Advanced Metering Infrastructure:
Nomination of the MEP and access to data

Submission to the Electricity Authority

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Overview

> *"Nobody is currently taking leadership in the country; and this is certainly not helped by the fact that the electricity industry structure in New Zealand is rather unique. While the line companies (distributors) would accrue the greatest benefits from a smart grid, the retail companies are the ones that have been put in charge of the so-called smart meters."*[1]

Smart meters

Climate change is the biggest environmental problem of our time. It is essential that New Zealand move towards a low carbon economy and take advantage of the new technology becoming available within the electricity sector. Smart grids, including smart meters, offer opportunities to reduce electricity consumption, thereby reducing carbon dioxide emissions.

In June 2009 I released my report: *Smart Electricity Meters: How households and the environment can benefit.* My investigation into smart meters was motivated by the environmental impacts of rising electricity demand, especially at peak times when thermal power plants are running at high capacity and emitting carbon dioxide. And when peak demand goes up, new power plants – all of which have some environmental impacts – must be built. Smart meters have the potential to create a step change in curbing the growth in the demand for electricity.

Retailers began a mass roll-out of new electronic meters in New Zealand in 2008 with plans to replace meters in 1.3 million homes. However, the electronic meters being rolled out do not have Home Area Network (HAN) chips installed. Consequently, they will not deliver significant benefits to the consumer, and consequently the environment.

The technological advance from old meters to HAN-functional smart meters has been likened to the difference between telegrams and wireless broadband. Extending the analogy, while the 530,000 meters rolled out thus far in New Zealand vary in their functionality, most can only be likened to a dial-up internet connection.

My report was tabled in Parliament and currently remains with the Commerce Select Committee for their consideration. The Committee has recently asked me whether I would update them on developments since my report was released and I will be doing so. When I appear before them I expect that this submission will form part of my update.

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[1] Chief Executives of eight electricity lines companies. 2010 *Smarter meters in New Zealand: Is the NZ Electricity Industry's rollout as 'smart' as it needs to be?*

Smart grid

> *"The smart grid will spur the kind of transformation that the internet has already brought to the way we live…"*[2]

The work undertaken in the report on smart electricity meters highlighted to me the importance of their role in the development of a smart grid.

A smart electricity grid will be the most important electricity infrastructure development for the foreseeable future. A smart grid makes use of modern digital technology to upgrade the current electricity system, ultimately giving much finer control.

Paul Budde (Chair of New Zealand's first Smart Grid Summit) has described a smart grid's three essential elements, as follows:

1. *"Interconnection between the traditional electricity grid and renewable energy sources such as solar panels, windmills and electric vehicles – also known collectively as distributed energy sources.*

2. *Home area networks that provide the tools for the end-users, in their own homes, to manage their overall energy usage as well as that of the individual devices.*

3. *The inclusion of communications technology into the electricity grid to make it intelligent and therefore more efficient and effective."*[3]

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[2] USA Department of Energy. 2008. *The Smart Grid: An Introduction*. p.2

[3] Budde, Paul. 2010. *New Zealand – Smart Grids Analysis 2010.* BuddeComm. Available online at www.budde.com.au/Research/New-Zealand-Smart-Grids-Analysis-2010.html

The view of the International Energy Agency (IEA)

The importance of smart meters and smart grids is highlighted in the IEA's 2010 review of New Zealand's energy policies. Two of the IEA's five key recommendations to the Government were:

1. *"Recognise that self-regulation can lead to undesirable outcomes and intervene when necessary, for example by regulating the introduction of smart metering and standardisation of distribution third-party access conditions.*

2. *Review the decision with regard to the regulation of the roll-out of advanced metering technology and take into greater consideration the needs of the future smart grid."*[4]

The IEA is clearly calling for regulation to be considered.

[4] International Energy Agency. 2010. *Energy policies of IEA countries – New Zealand 2010 review.* Paris, p.114

The current situation

A consistent theme in my work on smart meters/smart grid has been the need for effective leadership. Consequently, I was pleased to see a report of a plan to roll out up to 750,000 smart meters that I understand are HAN-functional.[5] This is a $200 million initiative of a group of 13 lines companies called SmartCo.

This would see around half of the country's households having HAN-functional smart meters installed by lines companies, and the other half likely to have new meters that are not HAN-functional installed by retailers. The lines companies reliant on the meters installed by retailers will not be able to gain the benefits of improved load management. Nor will the consumers in these cases be able to monitor and reduce their demand if they wish.

The result will be a muddle – half the country with truly smart meters – the other half with a variety of different meters, with inferior functionality and different data transfer systems. The costs of this muddle will ultimately be borne by lines companies, consumers and the environment due to the lost opportunities to better manage demand.

Indeed, the interests of lines companies, consumers and the environment are substantially aligned:

- Many lines companies want HAN-functional smart meters so that they can run their lines harder, manage outages and faults proactively, reduce peak demand and so defer or avoid costly upgrades.

- HAN-functional smart meters will allow consumers to easily track their energy use in real time, allowing them to better control their consumption through both behaviour change and access to new technology.

- Reducing peak demand and overall electricity use will lower carbon dioxide emissions and defer the need to build costly new generation.

Lines companies are the 'natural owners' of meters.

Without strong guidance through regulation and standardisation, different players will play by different rules in the New Zealand electricity market. Contrast this confusion with the United Kingdom where a regulated one-system smart meter roll-out is planned.

> *"Smart meters will put the power in people's hands, enabling us all to control how much energy we use, cut emissions and cut bills"*[6]

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[5] Edward White. 13 June 2011. 'Landis+Gyr selected for SmartCo meter rollout'. *Energy News*.

[6] UK Energy and Climate Change Minister Lord Hunt. 2009. 'UK energy smart meter roll-out is outlined'. BBC News. Available online at: http://news.bbc.co.uk/2/hi/business/8389880.stm

Responses to specific questions

The eight questions posed in the consultation paper have been paraphrased to make them clearer.

Question 1: Do you agree with the problem definition?

The problem as described in the consultation paper appears to be that retailers who own the new meters are incentivised to charge excessive fees for access to the data collected from these meters.

I agree that this is a problem. Competition between retailers and lines companies over the provision of these meters will not solve it, because of the cost of putting in a second meter.

However, the problem definition is too narrow. While lack of incentives to share data at reasonable cost is a serious issue, this is a symptom of a wider problem. This wider problem is the lack of centralised direction, policy and planning for the development of a smart grid, of which smart meters are a vital component.

Meters that are really smart because they contain Home Area Network (HAN) chips will provide benefits to lines companies, to consumers and to the environment. Lines companies, not retailers, are the 'natural owners' of smart meters.

Question 2:

- **Should the consumer have the right to choose who provides their smart meter?**
- **Should the default provider be the retailer?**

In principle consumer choice is always a good starting point. However, the great majority of consumers would understandably be confused by the different roles of lines companies and retailers. Even more opaque would be the process of evaluating the merits of choosing one or the other. Such a consumer choice would be 'faux'; most would choose the retailer because lines companies are invisible to them.

If consumers are given this choice, the default provider should be the lines company.

Question 3:

- **Should consumers have access to their own data?**
- **Should this be free when the purpose is to verify their bills?**
- **Should they be charged access fees for other purposes?**

The best way to give consumers access to their own data is by installing HAN-functional smart meters. These are already fully equipped to provide consumers with electricity use data in real time.

If consumers have HAN-functional meters, meter providers will not incur costs for consumer access and fees would be unnecessary. And markets will develop to help consumers make use of this data if they so choose through, for example, in-home displays and smart appliances.

Question 4: Is it unnecessary to specify terms of access to data from smart meters if consumers have the right to choose the meter provider?

If consumers have the right to choose the meter provider, it will be necessary to specify terms of access to data from smart meters. This is particularly the case if retailers are chosen as meter providers because they are incentivised to sell as much electricity as possible.

In contrast, the interests of lines companies align well with those of consumers. Lines companies are incentivised to manage demand because this enables them to defer investment in new distribution infrastructure. And HAN-functional smart meters give consumers greater power to manage their demand.

Question 5: Is disputes resolution unnecessary if consumers have the right to choose the meter provider?

No. A disputes resolution process would be an important safeguard.

Question 6: If the retailer or the lines company were responsible for providing the meter, should a compulsory disputes resolution scheme be established?

Yes. A compulsory disputes resolution scheme would be necessary.

Question 7: Is the Electricity Authority's proposal in line with its own statutory objectives?

Yes. It is good to see the Electricity Authority taking leadership in this area. The Authority's statutory objective to *"promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers"* is consistent with the development of a smart grid.

Question 8: Do you support the Authority's preferred option?

If consumers are given the choice of meter provider, then the lines companies should be the default option.