

SIGNPOSTING THE FUTURE

Implications of evolving technology for the pricing of New Zealand's distribution services

An exciting range of technologies are starting to transform the way consumers use electricity. These new technologies give consumers more choice and control.

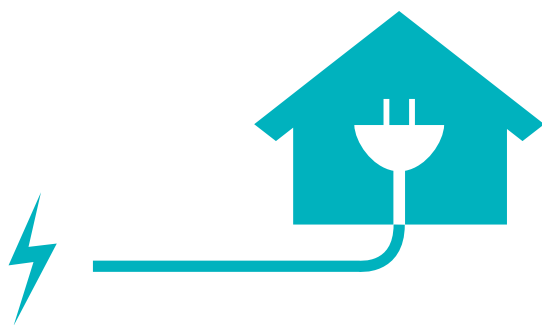
For consumers to receive these benefits, distribution prices need to clearly show what consumers are being charged for, at what time of the day.

We know distributors are thinking about how their pricing might change. It's clear that if distributors do not adapt, they will be left behind and their businesses, consumers and community assets will suffer.

If no action is taken, ordinary New Zealanders who rely solely on the distribution network to get electricity could see their prices increase.

IF THERE IS NO CHANGE:

Residential electricity bills could rise



10%
INCREASE
IN THE NEXT 10 YEARS

CHANGING DISTRIBUTION
PRICING STRUCTURES
COULD HELP ORDINARY
NEW ZEALANDERS
AVOID PRICE RISES

This document is a summary of the Electricity Authority's consultation paper *Implications of evolving technology for pricing of distribution services*. To view the full paper visit www.ea.govt.nz

We welcome all views on this topic. The consultation period closes on 2 February 2016.

THE CURRENT SITUATION

Distributors provide and maintain the power lines used to transfer electricity from the national transmission grid to homes and businesses across New Zealand. They transport electricity to a customer at a particular level of quality and reliability. They also keep a certain amount of capacity available on the network for each customer to use.

There are 29 distribution networks in New Zealand. Each year they collectively recover \$3 billion of revenue. At the moment, most of this revenue comes from how much electricity consumers use. This doesn't account for when consumers use electricity, or how much capacity is provided.

SERVICE-BASED PRICING

Service-based pricing could help all consumers benefit from advances in technology.

It means consumers could decide what level of service they want and what actions they could take to reduce the costs they cause to the network.

It could give consumers far more choice and control and create a pricing structure that is more durable and that achieves long-term benefits for all consumers.

OPPORTUNITIES PRESENTED BY EVOLVING TECHNOLOGY

The opportunities presented by evolving technology are exciting and fast-moving.

Solar panels, electric vehicles, heat pumps, battery storage, smart metering, smart appliances and a huge range of consumer apps all create new opportunities.

EVOLVING TECHNOLOGIES COULD:

- make it easier for consumers to manage and control when and how they use electricity



- let consumers choose whether to get electricity from their local distribution network or to generate their own electricity



- change how and when consumers use electricity



- let consumers select from a wider range of distribution services and service levels



- help reduce peak electricity usage, which could postpone or remove the need to build a bigger network which would reduce infrastructure costs that consumers have to pay.



WHAT IS THE ISSUE WITH OUR CURRENT DISTRIBUTION PRICING STRUCTURE?

The prices consumers pay are not aligned with the services they buy.

Currently the price consumers pay doesn't take into account the cost of providing them with network capacity.

In the past this didn't have large adverse impacts, as consumers didn't have so many opportunities to respond to prices by making different decisions about their electricity use or investment decisions.

Independent analysis commissioned by the Authority indicates that, in some parts of New Zealand, if residential

distribution pricing stays the same, the amount consumers pay could increase. Consumers who rely solely on the distribution network to get electricity, could see an increase in their distribution charges of 10% in the next 5 years and up to 30% in the next 10 years. This means overall residential retail bills for ordinary New Zealanders could rise by up to 10% in the next 10 years.

NEW ZEALAND'S CIRCUMSTANCES ARE DIFFERENT

While evolving technology is creating impacts around the world, the implications will be different in New Zealand because:

We already have a very high proportion of renewable generation

Around 80% of generation in 2014 came from renewable sources. This means if consumers switch to electric vehicles, it should mean a reduction in carbon emissions, as the electricity used to recharge the car's battery will most likely be from a renewable source. On the other

hand, it means new solar installations will probably displace other renewable sources (wind or hydroelectric) and will not reduce carbon emissions by as much as they will in other countries.



Our renewable generation has low operating costs

Renewable generation has substantially lower operating costs than fossil fuel generation. The price of new technologies (like solar and batteries) is falling and in other countries this means it is displacing existing, more expensive, generation. Because most generation

in New Zealand has a low operating cost, existing generators will be able to reduce their prices in response to competition from other technologies. This could ultimately mean lower prices for consumers without displacing existing renewable generation.



We have a competitive retail market

We have a highly competitive retail market, including a large number of independent retailers. This means retailers are quick to adapt their prices to win customers that use new technology. For example, some retailers are already

offering low night-time prices for customers with electric vehicles. It also means retailers will face competitive pressure to 'pass through' more efficient distribution pricing structures to consumers.



FUTURE HOME'S ENERGY USE

The home of the future will use electricity very differently. Evolving technologies are already changing consumers' decisions about how they use electricity.

LOAD CONTROL

Allows the consumer to decide to let someone else manage the supply of electricity to their household, allowing the controller to turn off smart appliances when the price is high and back on when the price is low, giving the consumer discounts for lowering the demand for electricity when it matters.

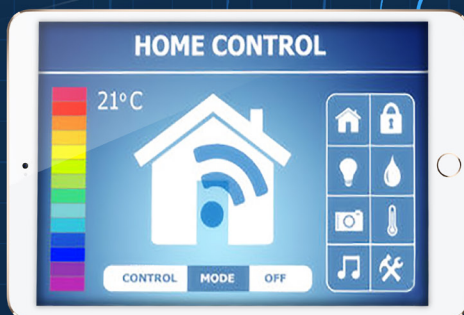
ENERGY EFFICIENT BUILDING TECHNOLOGIES

LED LIGHTING

SOLAR PANELS

ELECTRIC VEHICLES

BATTERY STORAGE

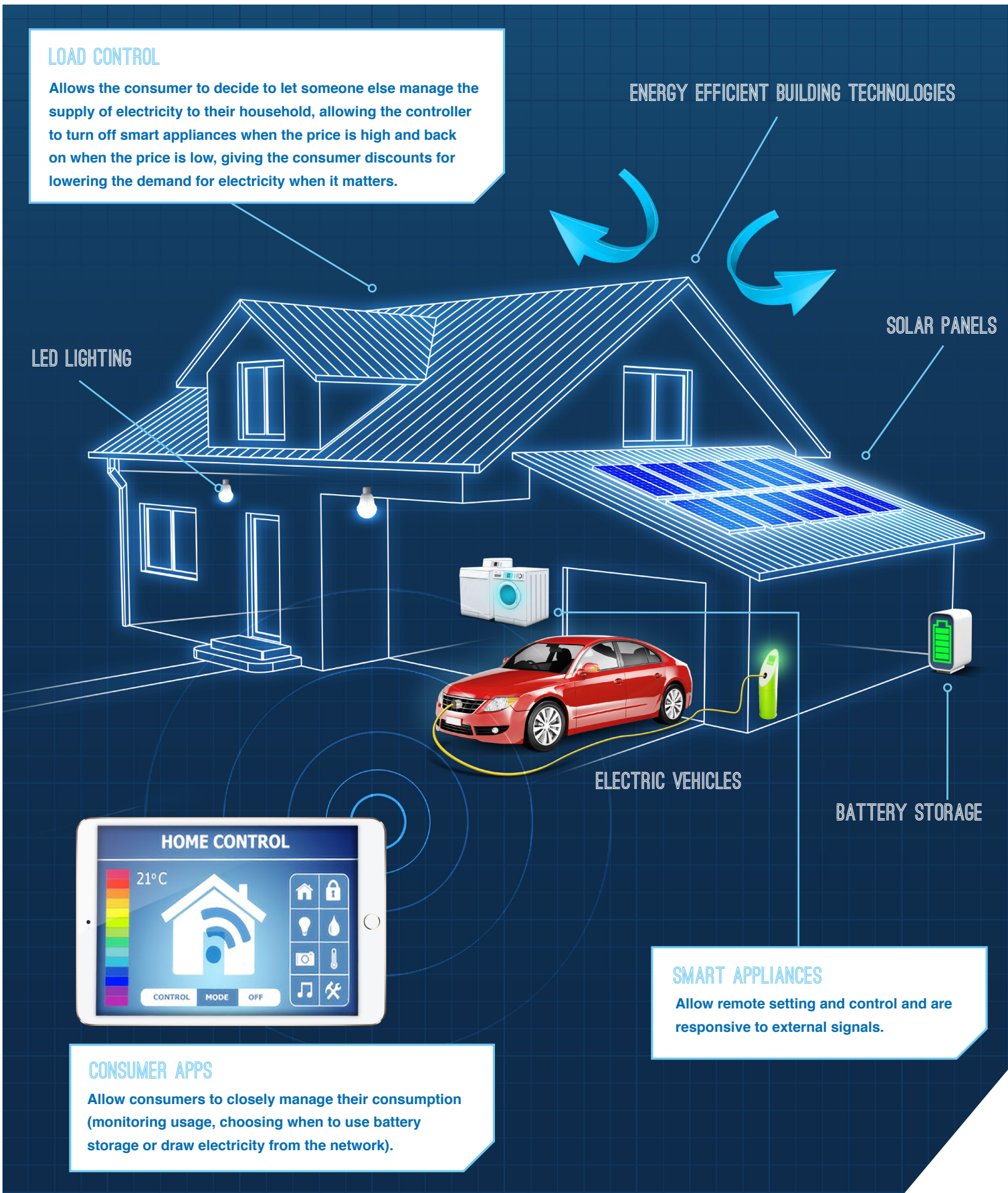


CONSUMER APPS

Allow consumers to closely manage their consumption (monitoring usage, choosing when to use battery storage or draw electricity from the network).

SMART APPLIANCES

Allow remote setting and control and are responsive to external signals.





CASE STUDY

ISSUES CREATED BY EVOLVING TECHNOLOGY

Brenda has installed 3 kilowatts (kW) of solar panels on her roof but has no way of storing electricity. This has reduced the annual amount of electricity she needs from 8,000 kWh to 4,300 kWh. The solar panels don't change Brenda's maximum demand for electricity from the distribution network as this occurs on cold winter evenings when the panels are not generating electricity.

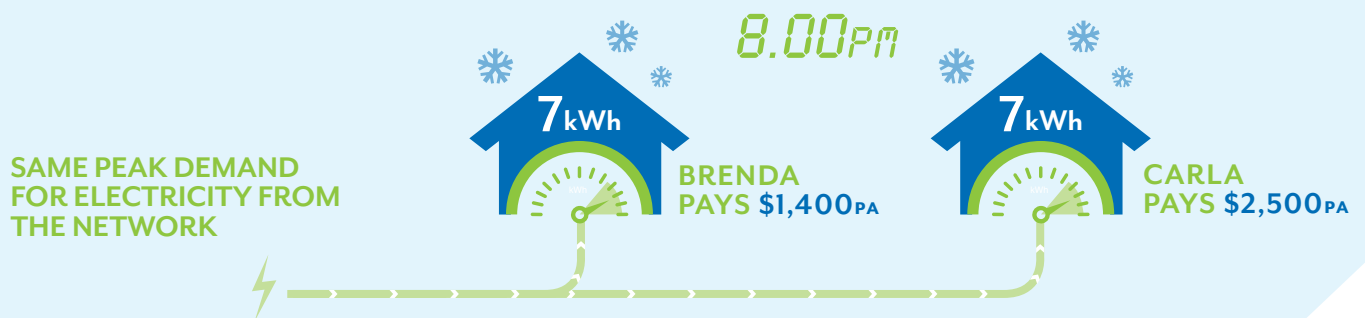
The solar panels are saving Brenda money – she now only pays her distribution company \$1,400 a year. Before the panels she was paying \$2,500 a year. The cost has reduced as her distribution costs are mainly based on the electricity she uses, rather than how much of the network capacity she needs.

Her neighbour Carla hasn't installed solar panels. Carla uses the same amount of electricity from the

distribution network that Brenda used to, and pays \$2,500 per annum. **Carla has the same maximum demand for electricity from the network as Brenda does on cold winter evenings.**

The distribution network supplying Brenda and Carla is built to serve their peak demand for electricity from the network. Since this is the same for both Brenda and Carla, they each need the same amount of network infrastructure, but Brenda no longer pays the same amount as Carla towards the investment in the poles and wires to meet her peak demand.

Since Brenda pays less, Carla pays more, to make up the difference. And, if more neighbours install solar panels, Carla will have to pay even more towards the network infrastructure to cover others costs.



CASE STUDY

RESIDENTIAL BATTERIES



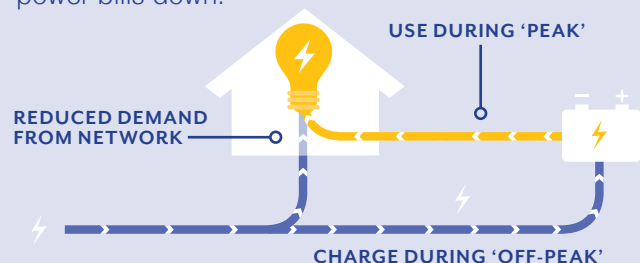
Johanna has installed a battery in her home which can store 7 kWh of electricity.

Johanna's retailer offers different rates for day-time and night-time use. So she can save up to \$300 a year by recharging her battery during the night when the rate is low and then using the stored electricity in the morning when the rate is higher. Johanna is not using the battery to reduce her peak demand for electricity from the network. So the amount of network needed to supply her doesn't change.

Another retailer offers Johanna a new pricing plan. Under the new plan, Johanna is charged a lower rate most of the day and night, and a higher rate that applies only during the evening peak (between 4pm and 9pm). She realises she can save much more

money if she uses the stored electricity from her battery at that time, to reduce her peak demand from 7 kW to 5 kW.

That means less network infrastructure is required to provide Johanna's electricity. If most of Johanna's neighbours start using batteries in the same way, the local distributor might be able to postpone the upgrade to the network it is planning. That will keep everyone's power bills down.



WHAT HAPPENS IF WE DON'T DO ANYTHING?

Keeping the status quo is not a long-term option.

We know many distributors are already considering their options. Ultimately evolving technology will force all distributors to change. Technology will compete with traditional distribution services and consumers will drive change.

If distributors don't take action their businesses will suffer and community assets will lose value. However, if prices are designed correctly, consumers' decisions will help all New Zealanders to benefit from the advances in technology.

Distributors should be discussing future options with retailers and their communities. Every distribution area is different, so a one-size fits all approach will not be successful. Each distributor will need to develop a pragmatic approach that will be acceptable to consumers but also efficient and useful.

ABOUT THE CONSULTATION

The Electricity Authority promotes competition in, reliable supply by, and the efficient operation of, the New Zealand electricity industry for the long-term benefit of consumers.

We are reviewing the regulatory arrangements under which 29 distributors structure the prices of the services they deliver to consumers.

Exciting new technologies are giving consumers more choice and transforming the ways they use electricity. The benefits to consumers could be enormous. The Authority is interested in making sure that distribution pricing is designed correctly.

TO MAKE A SUBMISSION

Please email submissions@ea.govt.nz with "Consultation Paper—Implications of evolving technology for pricing of distribution services" in the subject line. You can call 04 460 8860 if you have any questions.

Postal address

Submissions
Electricity Authority
PO Box 10041, Wellington 6143

Physical address

Submissions
Electricity Authority
Level 7, ASB Bank Tower,
2 Hunter Street, Wellington

Deadline for receiving a submission

Submissions should be received by 5pm on 2 February 2016.
Please note that late submissions are unlikely to be considered.

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