Smart meters

ELECTRICITY AUTHORITY
TE MANA HIKO

Electricity meters are used to record the electricity use of households and businesses in New Zealand. The traditional mechanical meters that were periodically read by a meter person are being replaced by smart meters.

A smart meter is an electronic meter that can record more regular and more accurate electricity consumption information and has two-way remote communication capability.

This fact sheet discusses the use and benefits of smart meters in New Zealand, how smart meters communicate, radio frequency fields from smart meters, legislation and guidelines for their use and where to go for further information.

The use of smart meters in New Zealand

Electricity metering data is essential to the functioning of the electricity market. Retailers use the information to issue bills to customers. The information is also used to determine wholesale market charges and network charges.

The Electricity Industry Participation Code 2012 (Code) requires household electricity meters to be certified that they accurately measure electricity consumption. Many retailers have decided to update their metering technology to use smart meters instead of certifying old traditional meters. There is no regulatory requirement for parties to install or use smart meters in New Zealand.

The technical aspects of all meters and the requirements for the handling of metering information are regulated through the Code.

Since 2005 when the first smart meters were installed by Meridian Energy in central Hawke's Bay, the number of smart meters in New Zealand has increased to over 800,000. It is estimated that about 1 million will be installed by 2013 and eventually up to 1.6 million.

The benefits of smart meters

Smart meters are a rapidly evolving technology that offers immediate and future benefits for electricity consumers and the electricity industry. The immediate benefits for consumers include:

- **no estimated bills** – each bill is based on an actual read rather than an estimate, because accurate consumption information is always available, and up-to-date information also means billing or electricity use queries can be resolved easily and at low cost

- **remote meter reading** – smart meters can be read remotely, removing the need for regular visits to your property by a meter reader, and smart meters also allow remote disconnection and reconnection

- **changing retailers will be easier** – the final read required when leaving a property or changing retailers can occur almost immediately
- **more information for consumers** – some retailers are providing consumers online access to their electricity use information, which allows consumers to better understand their electricity costs and to more efficiently control their electricity use.

Smart meters also offer the potential for:

- **retailers to offer more products that better reflect customer pricing and service requirements** – smart meters facilitate real-time pricing and greater customer control of electricity supply, for example, providing customers the opportunity to better manage their electricity cost by running appliances at times of the day when electricity prices are lower
- **home area network functionality** – the smart meter, in addition to other technologies, could act as the hub in a home area network that would control smart appliances, for example, washing machines, clothes dryers and fridges, and enable household distributed generation
- **distributed and micro-generation** – smart meters have the capability to measure electricity 'both ways' i.e. electricity being produced by the consumer from a device such as a solar panel and micro-wind turbine, which reduces the cost and difficulty for consumers to export electricity back into the grid.

A number of benefits should be delivered to the wider electricity industry as more smart meters are installed and retailers use the technology to compete to provide better services to consumers. In particular, the demand management potential of smart meters offers the opportunity to defer investment in the electricity generation, transmission and distribution sections of the industry. With smart meters there is also potential to share metering infrastructure with other utility industries such as water and gas.

> Total transmission time is usually less than one minute a day.

How smart meters communicate

Signals from smart meters communicate to the retailers or their service providers. The signals are radio frequencies of various wavelengths. There are two main transmission methods:

- **General packet radio service** – cellular transmission in the 900MHz or 1800MHz frequency bands – a point-to-point communication from the smart meter to a cell phone tower. As with cell phones, there are 'heartbeat' connection periods. Total transmission time is usually less than one minute a day.
- **Radio mesh** – radio transmission in the 900MHz frequency band – a point-to-many communication. These systems are relatively low power with a short range of a few kilometres. Information is collected into data concentration points and relayed.

Radio frequency fields from smart meters

Background radio frequency fields have been increasing as the use of cell phones, computers, microwave ovens, remote controls and other electronic devices has increased. Radio transmissions from smart meters must comply with local council and Ministry of Business, Innovation and Employment requirements. General information about exposure standards and health effects is available from the National Radiation Laboratory of Environmental Science and Research Limited – see www.esr.cri.nz/competencies/nrl/faq/Pages/SmartMeters.aspx.

Consumers should contact their retailer with any questions about radio frequency fields from smart meters.

Legislation and guidelines for smart meters

Part 10 of the Code regulates standards, installation, testing, maintenance and certification of meters. The requirements for integrity of meter-reading information are regulated in Part 15 of the Code.

The Authority has recently revised Part 10 of the Code to provide the industry rules covering smart meters and related services. This revision becomes effective on 6 June 2013.

Part 10 does not regulate the rollout of smart meters – this is being undertaken on a commercial basis by retailers and in some cases distributors. Part 10 also does not regulate access to or the provision of the information or data that is acquired by smart meters.

The Authority is monitoring the rollout of smart meters and use of information closely and will intervene if practices develop that impede the advancement of competition, reliability or efficiency for the long-term benefit of consumers.

The Authority has voluntary industry guidelines for the use of smart meters, available at www.ea.govt.nz/industry/market/metering/advanced-metering. The guidelines are currently being revisited in line with the revised Code relating to metering, particularly regarding future features, industry access to smart meter information and the appropriate sharing of technology.

Privacy of information collected by smart meters

The Authority has approved changes to Part 10 of the Code that requires the organisation responsible for the meter to ensure that information is secure and provided only to authorised recipients. A party can obtain metering information if specifically authorised by Part 10 of the Code or if authorised by the consumer.

Retailers and other parties with access to customer electricity metering information are obliged by the Privacy Act 1993 to prevent the unauthorised or unintended use or disclosure of that information, for example, by using encrypted communication.

Further information about smart meters

Consumers should contact their electricity retailer for information about their use of smart meters and rollout plans. For more information about smart meters for household consumers, see:

- Fact sheet 6a *Smart meters – information for households*
- Environmental Science and Research (ESR) smart meter information, available at: www.esr.cri.nz/competencies/nrl/faq/Pages/SmartMeters.aspx.

Fact sheets in this series cover topics including residential electricity supply and how the electricity sector is regulated in New Zealand. The full set can be found at ea.govt.nz/consumer/factsheets.