

Developments in the New Zealand market for Advanced Metering Infrastructure and related services

Kieran Murray and Melleny Black
3 July 2008



About the Authors

Kieran Murray

Kieran Murray is a Managing Director of LECG based in Wellington. Kieran's experience in energy reform and public policy spans 20 years. He has served as an economic consultant on regulatory and competition issues in the energy sector in Australia, Canada, New Zealand, Philippines, Tonga, Singapore, Vietnam and the United States. Public-policy engagements have included Principal Advisor to the Ministerial Inquiry into the Electricity Industry; Economic Advisor to the Hon Mike Moore (subsequently Director-General of the WTO) during his term as Leader of the Opposition; member of the Prime Ministerial Task Force on Targeting Social Assistance; and Economic Advisor to the New Zealand Minister of Finance, the Hon David Caygill.

Melleny Black

Melleny Black is a Senior Managing Economist with LECG based in Wellington. Melleny has a broad public policy, economics and finance background which she has applied across a range of sectors, including health and energy. Prior to joining LECG, Melleny worked as a Senior Analyst for the New Zealand Treasury.

About LECG

LECG is a global expert services firm with highly credentialed experts and professional staff with specialist knowledge in regulation, economics, financial and statistical theories and analysis, as well as in-depth knowledge of specific markets and industries. The company's experts provide independent testimony, original authoritative studies and strategic advice to both public and private sector clients including legislative, judicial, regulatory, policy and business decision-makers.

LECG is listed on the NASDAQ Stock Exchange and has approximately 1000 experts and professional staff worldwide. These experts are renowned academics, former senior government officials, experienced industry leaders and seasoned consultants.

For information on this report please contact:

Name: Kieran Murray
Telephone: ++ 64 4 472 0592
Mobile: ++ 64 21 245 1061
Email: kmurray@lecg.com

Table of Contents

1	Executive summary	1
2	Introduction.....	4
3	The New Zealand electricity market.....	5
3.1	Some characteristics of the New Zealand market.....	5
3.2	Metering is a contestable activity in New Zealand for all classes of meter	6
3.3	Metering for residential customers is non-contestable in Victoria.....	7
4	AMI deployments in New Zealand.....	9
4.1	Announced and current deployment of AMI.....	9
4.2	Technology and functionality of AMI	13
4.2.1	The meter	13
4.2.2	Communications.....	14
4.2.3	In-home capability	15
4.3	Costs and business case for retailers of AMI.....	16
5	Regulation of metering in New Zealand.....	18
5.1	Electricity Commission	18
5.2	Electricity Governance Rules	19
5.2.1	Metering obligations and responsibilities.....	19
5.2.2	Registry information and customer switching.....	20
5.2.3	Reconciliation	21
6	Competition for the supply of metering services in New Zealand	22
6.1	Access to meters and retail competition	22
6.2	Commerce Commission's analysis of competition for metering	22
6.3	Commerce Commission's definition of the relevant electricity metering market.....	23
6.4	Competition analysis	24
6.4.1	Existing competition and near supply	25
6.4.2	Potential competitors and barriers to entry.....	25
6.4.3	Countervailing Power	27
6.5	Litigation on access to meters.....	28

6.5.1	The Commerce Commission’s view of competition for metering services.....	29
7	Response to questions	30
Appendix	33
	Overview of Electricity Governance Rules related to advanced metering and metering services	33
	Part D - Metering	33
	Part E – Registry information and customer switching.....	35
	Part J – Reconciliation.....	35

1 Executive summary

The rollout of Advanced Metering Infrastructure (AMI) to domestic and small business customers in New Zealand is being led by electricity retailers and independent metering providers. To date, this rollout has occurred in response to customer demand and competitive pressure and the converging cost structure between AMI and conventional non-interval meters. There are no regulations mandating deployment of AMI.

Meters in New Zealand are generally owned by either third party meter service providers or by retailers. Retailers typically partner with third party providers of electricity metering services to access relevant technology, though two retailers source meters from a subsidiary company. Distribution network companies own less than 10% of all meters, and a smaller proportion of AMI.

Announced and current deployment of AMI includes:

- The rollout of 112,000 smart meters to Christchurch households by Meridian, over a two year period (50,000 had been installed by May 2008).
- Deployment by Genesis Energy of 500,000 - 600,000 AMI meters over the next 3-5 years.
- Contact Energy is rolling out advanced meters to 55,000 Canterbury customers and expects to begin extending the rollout to around 500,000 customers throughout New Zealand within about five years.
- Mercury Energy has announced plans to roll out AMI to the majority of its 350,000 customers within the next three years following a trial of 5,000 AMI meters in households in Auckland.

On basis of these deployment plans, most New Zealand households and small businesses will be served by AMI within five years, and the majority of households will have AMI within three years.

In May of this year, the New Zealand Electricity Commission issued guidelines for AMI. The guidelines are voluntary and promote the Electricity Commission's view that advanced metering systems should share certain common characteristics (primarily aimed at achieving open access and provision of information). The deployments described above were all underway prior to the Electricity Commission releasing its guidelines.

The market rate for a retailer to lease an installed AMI is about \$75 per annum, although this rate reduces materially where the retailer is prepared to enter into a long-term contract for a large number (several hundred thousand) of meters. We understand that charges quoted in the market for the lease of AMI under large volume, long-term

contracts are not much higher than the prevailing rates for existing non time-of-use meters of around \$55 to \$60 per annum (including the cost of bi-monthly manual reads).

The business case for mass deployment of AMI by New Zealand retailer/generators is being achieved via:

- Reducing costs to serve, through eliminating the need to estimate volumes and to undertake periodic manual reads, facilitating reconciliation of unaccounted for energy, and remote connection and disconnection.
- Potential for load control and the near to real time understanding of customer load profiles for risk management and generation optimisation.
- Potential in the future to sell additional services and products to customers, including customer appliance control and load control.
- A long standing regulatory deadline for all existing non-interval meters to be compliant with measuring standards by 2015, which in turn necessitates sampling or replacing of existing meters.

Deployment of AMI is expected to produce additional benefits for distribution network services companies, through for example using near to real time consumption information to improve network management. These additional benefits are generally viewed as incremental to the decisions by retailers and meter service providers to deploy AMI. As noted above, the business case for AMI is being made on the basis of the benefits and costs to retailers.

However, meter service providers and retailers recognise that if distribution network companies perceive value in the additional information provided by AMI, the distribution companies would likely be willing to contribute to the costs of AMI in return for access to the information.

In late 2004, the New Zealand Commerce Commission reviewed the market for AMI in New Zealand. It found that there is a national market for provision of time-of-use electricity meters, including associated metering services and that this market is workably competitive. It concluded that:

- Existing providers of metering services are constrained by competition from various existing and potential participants entering and expanding in the relevant market.
- Providers of metering services are constrained by the countervailing power of the large electricity retailers and consumers.

The Commission found that in a contestable market, a new entrant retailer can access alternative metering services and hence an existing retailer cannot use its ownership of a meter to secure its retail position. In these circumstances, a meter owner faces strong incentives to avoid stranding its asset by making the asset available to other parties,

including competitors, on reasonable terms. This finding is consistent with subsequent developments in New Zealand. Frequently in New Zealand, the party that owns the meter at a particular site has no contractual relationship with the end-consumer. This situation applies to existing non-interval and existing time-of-use meters. It arises where the retailer leases the meter from a third party meter services provider, or where the retailer that owns the meter has lost the energy supply contract to another retailer and has entered into an arrangement to lease the meter to the new retailer.

Contracting arrangements for the new AMI currently being deployed are still evolving. The retailers we interviewed for this report (which in aggregate serve 92% of the small customer market), expect similar leasing arrangements to be implemented for AMI as currently apply to non-interval meters.

Retailers expect reciprocal leasing arrangements to be developed because AMI is contestable and to avoid asset stranding meter providers have an incentive to provide access on reasonable terms and conditions.

2 Introduction

The Australian Energy Market Commission (AEMC) has requested LECG to prepare a factual report on metering services in New Zealand. This report provides an overview of developments in the New Zealand market for Advanced Metering Infrastructure (AMI) and related services. The body of the report is structured as follows:

- Section 3 provides an overview of the New Zealand market and contrasts some key characteristics with the State of Victoria in Australia.
- Section 4 outlines current and planned developments in the New Zealand market.
- Section 5 summarises the parts of the New Zealand Electricity Governance Rules (EGR) relevant to metering and the collection of metering information (further detail is contained in the appendix).
- Section 6 reviews the state of competition for the supply of AMI services in New Zealand, drawing from a Commerce Commission decision approving the merger of competing suppliers and a recent High Court case involving meter access. The Australian Energy Market Commission (AEMC) asked LECG to provide a summary of this decision.
- Section 7 addresses the questions asked by the AEMC in a separate review of AMI arrangements in Europe and North America,¹ to the extent those questions relate to the meter services market in New Zealand.

¹

[http://www.aemc.gov.au/pdfs/reviews/Victorian%20Jurisdictional%20Derogation%20\(Advanced%20Metering%20Installation%20Roll%20Out\)/consultant/000NERA%20London%20Report%20on%20Smart%20Metering%20for%20Electricity%20Consumers%20in%20Selected%20Jurisdictions%20-%202017%20June%202008.pdf](http://www.aemc.gov.au/pdfs/reviews/Victorian%20Jurisdictional%20Derogation%20(Advanced%20Metering%20Installation%20Roll%20Out)/consultant/000NERA%20London%20Report%20on%20Smart%20Metering%20for%20Electricity%20Consumers%20in%20Selected%20Jurisdictions%20-%202017%20June%202008.pdf)

3 The New Zealand electricity market

3.1 Some characteristics of the New Zealand market

New Zealand has a population of about 4.3 million people, with a population density of 15 people per square km.² By way of comparison, the Australian State of Victoria has a population greater than 5 million people, with a population density of 23 people per square km.³

Some characteristics of the New Zealand electricity market, and comparable figures for Victoria, include:

- The end customer market in New Zealand comprises 1.9 million Independent Control Points (ICPs);⁴ in Victoria the end customer market comprises 2.4 million residential and small business customers.⁵
- These ICPs are supplied in New Zealand by 24 distribution network companies, and one national transmission company; in Victoria residential and small business customers are supplied by five distribution network companies.
- The supply side of the market is relatively concentrated in New Zealand, with 91% of all consumers supplied by four vertically integrated generator retailers –

² Statistics New Zealand, <http://www.stats.govt.nz/products-and-services/nz-in-the-oecd/population.htm>

³ Australian Bureau of Statistics, <http://www.abs.gov.au/Ausstats/abs@.nsf/bb8db737e2af84b8ca2571780015701e/5A717784C2562A99CA2573D20010FF17?opendocument>

⁴ <http://www.electricitycommission.govt.nz/pdfs/opdev/retail/regstats/regstatspdfs/distributor/Ar08.html>

⁵ Australian Energy Market Commission, Review of the Effectiveness of Competition in Electricity and Gas Retail Markets in Victoria, First Final Report, 19 December 2007, page 37.

Contact Energy, Genesis Energy, Meridian Energy and Mighty River Power;⁶ in Victoria, four retailers serve 88% of all electricity customers in that State.⁷

- A total of 10 retailers participate in the New Zealand market; a total of 13 firms retail electricity in Victoria.⁸

Hence, the New Zealand end use customer market is smaller in terms of customer numbers than Victoria and more geographically dispersed. Retailer concentration is about the same, with four retailers serving most residential and business customers. The distribution network sector is much more concentrated in Victoria, with five firms, whereas New Zealand has 24 distribution network firms (though three companies supply 60% of all residential customers⁹).

3.2 Metering is a contestable activity in New Zealand for all classes of meter

New Zealand legislation requires separate ownership and operation of electricity retailing and generation from the ownership and operation of electricity lines businesses (distribution and transmission).¹⁰ The Electricity Industry Restructuring Act 1998, which required electricity generation and retailing to be separated from electricity lines businesses, did not dictate ownership of meters. In some cases, the meters were sold with the retail customer base, in other cases, the lines company retained ownership of the meter.

After a decade of market evolution, meters are generally owned either by specialist meter service providers or by retailers. As shown in the chart below, independent metering companies own about 50% of all meters in New Zealand, retailers own about 40%, and lines companies and consumers own about 10% of all meters.

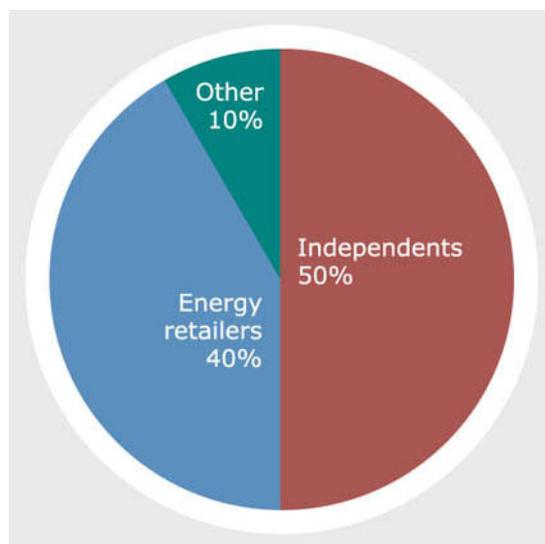
⁶ The New Zealand Electricity Commission, <http://www.electricitycommission.govt.nz/pdfs/opdev/retail/regstats/regstatspdfs/percenticps/Feb08-Appendix-1.html>

⁷ Australian Energy Market Commission, First Final Report, op cit, footnote 46, page 33.

⁸ Australian Energy Market Commission, First Final Report, ibid, page 31.

⁹ At the time of writing, New Zealand's largest distribution network company, Vector Ltd, is negotiating the sale of its Wellington distribution network.

¹⁰ Exemptions allow lines businesses to build and own new generation using renewable resources and very small scale plant; the Government has introduced into Parliament a bill that would expand the scope and scale of these exemptions.

Table 1. Ownership of meters in New Zealand¹¹

In this report, we use the term ‘independent metering company’ to mean a firm providing metering services which is neither an electricity retailer nor a distribution network service provider. Competition for the supply of metering services is discussed in section 6 below.

3.3 Metering for residential customers is non-contestable in Victoria

By way of comparison, distribution network companies are granted a statutory monopoly in the State of Victoria in Australia over the supply of existing (non-interval) metering services to residential and small business customers.

The Victorian Government has legislated for a mandatory rollout of Advanced Metering Infrastructure (AMI) to consumers of less than 160 MWh of electricity per annum (small customers) in Victoria. The Victorian Government’s intention is that distribution network companies will be responsible for implementing the rollout. The National Electricity Rules currently provide for retailers to generally be responsible for the provision of this type of meter, regardless of customer size. The Victorian Government has therefore requested that the Australian Energy Market Commission (AEMC) grant a jurisdictional derogation in accordance with section 91 of the National Electricity Law.

¹¹ Grant Dennehy, *The Market led path to advanced metering*, 28 April 2008.

This derogation would make distribution network companies responsible for the provision of these meters and associated metering data services in relation to small customers in Victoria.¹²

The proposed derogation is part of a broader suite of legislative and regulatory changes introduced by the Victorian Government to facilitate the AMI rollout. This regulatory framework is enabled under amendments made in 2006 to the Electricity Industry Act 2000 (Victoria).

¹² Department of Primary Industries (Vic), Victorian Government Rule Change Proposal (Jurisdictional Derogation) Advanced Metering Infrastructure, August 2007.

4 AMI deployments in New Zealand

4.1 Announced and current deployment of AMI

This section provides an overview of the current and planned deployment of AMI in New Zealand.

Vector Networks Ltd

Vector Networks Ltd (Vector) is New Zealand's largest electricity distribution network company. A fully owned subsidiary, NGC Holdings Ltd (NGC), provides metering services throughout New Zealand and is New Zealand's largest supplier of metering services. Vector also supplies metering services through Stream Information Ltd (Stream), a joint venture with Energy Intellect Limited (Energy Intellect). Through these activities, Vector provides independent electricity metering services to over 800,000 homes and businesses, as well as energy data management services to more than 14,000 electricity consumers in New Zealand and Australia.¹³ Vector is characterised as 'independent' as its metering services are provided to entities not connected to its network, and metering services are supplied to retailers operating on its networks separately from the conveyance of electricity.

Stream provides time-of-use metering and related services to businesses. The joint venture partner Energy Intellect offers its own range of time-of-use meters.

In October 2007, Vector and Siemens (N.Z.) Ltd (Siemens) concluded a 50:50 joint venture, Advanced Metering Services (AMS), to deliver advanced metering technology and operational services to customers throughout New Zealand. Siemens worldwide is a global metering services operation. Under the new arrangement, metering assets will be owned by Vector, with the joint venture offering bundled value-added services tailored to market and customer needs. These services include providing meter asset management and ongoing collection, processing and management of energy consumption data. The joint venture is looking to extend smart metering solutions to other utility services, such as water and natural gas.¹⁴

¹³ http://www.vector.co.nz/company_profile/brands.php

¹⁴ Vector press release "Vector/Siemens establish advanced metering joint venture", 29 October 2007, <http://www.vector.co.nz/news/242/>

Meridian Energy¹⁵

Meridian Energy Ltd (Meridian) is a retailer and the largest state owned generator of electricity in New Zealand. The company has an environmentally friendly / renewable generation branding strategy.

In September 2005, Meridian announced the rollout of smart meters to 6,000 customers in the Hawkes Bay region. This was Meridian's first regional rollout and Hawkes Bay was chosen because of its size, geography and the age of its metering stock. Many meters in the area were, according to Meridian, more than 40 years old and a large number were coming to the end of their useful lives. The meters were provided by Arc Innovations Ltd (Arc Innovations), a subsidiary of Meridian, and used mobile and radio technologies to allow remote reading and remote connections. The Hawkes Bay rollout is now complete and served as a large scale pilot for Meridian.

In August 2006, Meridian announced the rollout of 112,000 smart meters to Christchurch households, over a two year period. Again, the reason for the rollout was to replace existing meters, some of which had been in use for more than 40 years. The cost of the rollout was "approaching \$100 million". As at early May 2008, 50,000 meters had been installed in Christchurch.

Meridian is undertaking the rollout using the technology of its subsidiary Arc Innovations and Meridian will own the meters. Meridian is using a combination of mesh radio and GPRS communication technologies. Meridian's spokesperson said that the installation of the meters did not pose barriers to customers switching retailers (retailer ownership of meters and barriers to entry are considered in section 6 of this report).

Meridian and Arc Innovations have set expectations that the smart meters will lead to innovations in interactivity between the customer and the retailer. In announcing the Christchurch rollout, Arc Innovations Chief Executive, Helen Bremner compared the significance of the smart meter rollout for electricity retailing to the impact of the cell phone on the telecommunications industry:

¹⁵ Information taken from the Meridian Energy website, <http://www.meridianenergy.co.nz/>, and press releases "Central Hawkes Bay households first in New Zealand to get smart electricity meters", 29 September 2005, and "Meridian Christchurch initiative to bring power retail into 21st century", 03 August 2006 and a conversation with Meridian spokesperson, Alan Seay.

“We plan eventually to extend the services offered to enable people to operate their appliances by remote – that is, you could be sitting in your office and turning the heaters or dishwasher on at home.”¹⁶

Other benefits of smart meters cited by Meridian included enabling customers to make better energy efficiency decisions and the potential to deliver greater network efficiency by helping manage peak demand periods and communicate customer incentives for reduced demand during peak times.

Genesis Energy¹⁷

Genesis Power Ltd, which trades as Genesis Energy, (Genesis) is a state owned generator and New Zealand’s largest energy retailer with over 700,000 electricity and gas customers. It is aiming to rollout advanced metering services to 500,000 - 600,000 meters over the next 3-5 years. Communication technology will be GPRS.

Genesis will contract for the provision of advanced metering services to customers from a consortium of third party metering providers with whom Genesis is close to signing contracts. Genesis will not own the meters.

The introduction of advanced meters has required the upgrade of Genesis’s customer information systems. Genesis is upgrading its billing and customer management system to provide a flexible back-office platform to enable Genesis to make use of AMI. Once economic scale of the rollout is achieved for the information systems upgrades (around 20,000 – 30,000 advanced meters in place), Genesis will look to offer customers a range of features, such as differentiated pricing.

Genesis was initially working with Contact Energy on a contract to provide advanced metering services to customers, but Contact has now “gone it’s own way”.

Genesis’s intent is that the meters installed by the third party providers will enable customers to switch between retailers, and the meters would still allow for the option of manual reads. The functionality of the AMI deployments is discussed in the following section.

¹⁶ <http://www.meridianenergy.co.nz/AboutUs/News/Meridian+Christchurch+initiative+to+bring+power+retail+into+21st+century+.htm>

¹⁷ Information taken from a discussion with Richard Gordon, spokesperson for Genesis Energy, and article “Power Retailers Get Smart”, by Claire McEntee, published in The Dominion Post on 31 March 2008, http://stuff.co.nz/AAMB4/aamsz=300x44_MULTILINK/4455881a26871.html

Contact Energy¹⁸

Contact Energy Ltd (Contact) is a publicly listed electricity generator and electricity and gas retailer. Contact generates around 25% of New Zealand's electricity and has around 635,000 customers.

Contact is in the process of rolling out advanced meters to 55,000 Canterbury customers on the Orion network. It expects to extend the rollout to around 500,000 customers throughout New Zealand within about five years.

The Canterbury rollout is in association with NGC and AMS.¹⁹ The meters themselves will be owned by NGC, while AMS will own the IT layer and other service infrastructure. AMS is therefore an advanced metering service provider for Contact and manages metering deployment and service delivery to agreed standards. Communication technology will be predominantly GPRS.

Contact was asked “does the installation of the advanced meters have any implications for customers wishing to switch retailers? Why or why not?” Contact replied as follows:²⁰

“Currently installing an advanced meter has no specific implications, although contractually it means that all advanced metering companies require contracts for service with all retailers. Over time it is likely that switching time will fall through changes to Electricity Commission requirements in this area. It is not the installation of advanced meters themselves that makes the difference but what services the retailer offers the customer that may be different to competitors.”

When asked to clarify whether this meant there might be meter churn, Contact responded that:²¹

“...as long as the new retailer has a competitive commercial arrangement with the advanced metering service provider then there is little rationale for meter displacement. As an industry we certainly won't be encouraging asset replacement in this situation, but displacement cannot be totally ruled out if the

¹⁸ Information taken from Contact website, <http://www.contactenergy.co.nz>, and communication with Jann de Bruin, Contact spokesperson.

¹⁹ “Power Retailers Get Smart”, by Claire McEntee, published in The Dominion Post on 31 March 2008, http://stuff.co.nz/AAMB4/aamsz=300x44_MULTILINK/4455881a26871.html

²⁰ E-mail correspondence with Jann de Bruin, Contact spokesperson.

²¹ E-mail correspondence with Jann de Bruin, Contact spokesperson .

existing meter has lower functionality or the service is much more expensive than alternative options. If the new retailer simply doesn't have the capability to accept remote meter reading information, then they have the fallback position of reverting to manual reads."

Contact Energy also offers 'PrePower', a prepay billing option for residential electricity customers. This option requires the installation of a PrePower meter and customers purchase electricity either over the phone, or in person at Post Shops. The meter has a display panel showing current usage and the number of units of electricity available to use.²²

Mercury Energy²³

Mercury Energy Ltd (Mercury Energy) is the gas and electricity retail arm of state owned electricity generator Mighty River Power Ltd (Mighty River Power).

Mercury Energy has undertaken an advanced metering trial in 5,000 households in Auckland and now plans to roll out advanced metering to the majority of its 350,000 customers within the next three years.

Mercury Energy's main technology supplier is United States' company, Elster Electricity LLC. The advanced meters will be supplied and owned by Metrix, a division of Mighty River Power and the current supplier of non-interval meters to Mercury customers in Auckland. Communication technology will be a combination of mesh radio and GPRS.

Mercury Energy offers a remote meter reading service to customers with difficult to access meters that were designed to be read manually. This consists of a small device attached externally to the house that is connected to the electricity meter by a wire. The meter is then read through an electronic signal. Mercury charges residential customers \$43.80 +GST per year for the remote reading service.

4.2 Technology and functionality of AMI

4.2.1 The meter

The retailers we spoke with generally emphasised their interest in the functionality of the AMI, rather than the technology or type of equipment. However, the retailers have

²² <http://www.contactenergy.co.nz/web/view?page=/contentiw/pages/findoutabout/prepaidelectricitywithprepower&vert=fh>

²³ "Power Retailers Get Smart", by Claire McEntee, published in The Dominion Post on 31 March 2008, http://stuff.co.nz/AAMB4/aamsz=300x44_MULTILINK/4455881a26871.html and confirmed by discussion with Chantelle Urquhart, Communications Manager, Mercury Energy.

selected different providers of metering technology. AMI currently being deployed in New Zealand include meters provided by Arc Innovations, AMS, and Metrix.

The functionality of these meters differs slightly. However, they all provide two-way communications and the majority of meters deployed, or to be deployed, in New Zealand under announced roll-outs will have the following functionality:

- Remotely read the meter's total accumulated consumption, interval energy data, status indicators, event logs, and any meter parameter settings on a scheduled and on-demand basis.
- The meter will allow readings to be taken manually.
- Meter parameters to be updated remotely, including internal register configurations.
- Allow remote disconnection and reconnection.
- Set load thresholds to limit the demand that can be drawn by the customer over a defined period of time, with the ability for the customer to manually re-connect the supply.
- Ability to measure active and reactive energy flowing in *and* out of customer's premises (to allow for distributed generation).
- Ability to capture consumption information for other utility supplies, including natural gas and water.
- Provide a communications path to an in-house display unit.
- Many of the meters being deployed have prepayment capability – they are able to interface with a prepaid management system that provides information to the customer on the amount of energy prepared, their credit remaining, and historic consumption.

Independent meter service providers, and generally retailers, perceive the need to provide interoperability through choice of data protocols etc.

4.2.2 Communications

Current deployments use a combination of mesh radio and GPRS communication technologies, with GPRS being the predominant communication channel. The GPRS communication is provided by existing commercial telecommunication firms.

Meter service providers report that trials in New Zealand have shown that Powerline Carrier (PLC) communications technology is cost effective to deploy and can provide reasonably reliable performance from most installations.²⁴ However, commercial concerns include:

- The technology has dependability constraints – because the operation of PLC depends on the network design and operation, AMI is vulnerable to network design and capacity changes.
- Traceability of faults is reportedly difficult and causes operational delays, and additional personnel is needed to manage these faults.²⁵

Retailers and independent meter service providers (who in combination provide 90% of meters in New Zealand) appear to have concluded that PLC is not commercially feasible, unless the meter service provider is also the electricity distribution network company.

4.2.3 In-home capability

Most of the AMI being deployed will provide the capability for an in-house display unit separate from the meter. This in-home display might show total accumulated consumption, prepay information, and advice during peak, off-peak and other key time periods.

The ZigBee communication protocols appear to be gaining some momentum as an industry standard. Zigbee is one of a number of technology options (it's a protocol) for communicating from the meter to in-home networks or devices. M-bus is also gaining significant popularity particularly in Europe.

In-home functionality being developed by meter service providers include:

- The ability to control customer appliances such as air conditioners and heat pumps, and the capability to set remotely the time at which these appliances operate.
- The ability to shed load, either according to a defined timetable or by a remote request.

²⁴ Advanced Metering Services Ltd, Electricity Retailer Market Review, prepared for Office of Energy, Government of Western Australia, January 2008, <http://www.energy.wa.gov.au/cproot/1126/9495/Advanced%20Metering%20services%20Submission.pdf>. Powerline Carrier communications are communications sent via the electricity network cables which also carry electricity.

²⁵ Advanced Metering Services Ltd, Electricity Retailer Market Review, *ibid*, page 7.

Retailers comment that this functionality will be used to provide additional services in the future, but that these services are not currently being offered.

4.3 Costs and business case for retailers of AMI

From our discussions with retailers and meter service providers, it would seem that the market rate for a retailer to lease an installed AMI is about NZ\$75 per annum. This rate reduces materially where the retailer is prepared to enter into a long-term contract for a large number (several hundred thousand) of meters. This volume need not be concentrated in a particular area – it's the volume of the meters and the term of the contract that determine the discount, not the location of the meters. We understand that charges quoted in the market for the lease of AMI under large volume, long-term contracts, are not much higher than the prevailing rates for existing non time-of-use meters. Annual lease costs for existing non-time-of-use meters is around \$55 to \$60 per annum (including the cost of bi-monthly manual reads).

The business case for mass deployment of AMI by New Zealand retailer/generators is being achieved via:²⁶

- Reducing costs to serve, through eliminating the need to estimate volumes and to undertake periodic manual reads, facilitating reconciliation of unaccounted for energy, and remote connection and disconnection.
- Potential for load control and the near-to-real-time understanding of customer load profiles for risk management and generation optimisation.
- Potential in the future to sell additional services and products to customers, including customer appliance control and load control.
- A long standing regulatory deadline for all existing non-interval meters to be compliant with measuring standards by 2015, which in turn necessitates sampling or replacing of existing meters.

Deployment of AMI is expected to produce additional benefits for distribution network companies, through for example using near-to-real-time consumption information to improve network management. These additional benefits are generally viewed as incremental to the decisions by retailers and meter service providers to deploy AMI. As noted above, the business case for AMI is being made on the basis of the benefits and costs to retailers.

²⁶ Analysis based on discussions with retailers and meter service providers undertaken for this report.

However, meter service providers and retailers recognise that if distribution network companies perceive value in the additional information provided by AMI, the distribution companies would likely be willing to contribute to the costs of AMI in return for access to the information. The contractual terms for providing AMI services to distribution network companies are still evolving. Competitive pressures in both electricity retail and meter services markets should mean that payments by distribution network companies for AMI services would result in further decreases in the cost of AMI to end use customers.

New Zealand meter service provider, AMS, reports that installation and maintenance costs for a roll out make up 80% of the cost to deliver the service.²⁷ The firm says that a 15% premium on rural installation and maintenance equates to an overall increase in the cost to serve rural areas of 12%. It notes, however, that the benefit to retailers from a reduction in the cost of manual meter reading and special one-off meter read costs are higher for rural AMI than urban AMI (because the cost of manual meter reading is higher for rural areas than urban areas).

²⁷ Advanced Metering Services Ltd, Electricity Retailer Market Review, prepared for Office of Energy, Government of Western Australia, January 2008, page 4, <http://www.energy.wa.gov.au/cproot/1126/9495/Advanced%20Metering%20services%20Submission.pdf>

5 Regulation of metering in New Zealand

5.1 Electricity Commission

The Electricity Commission is a Crown entity, set up through a 2001 amendment to the Electricity Act 1992, with the role of overseeing New Zealand's electricity industry and markets. It began operating in September 2003.

The Electricity Commission regulates the operation of the electricity industry and markets (wholesale and retail) in accordance with the Electricity Act and Government energy policy. The principal objectives of the Electricity Commission, as set out in the Electricity Act 1992 (172N(1)), are to:

“(a) to ensure that electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable and environmentally sustainable manner; and

(b) to promote and facilitate the efficient use of electricity.”

The Electricity Commission must operate in a manner that is consistent with the New Zealand Government's Government Policy Statement (GPS). It has been given powers to regulate to achieve its aims. The GPS sets out the following expectation related to the Electricity Commission's approach to regulating the electricity market:

“In particular, whenever possible, the Commission should use its powers of persuasion and promotion, and provision of information and model arrangements to achieve its objectives rather than recommending regulations and rules.”

In May 2008, the Electricity Commission released a Policy Paper and Guidelines for Advanced Metering Infrastructure (Guidelines).²⁸ The Guidelines are voluntary, and set out the Electricity Commission's recommendations relating to the introduction of new technology for metering, the supporting infrastructure, and load management. The Guidelines also outline the Electricity Commission's expectations in situations where new meters are installed for new and existing consumers.

The Guidelines promote the Electricity Commission's view that advanced metering systems installed in New Zealand should share certain common characteristics, such as:

²⁸ Electricity Commission, Guidelines for advanced metering infrastructure v 1.0, dated 22 February 2008.

- Provide for open access – operate to allow multiple parties to concurrently offer services across a single party’s metering infrastructure.
- Allow wider localised load control capability – extend load control to other than traditionally controlled loads and allow load or demand reduction aggregation to encourage demand-side participation in the electricity market.
- Make available consumer information – remove barriers to helping electricity consumers better understand their electricity usage patterns and pricing options.
- Improve metering information availability – provide remote communications to allow regular and accurate reading of meters, network and supply parameters.

The Electricity Commission’s staff have also indicated that the Electricity Commission intends to review Part D of the New Zealand Electricity Governance Rules (EGR) next year. Part D sets out the obligations of participants in relation to metering standards. The current Part D rules, and other relevant parts of the EGR, are summarised below.

5.2 Electricity Governance Rules

The following parts of the New Zealand Electricity Governance Rules (EGR) are relevant to metering and the collection of metering information:

- Part D sets out the obligations of participants in relation to metering standards.
- Part E sets out the management of information held by the Registry and a process for switching customers between retailers.
- Part J describes processes and responsibilities for the reconciliation of electricity conveyed.

Parts D, E and J of the EGR are summarised in the Appendix. The following sections provide an overview of our understanding of the Rules as they relate to metering.

5.2.1 Metering obligations and responsibilities

Retailers are responsible for ensuring that electricity conveyed to the ICPs of their customers is quantified according to the required metering standards and submitted to the reconciliation process. However, the retailer does not need to own the meter to fulfil this obligation.

Anyone may own a metering installation. The person supplying the meter is responsible for ensuring that the meter installation meets the requirements of the EGR. The Code of

Practice requires metering equipment owners to implement a programme of meter replacement to ensure all meters comply with the EGR standards by 2015.²⁹

There is no requirement under the EGR for separation of participant roles in relation to the ownership, calibration or reading of meters. One participant may have multiple roles under the EGRs. For example, Trustpower Ltd (Trustpower) is an:

- Electricity retailer;
- Electricity generator;
- Class B test house; and
- Metering installation owner.

Certification of the meter and the meter installation must be undertaken by test houses. Any person can be certified as a test house, as long as they meet the requirements set out in the relevant Code of Practice under Part D of the EGR. Class A test houses can work with all meter types; Class B test houses are limited in the functions that they can perform.

Under the EGRs, a test house must certify and calibrate new meters prior to the meter being installed, and certify the installation of the meter. However, the test house does not need to physically install the meter. The test house can arrange for a suitably qualified person – for example an electrician – to install the meter and provide the certification on behalf of the test house. This means that a test house can use subcontractors to install meters and related equipment and wiring, especially in geographical areas that might otherwise be outside their traditional geographic markets.

As of 25 March 2008, there were 18 approved test houses, four with Class A approval, nine with Class B approval, and five with both approvals.

Requirements for calibration as part of the certification process prior to commissioning vary depending on meter type. Meters supplied to residential and small business consumers may be calibrated by Class A or B test houses through use of manufacturer sample testing processes.

5.2.2 Registry information and customer switching

Customer switching is co-ordinated through the Registry, which records the ICP for every customer and the distribution network company and the retailer that supply that customer. When a customer decides to change retailers, the switch requires actions to

²⁹ Code of Practice D3, Rule 4.8

be taken by the old and new retailer within time frames set out in the EGRs. The switch process depends on whether the ICP has half-hourly metering or not. However, the switch can be effected whether or not the existing retailer cooperates with the switching process.

5.2.3 Reconciliation

Retailers, generators, network owners, and distributors are all reconciliation participants. As such responsibility is placed on them for providing information to the Registry to allow the reconciliation of electricity conveyed with electricity used. Certain categories of reconciliation participants must be certified as having demonstrated that they will or are complying with the EGRs in the way that they collect, store and transmit information.

Actions required by reconciliation participants can be undertaken on their behalf by an agent. However, the reconciliation participant remains responsible for ensuring these actions have been undertaken in accordance with the EGRs and cannot be released from that obligation and associated liability.

Retailers are responsible for ensuring that electricity conveyed to the ICPs of their customers is quantified according to the required metering standards and submitted to the reconciliation process.

6 Competition for the supply of metering services in New Zealand

6.1 Access to meters and retail competition

This section reviews the state of competition for the supply of AMI services and whether contestable supply of metering services has impacted on electricity retail competition. The section draws from a decision of the Commerce Commission approving the merger of competing suppliers and a recent High Court case involving meter access.

6.2 Commerce Commission's analysis of competition for metering

In October 2004 Vector sought clearance from the Commerce Commission for the acquisition of NGC Holdings Ltd.³⁰ Both companies provided electricity metering services and the acquisition would lead to an aggregation of activity; the combined market share of the time-of-use meter market post-acquisition would be about 82%. In 2004, the market for time-of-use meters was small, with approximately 12,000 time-of-use meters in service. Most customers with time-of-use meters were large commercial firms.

Section 66 of the Commerce Act provides for the Commerce Commission to grant clearances for acquisitions where it is satisfied that the proposed acquisition would not have, or would not be likely to have, the effect of substantially lessening competition in a market. The Commerce Commission interprets a lessening of competition, and the creation, enhancement or facilitation of the exercise of market power as being equivalent.³¹

To assess the application for clearance, the Commerce Commission set about:

³⁰ Documents relating to this decision can be found on the Commerce Commission website at <http://www.comcom.govt.nz/PublicRegisters/mergersacquisitions-clearances.aspx>. The Commerce Commission decision number is 540.

³¹ Commerce Commission, Decision 540, paragraph 6.

- Defining the relevant market for metering services in New Zealand.
- Assessing the state of competition in that market.
- Analysing the likelihood, extent and timing of new entry into the market.
- Assessing whether retailers and other entities had countervailing market power.

The Commerce Commission undertook this analysis to determine whether the market for metering services was workably competitive, and whether the merger might lessen the competitive constraints on participants in the market. Workable competition is defined in New Zealand for the purposes of competition analysis as:

“Workable competition means a market framework in which the pressures of other participants (or the existence of potential new entrants) is sufficient to ensure that each participant is constrained to act efficiently and in its planning to take account of those other participants or likely entrants as unknown quantities... Workable competition exists when there is an opportunity for sufficient influences to exist in any one market which must be taken into account by each participant and which constrain its behaviour.”³²

The following sections summarise the Commerce Commission’s analysis of competition for metering services in New Zealand.

6.3 Commerce Commission’s definition of the relevant electricity metering market

To assess whether competition would be lessened, the Commerce Commission first defined the relevant market. For competition purposes, the term ‘market’ defines an area of close competition (or lack of competition) relevant to the firms, products, and conduct at issue.³³

An ‘area of close competition’ is, in economic terms, a field of exchange, or potential exchange, in which the goods and/or services being considered are closely substitutable for other goods and services. For example, if enough buyers would switch to some other good or service in response to a relatively small price rise, these other goods and services are considered to be substitutes and therefore in the same market. In the same

³² ARA v Mutual Rental Cars (Auckland Airport) Ltd, (1987) 2 TCLR 141, at 166; Fisher and Paykel Ltd v Commerce Commission, (1990) 2 NZLR 731, at 757.

³³ David Scheffman and Pablo Spiller, Geographic Market Definition under the U.S. Department of Justice Merger Guidelines, *The Journal of Law and Economics*, 30(1) (1987), 123-147.

manner, if an alternative supplier provides substitutable goods or services using existing production and distribution facilities in response to a relatively small price rise, then that alternative supplier is in the same market as the original supplier. A market for a good or service includes all close substitutes for that good or service that could make it unprofitable for a supplier to raise prices.

By describing the field of exchange in which there is close substitution between goods and/or services, a market defines the current competitive constraints on the firm or firms participating in that market.

Based on the above definitions and parameters, the Commerce Commission concluded that the relevant market for metering services was:

“...a national market for the provision of time of use electricity meters, including associated metering services. Metering services includes the installation and maintenance of such meters and electricity consumption data retrieval and processing.”³⁴

The Commerce Commission’s finding that the relevant market was a national market was based on the spatially dispersed sources of supply to which buyers could turn should the prices of local sources of supply be raised. The Commerce Commission observed that three firms operating in the time-of-use metering market provided meters on a national basis (including the two firms that were part of the acquisition). The Commerce Commission also observed that retailers purchasing metering services provided retailing services on a national basis.³⁵

Recent and proposed deployment of AMI in New Zealand, as outlined in section 4, confirm the Commerce Commission’s view that the market for metering services is a national market. Meter service providers are deploying AMI across New Zealand.

6.4 Competition analysis

The Commerce Commission considered whether the acquisition would be likely to lead to a substantial lessening of competition in the relevant market. In undertaking this analysis, the Commerce Commission applied the “with” and “without” test. The Commerce Commission considered the relevant counterfactual for the test to be the status quo.

³⁴ Commerce Commission, Decision 540, paragraph 47.

³⁵ Refer Para 11.62, Notice under s66 of the Commerce Act 1986 by Vector Limited.

6.4.1 Existing competition and near supply

The Commerce Commission considered that existing competition occurs between those businesses in the market that already supply the product, and those that could readily do so by adjusting their product-mix (near competitors). Supply-side substitution by near competitors could arise either from redeployment of existing capacity or from expansion involving minimal investment. In both cases the Commerce Commission considered that, to be relevant, the delay to reach the market should be no more than one year.

Within the market defined by the Commerce Commission as relevant – being the national market for the provision of time-of-use meters and associated metering services – the acquisition would have led to a concentration of activity. Estimates supplied to the Commerce Commission suggested there were approximately 12,000 time-of-use meters in service, and that post-acquisition the market share of Vector/NGC would be about 82%. The Commerce Commission considered that, prima facie, such a concentration raised competition concerns.

The Commerce Commission then turned its attention to the likely behaviour of other businesses in the market, and specifically the competition that would exist between the remaining firms should the acquisition proceed, compared to that which would exist in the absence of the merger.

The Commerce Commission identified 18 companies participating in the national market for the provision of time-of-use meters and metering services. In addition, there were other meter providers not currently participating in the market for the provision of time-of-use meters, but who had historical leasing arrangements with either retailers or end consumers. A number of large consumers throughout New Zealand were also known to own the electricity meter at their sites.

Based on this reasoning the Commerce Commission identified that there were a number of competitors and near competitors in the relevant market, and that the situation would be likely to continue post-acquisition. However, the Commerce Commission considered that the merged entity would be the most significant provider of time-of-use meters and metering services post-acquisition (with 82% of the market), and that existing competition would not be sufficient to constrain the merged entity.

6.4.2 Potential competitors and barriers to entry

The Commerce Commission then considered whether, given inducement to do so through the post-acquisition entity exercising market power, other businesses would be able to enter the market and thereafter expand. Particular attention was given to any barriers to entry.

The Commerce Commission noted that while most retailers currently contract with other providers to supply time-of-use meters and metering services, in the near past they had

all used in-house metering services. Trustpower, for example, told the Commerce Commission at the time that it considered it more efficient for NGC to manage the compliance, installation and maintenance of its meters.³⁶ The Commerce Commission observed, with support from submissions from Trustpower, Contact, Genesis, Mighty River Power and Meridian Energy, that these firms could easily revert to in-house supply should the post-acquisition entity attempt to raise prices or reduce service. Some of the firms identified by the Commerce Commission have subsequently entered the market and are involved with the deployments discussed in section 4.

The Commerce Commission identified a number of providers, other than electricity retailers, as having the potential to enter and expand into the relevant market. These included meter manufacturers, test houses, electricity lines companies and large consumers who already owned time-of-use meters and provided their own metering services. Some of the firms identified by the Commerce Commission have subsequently entered the market and are involved with the deployments discussed in section 4.

The likely effectiveness of the threat of new entry in preventing a substantial lessening of competition in a market following an acquisition is determined by the nature and effect of the aggregate barriers to entry into that market. The Commission defined a barrier to entry as being anything that amounted to a cost or disadvantage that a business entering the market had to face that an established incumbent did not.

The Commission considered that the barriers to entry in the relevant market were low for the following reasons:

- Hardware meter technology was widely available. Time-of-use meters were easily acquired. As well as the New Zealand time-of-use meter manufacturer, Energy Intellect, there were a number of international companies that supplied time-of-use meters to the New Zealand market through local agents.
- Software technology for consumption data retrieval and analysis was widely available.
- Retailers could purchase and install their own meters to service their individual customers.³⁷
- NGC (the company being acquired) employed about 30 independent electrical contractors to install and maintain its meters nationwide, so access to suitable skills by other potential meter providers to install meters did not appear to be an issue.

³⁶ Commerce Commission, Decision 540, paragraph 93.

³⁷ Current deployment initiatives discussed in section 4 indicate that retailers can purchase and install meters for their mass market customers.

- Access to meter certifiers (test houses) was readily available.

Having considered possible new competitors and barriers to entry, the Commerce Commission turned to the question of whether the threat of market entry would act as a sufficient constraint on the merged entity. For market entry to be a sufficient constraint on existing participants, entry of new participants in response to a price increase or other manifestation of market power must be Likely, sufficient in Extent and Timely (the so-called LET test).

One retailer (Contact Energy) advised the Commerce Commission that it would take about 12 months for it to completely switch between time-of-use meter providers for all its large customers. NGC informed the Commerce Commission that time-of-use meter contracts between itself and retailers were either for one year or were back-to-back with the relevant consumer's electricity supply contract (up to two years in length). The Commerce Commission considered that there did not appear to be a contractual barrier to entry within the Commerce Commission's two year time frame for its analysis.

The Commerce Commission therefore concluded that were the merged entity to price time-of-use meters unreasonably, retailers and others would have the ability to enter or expand the range and level of their activities in the relevant market, and would be able to do so in a timely manner. The potential for new entrants and for current competitors to expand their range and level of activities would act as a constraint on the exercise of market power by an otherwise dominant firm.³⁸

6.4.3 Countervailing Power

The Commerce Commission considers that the potential for a business to wield market power may be constrained by countervailing power in the hands of its customers, or in the hands of its suppliers when considering buyer market power (oligopsony or monopsony).

Vector and NGC argued that the large electricity retailers or large electricity consumers, as users of time-of-use meters, had countervailing power. The Commerce Commission agreed with this argument on the basis that if prices or terms of access to existing meters were unreasonable, large electricity retailers and large consumers would have the resources and expertise to install new meters. This countervailing threat would place the previous meter supplier at risk of having to face the expense of removing the existing meters, were it to attempt to overprice its metering services.

Similar logic applies if a retailer were to own the meter. In a contestable market, a new entrant retailer can access alternative metering services and hence an existing retailer cannot use its ownership of a meter to secure its retail position. In these circumstances,

³⁸ Commerce Commission, Decision 540, paragraph 99.

a meter owner faces strong incentives to avoid stranding its asset by making the asset available to other parties, including competitors, on reasonable terms.

The Commerce Commission therefore considered that electricity retailers and large consumers were also likely to constrain the merged entity, and that the constraint already provided by these parties would be unlikely to be reduced significantly as a result of the acquisition.³⁹

6.5 Litigation on access to meters

While the Commerce Commission concluded that there was a national market for time-of-use meters, it did not reach the same conclusion in relation to non-time-of-use meters in the Bay of Plenty. In a Court action heard by the New Zealand High Court in 2007, the Commission argued that there was a regional market for the supply of non-time-of-use meters in the Bay of Plenty.⁴⁰ The Commerce Commission alleged that Bay of Plenty Electricity Ltd (Bay of Plenty Electricity), the retailer that owned almost all of the meters in that region, had market power and had used that market power to prevent or deter entry by competitors. This Court action was initiated by the Commerce Commission after the four largest retailers in New Zealand had complained that Bay of Plenty Electricity would not lease its meters to them when they won a former Bay of Plenty customer.

The High Court found that the Commerce Commission had not established a case against Bay of Plenty Electricity. The Commerce Commission has since lodged a notice that it intends to appeal the High Court decision (but has not yet lodged an appeal). The circumstances of the Bay of Plenty action, however, appear relatively unique. The Commerce Commission's concerns (which were not accepted by the Court) in relation to the situation in the Bay of Plenty do not appear to have parallels in the market for AMI:

- The Commerce Commission defined a regional market for non-time-of-use meters, where the Commission has concluded that there is a national market for AMI.
- The Commerce Commission argued that Bay of Plenty Electricity, which owned nearly 100% of the meters in the region, had market power in the regional market, whereas the Commission accepts that the national market for AMI is contestable.

³⁹ Commerce Commission, Decision 540, paragraph 99.

⁴⁰ *Commerce Commission v Bay of Plenty Electricity Limited* HC WN CIV-2001-485-917 [13 December 2007].

In preparing this report, we spoke to four of the retailers that complained to the Commerce Commission about Bay of Plenty Electricity. None of these retailers anticipated difficulty in gaining access to AMI where they did not own the meter. The contracting arrangements for the new AMI currently being deployed, including access terms, are still evolving. The retailers we interviewed for this report (which in aggregate serve 92% of the small customer market), expect reciprocal leasing arrangements to be implemented for AMI. The critical condition underpinning this confidence is that the AMI market is contestable; new retailers have alternative options available to them, which in turn encourages meter providers to avoid asset stranding and to provide access on reasonable terms and conditions.

6.5.1 The Commerce Commission's view of competition for metering services

In summary, after investigating the market for time-of-use meters in New Zealand, the Commerce Commission concluded that:

- There is a national market for provision of time-of-use electricity meters, including associated metering services;
- Existing providers of metering services would be constrained by competition from various existing and potential participants in the relevant market; and
- Providers of metering services would be constrained by the countervailing power of the large electricity retailers and consumers, with the associated potential for existing providers' meters to become stranded assets.

The Commerce Commission was satisfied that the constraints that would remain, following the acquisition of NGC by Vector, would be such that there would be unlikely to be a substantial lessening of competition as a result of the acquisition.

Importantly, the Commerce Commission found that the meter services market was contestable, and that in a contestable market, owners of meters would face strong commercial incentives to provide open access to their meters (to avoid a self imposed stranding cost). The practices that have subsequently evolved in the New Zealand market, and which were discussed in section 4, support the Commerce Commission's analysis.

7 Response to questions

The AEMC commissioned a separate review of AMI arrangements in Europe and North America.⁴¹ The AEMC asked a series of questions related to AMI programmes. This section addresses those questions as they relate to the meter services market in New Zealand.

***The cost of deploying AMI:** The types of costs and the economies of scale and density; any duplication of communications infrastructure; extent of any stranded assets and meter churn. What have been the avoided costs as a result of developments in remote meter reading?*

The market rate for a retailer to lease an installed AMI is about \$75 per annum. This rate reduces materially where the retailer is prepared to enter into a long-term contract for a large number (several hundred thousand) of meters. This volume need not be concentrated in a particular area – it's the volume of meters and the term of the contract that determine the discount not the location of the meters.

In a contestable market, a meter owner faces strong incentives to avoid stranding its asset by making the asset available to other parties, including competitors, on reasonable terms. It is common practice in New Zealand for the party that owns the meter at a particular site to have no contractual relationship with the end-consumer. This situation applies to existing non-interval and existing time-of-use meters. It arises where the retailer leases the meter from a third party meter services provider, or where the retailer that owns the meter has lost the energy supply contract to another retailer and has entered into an arrangement to lease the meter to the new retailer. From interviewing retailers and meter service providers, we found no evidence of stranded AMI assets or meter churn (though AMI deployment on a large scale is still in its early stages).

The retailer business case for AMI is being achieved through expected reduced costs to serve, through eliminating estimated volumes and manual reads, facilitating reconciliation of unaccounted for energy, and remote connection and disconnection; potential for load control and improved risk management and generation optimisation; the potential to sell additional services, and a regulatory obligation to ensure existing meters meet measuring standards by 2015.

41

[http://www.aemc.gov.au/pdfs/reviews/Victorian%20Jurisdictional%20Derogation%20\(Advanced%20Metering%20Installation%20Roll%20Out\)/consultant/000NERA%20London%20Report%20on%20Smart%20Metering%20for%20Electricity%20Consumers%20in%20Selected%20Jurisdictions%20-%202017%20June%202008.pdf](http://www.aemc.gov.au/pdfs/reviews/Victorian%20Jurisdictional%20Derogation%20(Advanced%20Metering%20Installation%20Roll%20Out)/consultant/000NERA%20London%20Report%20on%20Smart%20Metering%20for%20Electricity%20Consumers%20in%20Selected%20Jurisdictions%20-%202017%20June%202008.pdf)

The efficiency and effectiveness of cost recovery arrangements of AMI. What are the cost recovery arrangements for AMI and has this had an impact on the deployment or the effectiveness of retail competition?

Retailers recover the cost of metering in the bundled price of delivered energy to end use customers. These charges are not subject to price control and are determined by competition. Deployment of AMI is being driven by retailers and meter service providers in response to commercial and competitive pressures amongst retailers. Hence, the timing and scope of deployment differs between retailers. On announced deployment plans, almost all New Zealand households and small businesses will be served by AMI within five years, and the majority of households will have AMI within three years.

The impact on innovation in AMI technology: Has innovation in AMI been hindered or enhanced by the AMI arrangements in different jurisdictions?

AMI technology choices are a matter of commercial choice for retailers and meter service providers. The major retailers have all run pilot schemes and have selected AMI technology providers on the basis of those pilots. The technology platforms differ, but the majority of AMI meters would appear to share similar functionality (as discussed in section 4.2).

The impact on contestability in metering services: Have the AMI arrangements affected metering services contestability? Specifically, has distributor responsibility for AMI assets and services resulted in metering services competition?

Distributors do not have responsibility for AMI in New Zealand. AMI in New Zealand is a contestable service.

Network operational benefits: Have there been network operational benefits arising out of AMI in terms of information for network planning and performance; infrastructure synergies; and enhanced services (for example, special meter read; remote energisation and de-energisation)? Was it considered that these benefits could be obtained only if the distributor (as opposed to the retailer) was responsible for the AMI rollout?

AMI is being deployed on the basis of commercial costs and benefits as assessed by retailers and meter service providers. Deployment of AMI is expected to produce additional benefits for distribution network services companies, through for example using near-to-real-time consumption information to improve network management. These additional benefits are generally viewed as incremental to the decisions by retailers and meter service providers to deploy AMI. However, meter service providers and retailers recognise that if distribution network companies perceive value in the additional information provided by AMI, the distribution companies would likely be willing to contribute to the costs of AMI in return for access to the information.

Impact on retail competition: *In markets where there is retail competition, what has been the impact on retail market efficiency and competition? In particular, what has been the impact on the efficiency, diversity and cost of retail service delivery; entry into the market by new retailers; incentives for customer switching and retail product offerings? The AEMC is also interested in understanding whether retail competition has been promoted or hindered under different AMI arrangements (specifically where the distributors or retailers have been responsible for the AMI assets and services).*

Large scale deployment of AMI in New Zealand is in its infancy, with the rollout expected to take three to five years to reach most New Zealand households. Hence it is not yet possible to fully assess the impact of AMI on retail competition. AMI is expected to reduce both the transaction costs and time involved in switching customers (for example, by removing the need for a manual meter read). A reduction in switching costs would typically be expected to lead to increased competitive pressure in retail markets. As meter services is a contestable market in New Zealand, a meter owner (whether distribution network company, retailer, or meter service companies) faces strong incentives to avoid stranding its asset by making the asset available to other parties, including competitors, on reasonable terms. Ownership of the meter will tend to migrate over time to entities with comparative advantages in providing metering services. In the New Zealand market, the majority of meters are provided by independent meter service providers, closely followed by electricity retailers. Few distribution network companies elect to own meters.

Appendix

Overview of Electricity Governance Rules related to advanced metering and metering services

Part D - Metering

Section 3 of Part D of the EGR sets out responsibility for quantification at points of connection on local networks or embedded networks.

“3.1 Retailers responsible for quantification at points of connection

Each retailer must ensure that the conveyance of electricity is quantified either by using a metering installation or a method of calculation approved in accordance with the rules, at each point of connection in relation to the ICPs for which it is responsible;”

Section 6 of Part D states that each participant responsible for providing a metering installation will ensure that the metering installation meets the requirements of the Codes of Practice.

Section 4 of Code of Practice D3 requires that metering installations must be certified by an approved testing house (with exceptions for existing metering installations). Sections 8, 9 and 10 of Part D of the EGR set out rules in relation to the testing of meters, which must be carried out by an approved test house.

Requirements for obtaining test house status are set out in Code of Practice D2. There are two classes of testing house: Class A test houses can work with all meters and Class B with only certain classes of meters depending on the activity being undertaken. Code of Practice D2 sets out requirements for testing houses, amongst other things:

- To be organised and managed in such a way as to give confidence in their independence and judgement (requirements depend on class of testing house); and
- To be audited, including for the purposes of judging compliance with the regulations and rules.

Test houses are approved to carry out meter calibration, installation and commissioning and certifying of metering installations, within the restrictions related to their Class.

Code of Practice D3 sets out the requirements for metering installations. This states that:

“3. Metering equipment

3.1 General installation or replacement of metering equipment

Metering equipment shall be installed to meet the requirements of appendix 1. Components of a metering installation including auxiliary equipment and wiring may be installed by any suitably qualified personnel, provided that in all cases:

Approved test house employees or their subcontractors only, shall check, test, calibrate or certify, as appropriate, prior to the metering equipment being commissioned.”

Rule 4 of Code of Practice D3 requires that every metering installation to be used for energy trading under the rules will be certified, allowing for temporary situations due to exceptional circumstances. Every metering installation must also comply with the requirements of regulation 54 of the Electricity Regulations 1997.⁴²

Certification requirements for new metering installations differ depending on the category the meter falls into. All meters can be certified under rule 5 of the Code of Practice D3, but as an alternative category 1, 2, and 3 meters can be certified by complying with the requirements of rule 6 of the Code of Practice D3.⁴³

Definitions of metering categories are set out in Code of Practice D1. Category 1 – 3 meters are permitted to have greater maximum permitted error bounds than category 4 - 6 meters. Metering installations that fall within categories 3 – 6 must be *half hour*⁴⁴ (or sub multiple of) metering installations.⁴⁵

Rule 5 of Code of Practice D3 sets out the requirements for full certification of fully calibrated metering installations. Rule 6 of Code of Practice D3 sets out the requirements for full certification of selected component installations. Differences

⁴² Section 54 of the Electricity Regulations states that “Where any person supplies electricity at standard low voltage through a revenue meter, that person must ensure that the meter operates within a margin of error (in excess or deficiency) of 2.5% from complete accuracy.”

⁴³ Rule 4.1 and 4.2 of the Code of Practice D3 of the EGR

⁴⁴ EGR Part A – defined terms: *half-hour metering* means metering which stores information relating to *electricity* consumption during *half hour* periods;

⁴⁵ Rules 1 and 3 of Code of Practice D1 of the EGR.

between the rules include the use of certification based on manufacturing sample testing for meters certified under rule 6.

Part E – Registry information and customer switching

Part E of the EGR provides for the management of information held by the *Registry*; and a process for switching *customers* and *embedded generators* between *retailers*.

Customer switching and entering of Registry information is facilitated by the use of installation control points (ICPs) – a unique identifier for a point of electricity connection for reconciliation processes.

Schedule E2 sets out the procedures for the switching of customers between retailers. The procedures differentiate between a situation where:

- the ICP has non half hour metering; and
- the ICP has either had, will have, or continue to have, *half hour* metering.

Timelines and responsibilities of the old and new retailer to manage the switch request are outlined.

Part J – Reconciliation

Part J of the EGR describes how *reconciliation participants* must gather, store and provide information about electricity conveyed, how *reconciliation participants* must prepare and provide submission information and how the *reconciliation manager* must calculate responsibility for that *electricity* among *reconciliation participants*.⁴⁶

A *reconciliation participant* means any *participant* (excluding the *Board* (even if the *Board* acts as a *service provider*) and the *Rulings Panel*) which is any of the following:

- (a) a *retailer* when purchasing *electricity* from, or selling *electricity* to the *clearing manager*;
- (b) a *generator*;
- (c) a *network owner*;
- (d) a *distributor*; and

⁴⁶ EGR Part J, section 1.1.

(e) a person who purchases or sells *electricity* to or from the *clearing manager*.⁴⁷

Part J requires *reconciliation participants*, and in some cases particular types of participants (e.g. retailers), to ensure certain actions are undertaken. The language used in the EGR is generally along the lines of the “participant must deliver”⁴⁸ or the “participant must notify”⁴⁹ or the “participant must ensure”⁵⁰.

Part J section 15 states that:

“15 Use of agents by reconciliation participants

A reconciliation participant that has an obligation in accordance with this part J of the rules may discharge that obligation by way of an agent. A reconciliation participant that utilises an agent, as contemplated by this rule 15, for the discharge of any obligation in accordance with the rules remains responsible and liable for, and must not in any way be released from, that obligation. A reconciliation participant is not able to assert, against anyone, that it is not responsible or liable for its obligations because the agent has done or not done something or has failed to meet a relevant standard.”

Schedule J1 states that the following categories of *reconciliation participants* who are responsible for the performance of any tasks in accordance with the EGR, including those listed in rule 19 of Part J, must be *certified* in accordance with schedule J1:

- *retailers* who purchase *electricity* directly from or sell *electricity* directly to the *clearing manager*;
- *direct purchasers*;
- *grid owners*; and
- *generators*, including *embedded generators* who sell directly to the *clearing manager*.

⁴⁷ EGR Part A – defined terms. The reference to *Board* refers to the Electricity Commission. The *Rulings Panel* means the panel established by regulation 160 of the Electricity Governance Regulations 2003.

⁴⁸ EGR Part J section 4.2.2.

⁴⁹ EGR Part J section 3.

⁵⁰ EGR Part J section 4.1.3.

Schedule J1 section 3 outlines the requirements for gaining certification as a *reconciliation participant*. As part of the application for initial certification, the applicant must indicate to the *Board* the information gathering processing and management tasks it intends to perform and who it intends to use to perform the tasks.

Schedule J2 relates to the collection of volume information, including the collection of raw meter data and the interrogation of meters. Rules under Schedule J2 differentiate on the basis of whether the meter is a half hour metering installation or a non-half hour metering installation.