of quality and security of supply and safety." Smart meters, on the other hand, are digital devices that monitor electric or gas usage and can transmit this information to the utility and the consumer at regular intervals. Some smart meters can also be used for demand-side management initiated from remote locations.

MAIN DRIVERS FOR THE SUCCESS OF SMART GRIDS AND SMART METERS

The main drivers for the successful uptake of smart meters are consumer confidence, satisfaction and engagement with the new technology, cost-effectiveness, and ease of use by all. Broken down into more detail, examples of the issues now being raised by national consumer organizations include:

1. Security of personal data and information privacy
2. Security of meters

3. Accuracy of billing and flexibility of payment methods
4. Potential social benefits for low-income and vulnerable consumers
5. Transparent and consumer-friendly pricing
6. Preservation of consumer choices and ease of switching
7. Long term downward pressure on energy costs for consumers
8. Consumer-focused remote management of meters and appliances
9. Potential improvements to reliability and service

1. *Security of personal data and information privacy*

Privacy should be designed into smart meter systems right from the start as part of the whole compliance life-cycle. Therefore, the principle of privacy by design should be made mandatory, including the principles of data minimization and data deleting when using privacy-enhancing technologies. Moreover, appropriate technical standards should be in place to ensure end-to-end security of the system. Research undertaken by the Information Commissioner's Office in the United Kingdom indicates that 94 per cent of the population thought that 'protecting people's personal information was the most important social concern along with preventing crime" highlighting the importance of this issue. Fear over 'a spy in the home' was a contributory factor in smart meter roll out being halted in the Netherlands.

In addition, customers should have control and choice over how their own energy consumption information is used and by whom. Beyond information necessary for standard operations and customer communications, the incumbent energy company should not have default access to customer's detailed consumption data as this will have a negative impact on competition in the energy services market, result in unsolicited sales and marketing, and may serve to limit consumers' choices as they are profiled by companies to manage their own risk.

2. *Security of meters*

Consumers should have confidence that their meter will not be tampered with or hacked into. Smart meters and grids must be safe from infection with viruses and malware. This is to ensure both security of supply and the protection of personal data. The smart meter worm demonstrated by IO Active at the Black Hat annual security conference in July 2009 managed to hack into and take control of about 15,000 out of 22,000 homes in just 24 hours. IO Active reports that substantial numbers of existing smart meters on the international market have poor authentication, lack of encryption and inadequate authentication processes making them accessible to hacking. These experts suggest that addressing security concerns once devices are installed would be cost prohibitive. We therefore urge decision makers to get this right before rollout and that decisions on meter design, functionality, operation, management and technology are taken following key decisions on security.

3. Accuracy of billing and flexibility of payment methods

Billing is a major source of consumer complaints. Estimated and inaccurate billing is a considerable problem in the utility market and can often have the added effect where people fall into debt and are then put onto more expensive payment methods. Having access to real-time information on energy usage as well as historic data on one's energy consumption is a key for consumers to be able to change their consumption behaviour and lower their energy bills. This should be free of charge at any time.

The current investigation into the accuracy of new smart meters in Bakersfield, California, is a reminder to give consumers peace of mind that new functionality will deliver accurate billing. It is also important that smart meters deliver flexibility of payment methods for customers – that consumers can continue to chose to pay a fixed sum monthly to help them budget over the more expensive winter months and do not have to pay a variable direct debit. In addition, in countries with prepayment meters, smart meters should facilitate flexibility of top up methods, over the phone, internet, via an ATM providing greater convenience and control for customers. Care must be taken though to ensure that customers

are not forced to prepay. This is particularly a risk where the customer has a poor credit rating and therefore advanced payment is used to manage the company's debt risk.

4. *Potential social benefits for low-income and vulnerable consumers*

Opportunities around delivering tele-care services to vulnerable consumers also need to be explored to ensure that they are not missed. For example, warnings if the temperature in the home falls below a certain level or an elderly person has not turned on the kettle in the morning could send an alarm to care providers. In addition, the smart meter installation visit may provide an opportunity to identify and target help and assistance to hard to reach groups that may be struggling to afford to heat their homes. In countries with prepayment meters, smart metering could be used to help identify customers who are not regularly topping up their meters and could be struggling to afford their energy bills. In countries such as Tasmania, energy companies are obliged to monitor customers vending and target them with support should they suspect they are in financial difficulties.

5. *Transparent and consumer-friendly pricing*

New utility pricing must deliver demonstrable benefits to consumers and society. For example, higher cost critical peak pricing may be justifiable on a voluntary basis if consumers are able to switch to cheaper off peak deals and results in better load management that keeps electricity flowing for all consumers during high demand periods. But new fees must not be used as an excuse to increase revenues across the board or impose peak rates on vulnerable ratepayers who cannot shift their use safely. This will result in a loss of trust. For example, Victoria in Australia is currently considering a moratorium on new tariffs because of bill hikes. Regulators should ensure there are protections in place limit consumers' financial exposure in transitioning to new programs

In addition, research is needed into the distributional impact of time of use tariffs, and new "smart deals" on different social groups needs to be considered. Work carried out by the GB regulator Ofgem has identified that some low income working households may be particularly adversely affected by new pricing practices as they have little flexibility over when they use energy often forced to use it at peak times. AARP in the U.S. has found that many elderly customers do not have the ability to shift load off-peak and or may make unhealthy choices to reduce energy use when faced with steep prices. More generally, empirical evidence from North America suggests that, faced with a choice, many consumers prefer direct load control to price response programmes. Clear rules around remote demand management tariffs will need to be developed.

6. *Preservation of consumer choices and ease of switching*

Smart meters should make it easier for consumers to switch to the best deal for them. Smart meters are likely to be coupled with a range of new pricing options – critical peak pricing, time of use tariffs, single energy tariffs, seasonal options, energy services packages, which include displays and energy efficiency measures, remote management fees among them. Consumers should have choices among these programs and be able to pick a plan that is best suited to their needs and budget. Customers must also have the choice to reject a smart meter. Emphasis should be on winning hearts and minds, not forcing customers to accept meters, especially in the early stages of rollout.

Consumers should also be able to access their consumption data free of charge in a user-friendly format so that they can easily compare options. An investigation into the energy retail market in Great Britain by Ofgem revealed that around a third of consumers switch to a worse deal. It is important smart meters do not add complexity hindering effective switching decisions. In deregulated markets, particular safeguards will be needed around sales and marketing practices and new contracts to avoid problems encountered in other sectors such as telecom. In theory, same day switching should be possible in a smart world, but regulatory changes may be needed to incentivize this. It is important that customers have

the tools they need and there is appropriate regulation so they can engage in this market with confidence. Consumers need pricing and meter choices that will help them reduce their usage and energy bills.

7. Long term downward pressure on energy costs for consumers

Smart grids offer the potential to reduce energy costs through greater operational and other efficiencies across the supply chain, which in turn, should lead to a downward pressure on energy retail prices. Regulators need to ensure accountability that the benefits of cost savings for distributors and generators are passed through to ratepayers or customers. This is likely to require changes to regulatory frameworks, market rules, charging methodologies and industry codes. Accordingly, costs must be transparent and functionality must provide value for the money. Regarding the financial costs of smart meters for consumers, national regulators and Member States should ensure that costs are justified, transparent and fair.

The DECC 2011 impact assessment into smart metering identifies that the majority of consumer benefits come from customers changing behavior and reducing their energy use. Such results have not yet been consistently shown in smart meter rollouts in the U.S., but if smart meters are going to provide consumers real-time information, the rollout must at the very least include the option for consumers to have an in-home display. Social marketing strategies need to be developed to ensure that behavior change is delivered and customers need the tools, whether information via in home displays, one to one support and advice, or financial assistance to buy energy efficiency measures to ensure that they benefit from new technology. As there is no "one-size-fits-all", it is important to bear in mind that different consumer groups should be approached in an appropriate manner. In addition, most smart meter benefits will not materialize without smart grid upgrades to lay the foundation for efficiency and savings. "Smart meters first" is likely a poor policy choice in smart grid development.

Closer analysis is needed for certain industry assumptions, such as, "Smart grids will be more reliable and save consumers money," or "Higher prices at peak times will incentivise lower energy usage." These assertions need to be verified based on large-scale, empirical evidence. It should also be noted that there will be winners and losers from new time of use tariffs, and where customers are hard hit by rising prices, this may cause a backlash against smart meters.

8. Consumer-focused *remote management of meters and appliances*

Remote management of meters and monitoring of energy use is expected to bring cost-savings such as an end to the need for visits from meter readers. It is important that the functionality chosen minimises the need for additional expenses, e.g. the need for regular upgrades. Safeguards are, however, needed around remote management of appliances - consumers must have the choice whether they opt in to remote management of appliances in their home. Clear consumer complaints procedures and redress must be in place in case things go wrong, such as a freezer is accidentally switched off for longer than it should be resulting in the defrosting of food. Consumers should have the capability to override remote load management if necessary. Finally, and most importantly, consideration must be given as to how to prevent abuse by suppliers of the new remote-disconnection functionality and load limiting capabilities. Consumers must be assured basic safeguards, such as an in-home visit and temperature-based limits for health and welfare before meters are turned off for non-payment.

9. ***Potential improvements in reliability and service***

Utilities often tout smart grids' reliability and service benefits. Such benefits should be reasonably demonstrated, and risk should be shared between the utility and ratepayers in the event these benefits do not come to fruition as predicted. Utilities often promise improved response time on outages and fewer outages, and these promised benefits should be monitored for compliance. Functionality standards must also include security and privacy

by design. Technology chosen must be safe and communications limit any health risks and address concerns such as electromagnetic sensitivity.

Regulators should also monitor the utility's performance on customer service and hold utilities accountable for inadequate service. The utility should institute effective policies to handle complaints with smart meters or grid upgrades and provide support and advice in how to use their smart meter and energy display to help them save money on their energy bills. As part of the installation visit, customer displays must be set up and left operational, consumers should be taught how to use them, and given advice and support on how to cut their energy bills. Low income and vulnerable consumers should be given extra support as appropriate. Smart grids will provide utilities with more information, and this benefit should be shared with consumers. Consumers should be provided up-to-date account balance information to help them budget their expenses more readily.

Conclusion

It is too early to completely identify the drivers for consumer engagement on the potential objectives of smart grids. There will be different drivers for the rollout of smart grids in different countries and different segments of consumers will have very different motivations even within the same area. However, it is imperative that there be a clear consumer value proposition so that customers are aware of the potential benefits. It is also essential that adequate protections are put in place to help ensure consumer confidence. The experience of the early recipients of smart meters will have critical impact of the acceptance of smart grid more widely and consumer acceptance is best served by consumer-friendly policies and protections.