

# Adjusting to New Zealand's Electricity Future

James Stevenson-Wallace, Chief Executive, Electricity Authority

A large, abstract graphic consisting of several thick, wavy lines in various colors (blue, red, orange, yellow, green) that flow across the bottom half of the slide, creating a sense of movement and energy.

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# Market snapshot

## BY THE NUMBERS

AROUND  
**38,800 GWh**  
OF ELECTRICITY WAS CONSUMED IN 2017

RESIDENTIAL CONSUMERS

**1,720,000**



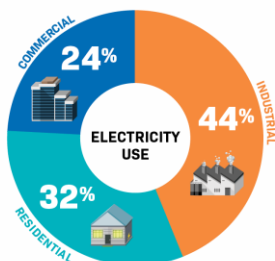
COMMERCIAL CONSUMERS

**175,000**

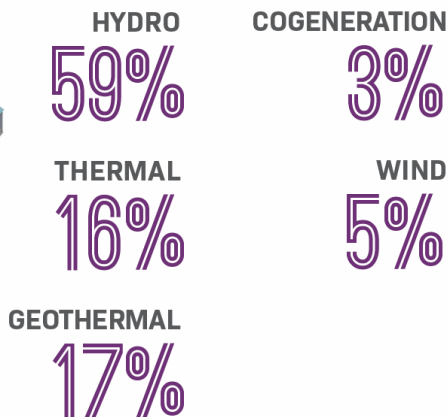


INDUSTRIAL CONSUMERS

**123,000**



## AVERAGE PERCENTAGE OF GENERATION BY FUEL TYPE 2013-2017



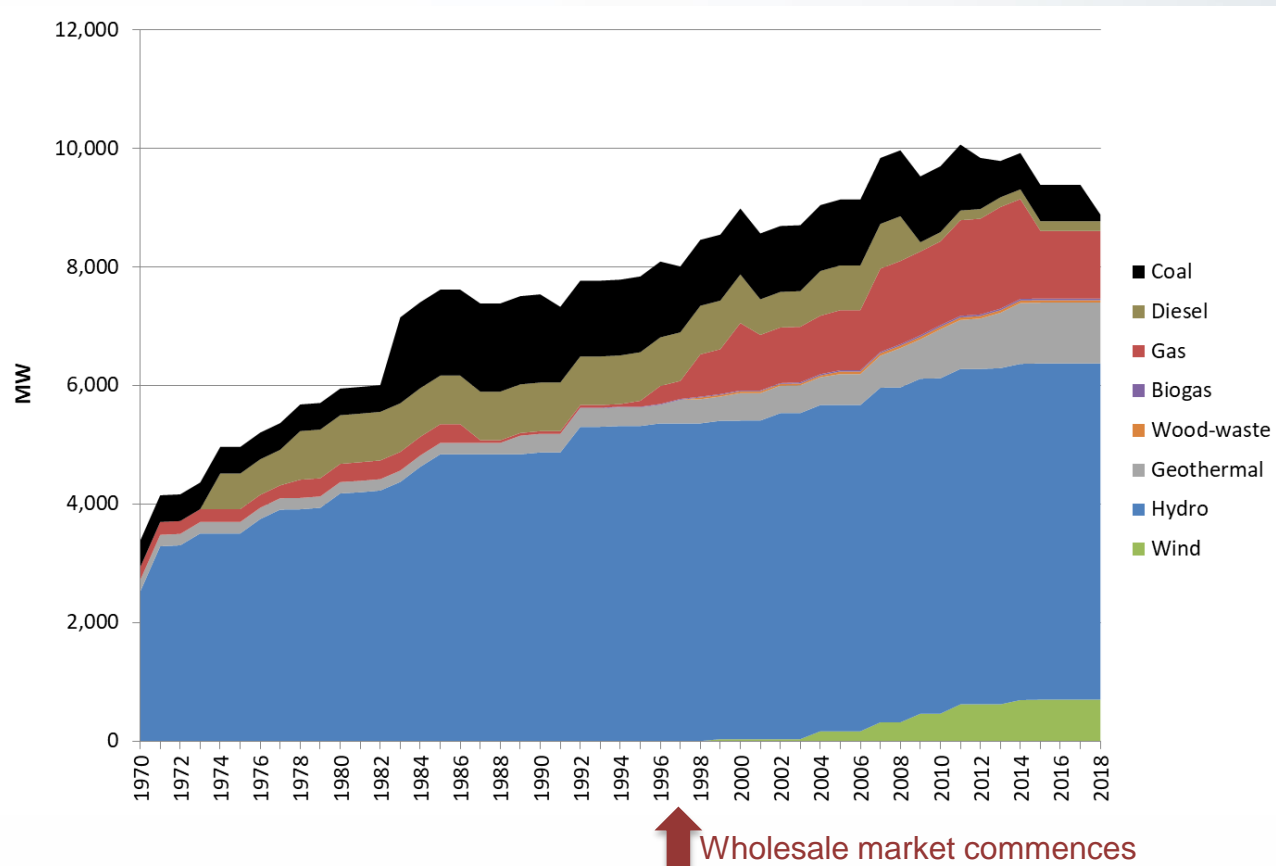
**An enviable generation mix**

Source: Ministry of Business, Innovation and Employment as at 25 May 2018

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# Implicit wholesale energy price signals

Renewable generation signification proportion of total – and growing



Efficient use, entry and retirement

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# OUR CHANGING CONTEXT

## *Political environment*

- **Electricity Pricing Review:** Increased awareness of affordability issues/'energy hardship', an observation that household electricity prices have risen faster than industrial prices.
- **Low-emissions:** Emphasis on the role of energy in transitioning to a lower-emissions economy: 100% electricity generation from renewable sources by 2035.

## *Operating environment*

- **Hydro-storage critical:** Winter 2017 extremely low inflows caused storage to fall to its lowest level since 2008. Our market mechanisms successfully supported security of supply.
- **Dynamic spring market situation:** Since October, wholesale electricity market faced particularly high spring spot prices - due to lower than normal lake levels and reduced gas production.

# OPPORTUNITIES

## (1) An Electricity System that is Nimble and Reliable

*A range of initiatives support security of supply - and enable NZ to increase generation from renewable sources...*

*..we are continuing to make modifications – including reducing barriers to the use of batteries and encouraging consumers to change behavior - to maintain security and reliability.*

- Secure and flexible system
- Market participants required to manage their commercial risks
- Back-up options under adverse weather conditions
- Markets for instantaneous reserves and frequency keeping help ensure supply is stable and secure

# OPPORTUNITIES

## (2) New Zealand is on a renewable path

*Generators are optimistic and confident about the direction of the electricity sector.*

- Emissions trading incentivizes a shift to lower-emission generation and a switch opportunity for industrial demand
- Consumers are asking for clean, green electricity: players in the retail market are focused on catering to that demand
- Renewable generation is generally the cheapest investment option (expected future costs of emissions is important)
- Steadily decreasing cost of renewable technology is a motivator
- Installing more renewable generation is unlikely to put upward pressure on consumer prices



# OPPORTUNITIES

## (3) Technology and Innovation Development

*The electricity industry is now arguably one of the most active when it comes to innovation and technology developments...*

*...all contributing to the electricity system's ability to manage increased renewable generation.*

- Newcomers entering retail and distribution – with offers based on pricing transparency and convenience
- New types of market participants and technologies are rapidly emerging – including smart home energy management devices
- Distributions are investigating emerging markets and taking steps to deal with the effects of new technology on their ability to meet obligations

# CHALLENGES

## (1) Downstream effects of technology

***With new technologies consumers will soon be able to choose their own levels of reliability and security of supply... changing expectations around what security of supply costs and who pays.***

- We are considering how to ensure consumers have equal access to the 'poles and wires'.
- We are considering barriers to consumers entering into contracts with more than one electricity service provider – for the benefit of a more secure and open electricity system.
- We are looking to make it possible for the price of electricity to be seen in real time – for the benefit of immediate demand response and transparency of the costs of electricity sources.



# CHALLENGES

## (2) Supply risks need to be managed

*Security of supply continues to be a big consideration.*

- We benefit from a robust voluntary hedge market to manage the financial impacts of supply risks – which provides incentive to build and supply backup generation.
- Our hedge markets (with enhancement) offers a platform for dealing with the volatility of renewable generation, without subsidies for backup generation.
- Future changes in technology mean the possibilities for backup and intermittent capacity will need to be carefully approached. Solutions need to reflect NZ's hydro-dominated system.

# CHALLENGES

## (3) Keeping prices reasonable

- **Given current technology: efforts to further minimise 'backup' fossil-fuelled generation in normal hydro inflow years – requires more renewable generation to be available. In wet years that would sit idle.**
- **Future technology advances open a different set of technology choices to manage storage, scale generation, control systems, and effective price signalling/response.**
- **The Authority is focused on removing any inefficient barriers to the adoption of these new technologies.**
- **Unless parties see the real distribution and transmission costs of their decisions, they are unlikely to adopt the most appropriate technologies.**

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## In summary

**The New Zealand market and the Authority are continuously improving:**

- **carefully thinking through the possible consequences of an intervention**
- **valuing the experience when things don't go to plan**
- **preferring market mechanisms to administrative solutions**
- **linking initiatives into an integrated package**
- **involving participants, for their input and to build their awareness.**

**Always finding ways to do things better**

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