

Briefing to the Incoming Minister

Hon. Judith Collins

22 December 2016

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Section 1: Key upcoming events

Upcoming events for the Minister

Event	Timing	See page
Appointment of new Board member/s (MBIE are responsible for the appointment process)	Process underway	35

Upcoming events for the Authority

Event	Timing	See page
2017 Budget: appropriations recommendations report to be sent to you	Mid-Feb 2017	5
The Authority's decision on transmission pricing review is expected in April 2017. We will provide you with a briefing prior to the announcement	April 2017	7
We will provide you with an update on the distribution pricing review before 1 April 2017 which is when distributors are required to have published their roadmaps for reform	1 April 2017	8

2017 Budget: appropriations recommendations

The Electricity Authority is cost neutral to the Crown as the appropriation to the Authority is funded by a levy on industry participants. We are required to consult annually with levy payers on our proposed appropriations for the coming financial year. We also use this consultation to engage on our proposed strategic priorities.

The consultation for the 2017 Budget took place from 25 October to 6 December 2016¹. We also consulted on our strategy and programmes. Submissions were published on 20 December.

We will provide a report to you in February 2017 on the results of the consultation and our recommended appropriations. The recommendations from this report feed into the Government's 2017 Budget process and our 2017-2021 Statement of Intent and 2017/18 Statement of Performance Expectations.

The appropriation proposal as consulted on

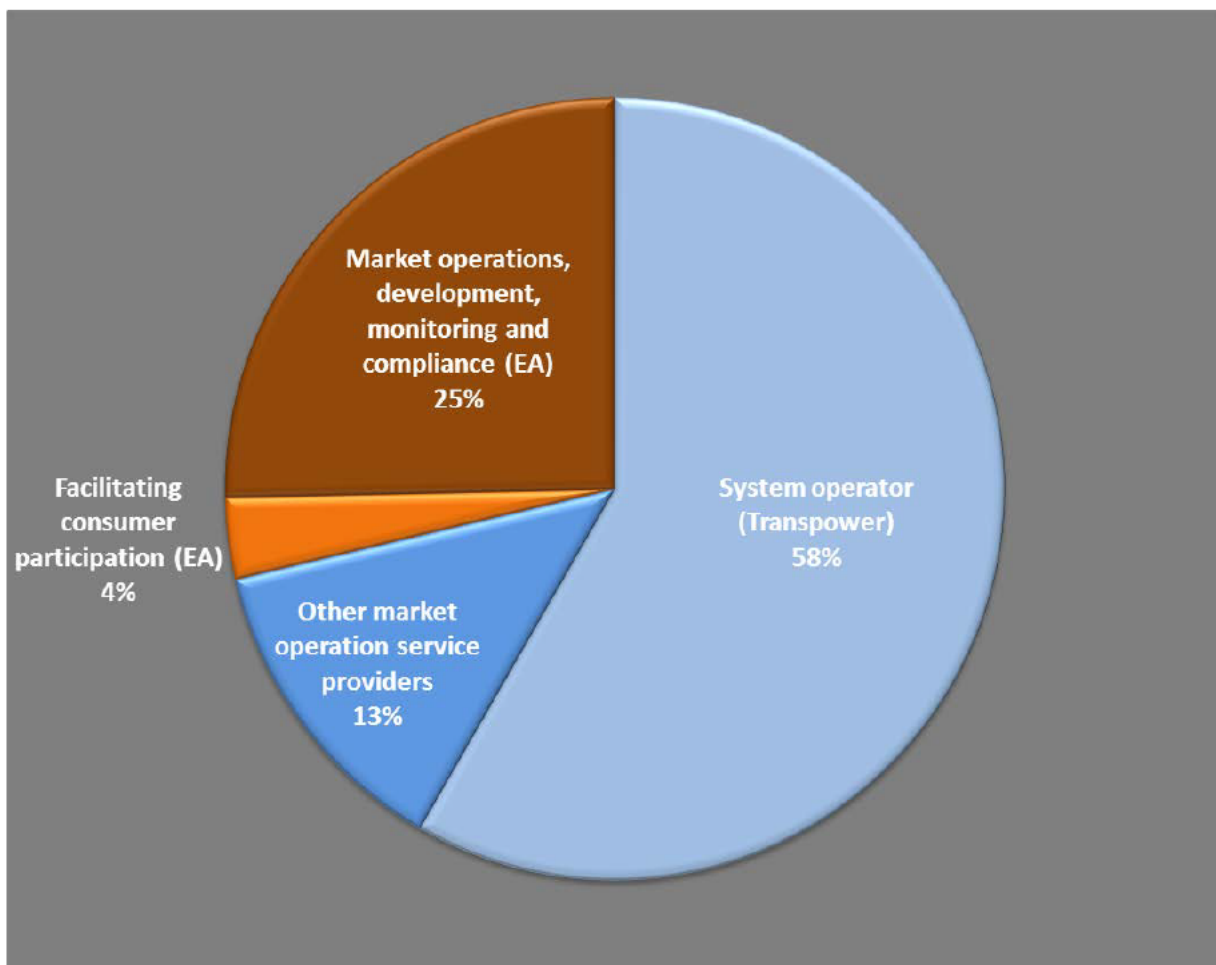
Total appropriations consulted on are \$2.1 million lower than 2016/17. This is largely due to a reduction in system operator (Transpower) fees.

Summary of proposed appropriations as consulted on:

Electricity Authority	\$ million	
	Appropriation 2016/17	Proposed appropriation 2017/18
Operational appropriation		
Electricity industry governance and market operations	76.037	73.937
Contingent appropriations		
Security management (1 July 2012 to 30 June 2017) - <i>expiring</i>	6.000 over five years	
Security management (1 July 2017 to 30 June 2022) - <i>proposed new</i>	6.000 over five years	
Electricity litigation fund	0.444	1.000

¹ The consultation paper and submissions are available at <http://www.ea.govt.nz/about-us/corporate-projects/201718-planning-and-reporting/>

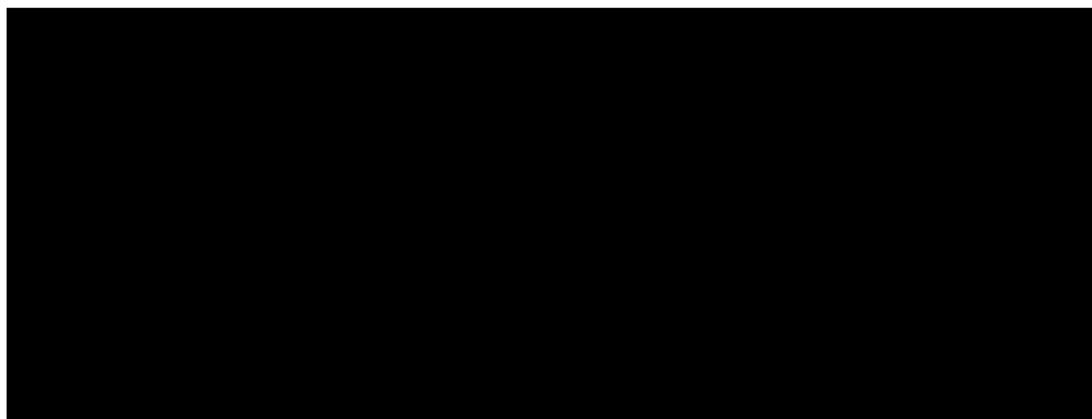
Figure 1: Use of the Electricity industry governance and market operations appropriation in 2017/18 [withheld – Budget confidential]

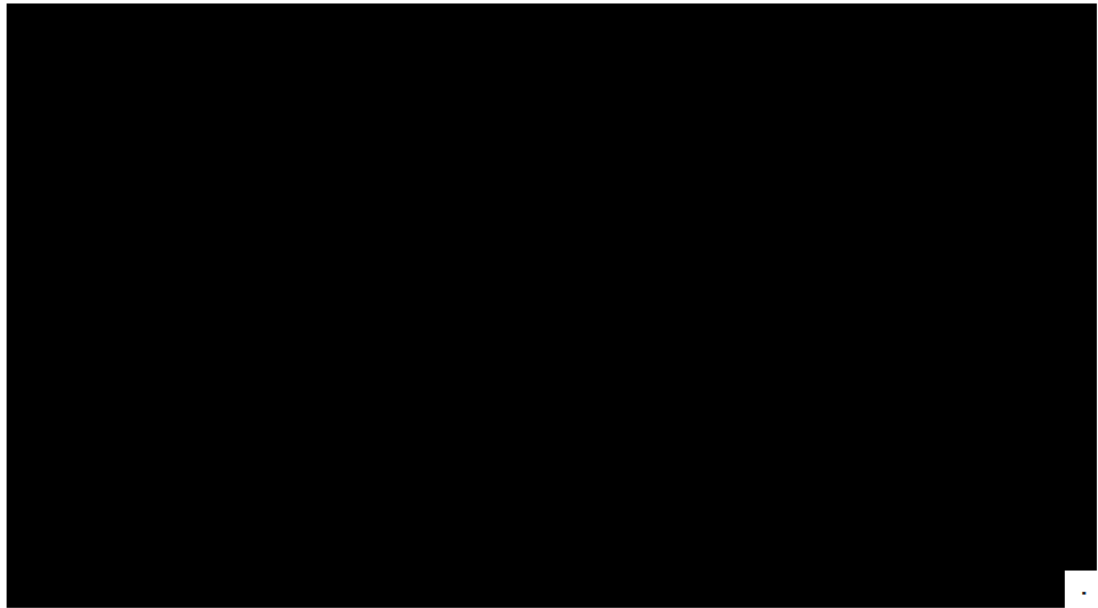


New initiative bids

The Ministry of Business, Innovation and Employment (MBIE) coordinates our input into the Estimates. We are coordinating with MBIE on the three new initiatives for the budget that were signalled in the consultation paper.

In summary the bids are:





[withheld – Budget confidential]

Next steps

The Board will consider the submissions on its proposed appropriations at its 1 February 2017 meeting. A report will be provided to you after that meeting.

The approved appropriations will be included in our 2017–2021 Statement of Intent (SOI) and 2017/18 Statement of Performance Expectation (SPE) to be published in June 2017.

Submissions will also inform development of our work programme. We expect to publish our 2017/18 Work Programme in July 2017.

Transmission pricing review

Since May this year the Authority has been considering stakeholder feedback on its proposed guidelines for transmission pricing³. The current transmission pricing methodology (TPM) needs to be replaced as it is flawed and unsustainable.

The Commerce Commission determines the overall revenue Transpower is allowed to charge for transmission services, which amounted to \$917m in 2015/16, and rises to \$977m by 2019/20⁴. The Authority sets the guidelines for Transpower to allocate its

² The SOSPA is our contract with Transpower to provide the system operator service. In February 2016, the Authority and Transpower completed negotiations for an updated SOSPA contract, providing stronger alignment with our statutory objective and putting into place more commercial rigour. This included a new requirement for the system operator to consult on service enhancement proposals, and the Authority making the decision on whether to proceed with these proposals. The contract came into effect on 1 July 2016 and is worth \$216 million over the next five years. The SOSPA is available at <http://www.ea.govt.nz/operations/market-operation-service-providers/system-operator/what-the-system-operator-does/>

³ Details are available at <http://www.ea.govt.nz/development/work-programme/pricing-cost-allocation/transmission-pricing-review/>

⁴ See the May consultation paper <http://www.ea.govt.nz/development/work-programme/pricing-cost-allocation/transmission-pricing-review/consultations/#c16277>

revenue requirements among its customers; the Authority's review of the current TPM alters the allocation of transmission charges and does not involve any overall increase.

The proposed changes are expected to reduce transmission charges for 12 of the 29 electricity network areas across New Zealand. For the 17 network areas where transmission charges are expected to increase, the Authority is proposing to cap the increases to provide more price certainty for consumers. We are also proposing to cap increases in transmission charges for major industrial consumers. Transmission charges are expected to reduce for some major industrial consumers, in particular New Zealand Aluminium Smelters (NZAS) at Tiwai Point.

The cap means that distributors and retailers can mostly limit the flow-on impact to households to no more than 3.5% of their total electricity bill. This means that in the most affected areas—Ashburton and the Grey District—changes to the TPM alter a typical consumer's total electricity costs by no more than \$55 per year.

The proposed changes won't take effect until April 2020, when the Commerce Commission's price control regime could also alter transmission and distribution charges. The combined effect could reduce electricity lines prices for almost all consumers.

On 13 December 2016 we released a supplementary consultation paper setting out refinements to the proposal we released in May 2016. Submissions close on 24 February 2017.

This is a complex and contentious project, with stakeholders holding widely divergent views and attracting significant media attention. There has already been one unsuccessful legal challenge to the process (see page 34), and there is the potential for further challenges.

Also see page 30 for more information.

Next steps

We are planning on announcing final decisions on the transmission pricing guidelines in April 2017, but we cannot prejudge the complexity of the issues that may be raised in submissions and we will take the time we require to consider that decision. The Authority will decide guidelines for Transpower to use in developing its actual pricing. Transpower's proposal of actual charges will not be released until 2018. At this stage the Authority expects a revised TPM to be in place by 1 April 2020.

Distribution pricing review

Recent and forthcoming change to the structure of distribution prices imposed by local lines companies (called distributors) is another high profile issue.

In November 2015, we released a consultation paper about the implications of evolving technologies for the pricing of distribution services. Evolving technologies include electric vehicles, battery storage units, smart appliances, consumer apps and small scale generation (including rooftop solar panels).

Submissions to our consultation paper demonstrated widespread agreement that the structure of distribution prices need to change to provide consumers with the price signals they require to make good decisions about new technology. Also, consumers could face a

30% increase in their distribution charges over the next 10 years if the current approach is retained, and many communities could suffer a significant loss in the value of the distribution assets they own (via community trusts).

Many distributors are considering their current and future pricing. For example, on 1 April 2016, Unison Networks Ltd (Unison) introduced a new tariff for retailers, based on whether their customers have solar generation. Greenpeace and some solar installers have taken a strong stand against Unison's new tariff, seeking rulings from the Authority, the Commerce Commission and most recently the Rulings Panel (described later in this report) to have the tariff removed. Greenpeace presented a petition to the Authority in October this year, which has garnered more than 78,000⁵ signatures.

We stated at the time it was released that Unison's new tariff is not as service-based and cost-reflective as it could be, and doesn't offer sufficient choices to consumers. The Board of the Authority met with the Board of Unison to underline this message. In mid-2016 Unison informed us that their new pricing is an interim step towards our preferred approaches.

The Electricity Networks Association (ENA) has been working on distribution pricing reforms since late 2014. The ENA and its members are working closely with the Electricity Retailers' Association of New Zealand (ERANZ) and its members on these issues. The Authority has requested all electricity distributors provide to the Authority, and publish, by 1 April 2017 their 'roadmap' for reforming their distribution prices.

Also see page 29 for more information.

Next steps

We will provide further briefings to you in early 2017.

⁵ <https://act.greenpeace.org/ea-action/action?ea.client.id=1939&ea.campaign.id=52200>

Section 2: About the electricity sector

The traditional electricity supply chain

Most of New Zealand's electricity is produced by generators distant from where electricity is used. This is often because of the geographical location of energy sources, for example, rivers used for hydro-generation, geothermal fields or the location of good wind generation sites.

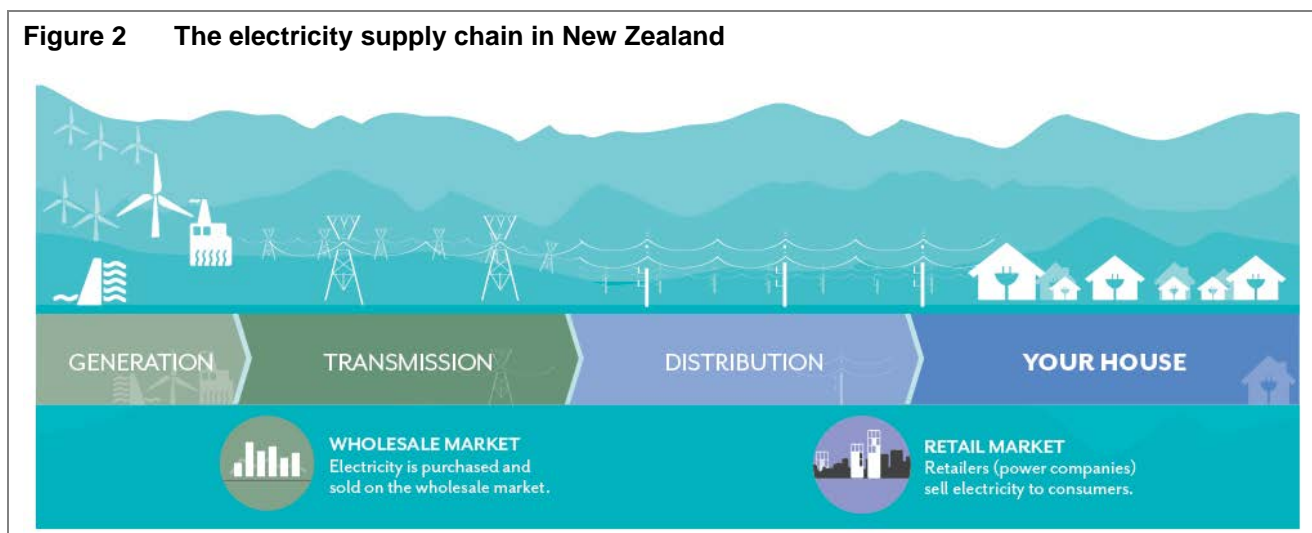
Around 90 per cent of New Zealand's electricity passes through the high voltage transmission system that spans the country and is known as the national grid. For the year ending June 2016, 83.4 per cent of New Zealand's generation comes from renewable sources.

The transmission system delivers electricity at high voltage to substations in each part of New Zealand. Large cities may have several substations serving them, and in a few cases, electricity is directly supplied to large industrial consumers.

Local distribution systems take the power delivered to each substation and deliver it at lower voltages to homes and businesses.

The remaining 10 per cent of electricity that doesn't pass through the transmission system is generated by plant that is directly connected to the local distribution system or, in the case of some large industrial customers, by their own on-site generation.

The diagram below summarises the various parts of the traditional electricity supply chain, in which electricity is produced by large generation units, transported to consumers via large and interconnected transmission and distribution systems and sold to consumers primarily by large electricity retailers.



New technology is beginning to fundamentally alter the traditional supply chain, with rapid growth in the number of consumers producing their own electricity, the emergence of household electrical storage systems (eg, the Tesla Powerwall) and many small networks (called secondary networks) connected to traditional distribution networks.

New technology is also opening up opportunities for consumers to bypass traditional electricity retailers and buy electricity from other consumers producing their own electricity (often called prosumers) or directly from the wholesale electricity market.

As a result of these developments, the traditional demarcation between the retail, wholesale, and transport parts of the sector is becoming increasingly blurred. Sections 5 and 6 outline some of these challenges facing the sector, and what we are doing about them.

Sector statistics

Electricity is one of the most capital intensive industries in New Zealand, and one that is vital to all New Zealanders.

There are:

- 1.7 million residential consumers
- 170,000 commercial consumers
- 77,000 agriculture, forestry and fishing consumers
- 41,000 industrial consumers.

Almost **\$7 billion** a year is spent on electricity.

Other roles in the electricity sector

We are one of several agencies with distinct roles in the electricity sector. We work closely with these other agencies.

Other important agencies in this space are:

- The **Ministry of Business, Innovation and Employment** (MBIE) is the policy adviser to the Government. Its role includes advising on Acts and regulations. MBIE also has a monitoring role in respect to the Authority.
- The **Commerce Commission** regulates monopoly suppliers of electricity lines services under the Commerce Act 1986. All electricity businesses serving residential consumers are subject to the Fair Trading Act.
- **Utilities Disputes Ltd** (Utilities Disputes) deals with complaints between individual consumers and retailers. Utilities Disputes is funded by member companies, but is otherwise independent of the industry.
- The **Energy Efficiency and Conservation Authority** (EECA) works to improve the energy efficiency of New Zealand's homes and businesses and encourage the uptake of renewable energy.

Section 3: About us

The Authority was established as an independent Crown entity on 1 November 2010 by the Electricity Industry Act 2010 (Act).

We are required to have regard to Government Policy Statements presented in Parliament by the Minister of Energy and Resources (Minister), but are not required to give effect to them. There are currently no such policy statements.

The Authority is governed by a Board, which is supported by the Chief Executive and has approximately 65 staff. Please see appendix A for more information about the Authority Board and senior leadership team.

Section 15 of the Act sets us a clear objective:

to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

We progress this statutory objective by focusing on the three limbs of competition, reliability and efficiency.

Figure 3 Electricity Authority's statutory objective



The Authority's work is recognised by international regulators for the innovation and leadership we have shown in reducing barriers to retailer entry and expansion, encouraging consumer participation and managing supply risks with a highly effective wholesale electricity market. In August 2014 the Authority hosted the Asia Pacific Energy Regulators Forum in Auckland and in April 2016 we hosted the 32nd Energy Intermarket Surveillance Group in Wellington. Authority Board members and staff are frequently called

upon to present to international peers, most recently in Seoul, Sydney and Washington DC.

Funding and the levy

We are funded from Vote: Business, Science and Innovation.

The Crown is reimbursed for the Authority's costs through a levy on industry participants. The levy also funds the Energy Efficiency and Conservation Authority's (EECA) electricity efficiency programme. The levy is administered by the Authority in accordance with detailed formulae set out in the Electricity Industry (Levy of Industry Participants) Regulations 2010.

The Act prevents the Authority from charging service fees, which is in contrast to many other comparable regulators in New Zealand and overseas. The Authority would like to charge fees in certain circumstances to enhance the efficiency of the electricity industry.

Our regulatory role

We are responsible for providing independent governance and regulation of the electricity industry.

Market development

Our market development work focuses on promoting the competitive, reliable and efficient operation of the electricity system and markets.

The key tools at our disposal to develop the market are voluntary market facilitation measures and amending the Electricity Industry Participation Code 2010 (Code).⁶

Figure 4 The Authority is a third-tier legislator



The Code came into effect on 1 November 2010, and is substantially the same as the previously existing market rules. The Code sets out industry participants' obligations across the supply chain: generation, transmission, distribution, retailing and the hedge market⁷.

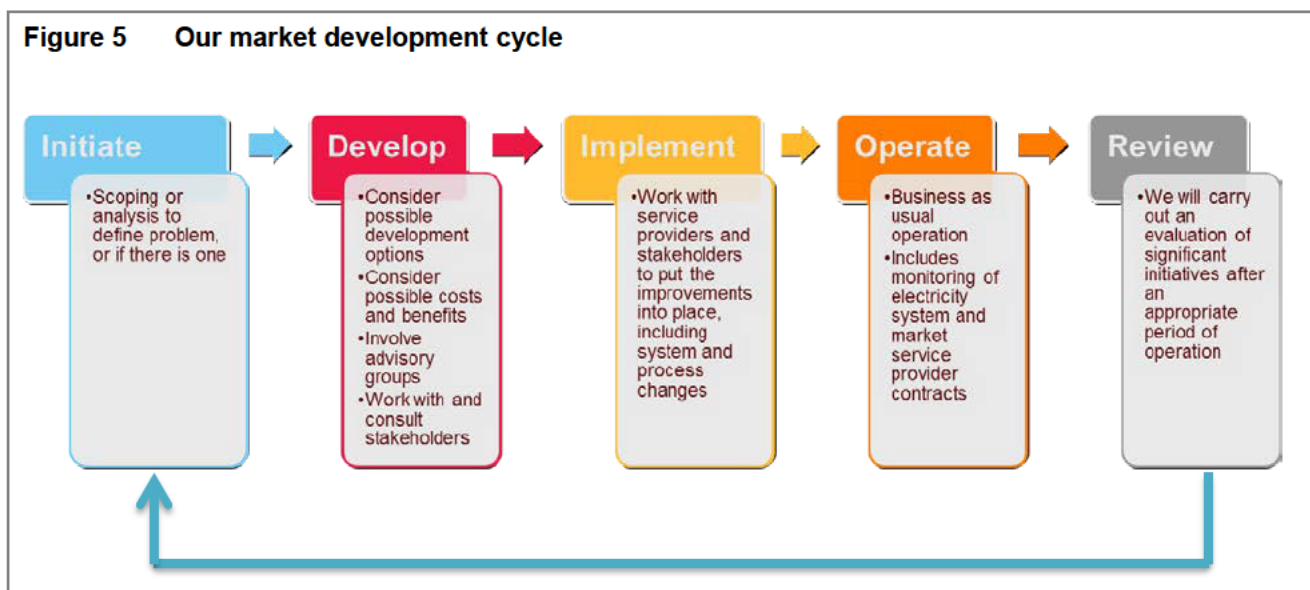
⁶ Market facilitation measures (MFM) are non-Code initiatives such as guidelines or model arrangements or information campaigns or working directly with participants to facilitate desired results.

⁷ The hedge market refers to the buying and selling of financial contracts to manage the risk of price movements in the spot market. The spot market is where electricity is bought and sold.

The list of industry participants also includes several industrial consumers because they buy electricity directly from the wholesale market and many of them provide services to it, such as making their load available for immediate interruption (called interruptible load). Residential consumers are not industry participants and therefore are not subject to the Code.

The Authority, in its own right, makes changes to the Code and monitors and enforces compliance with the Act, regulations, and the Code. We keep the Minister informed on a 'no surprises' basis.

There are several regulations relating to our functions, which are administered by MBIE⁸.



Working with stakeholders and advisory groups

Under the Act, we are required to have a Security and Reliability Council (SRC) and at least one other advisory group. More information on the membership of these bodies is available in appendix B.

The SRC provides advice on the performance of the electricity system, the performance of the system operator⁹, and on reliability of supply matters.

Authority staff often work with advisory groups—comprising an independent chair and consumer and industry representatives—to analyse problems or issues assigned to them by the Authority’s Board. Advisory groups make recommendations to the Board about solutions to address these issues, and they are strongly encouraged to make consensus recommendations to provide clear guidance to the Board.

The Authority uses advisory groups to draw on industry and consumer expertise to minimise the risk of unintended consequences occurring with its initiatives. Although they often make a substantial contribution to many Authority initiatives, they are not always able

⁸ For example, the Electricity Industry (Enforcement) Regulations 2010 and the Electricity Industry (Levy of Industry Participants) Regulations 2010.

⁹ The system operator decides what generation plants will be utilised to meet current demand. The Electricity Industry Act 2010 specifies that Transpower must provide the system operator service to the Authority.

to do so. In our experience, it is often difficult for advisory groups to reach consensus on highly contentious issues, particularly issues that are likely to have material positive effects on some participants and material adverse effects on others.

We have just completed decisions on refocussing the advisory groups. Consultation on a proposed new structure and approach took place in August – September 2016¹⁰. The new groups are:

- The Innovation and Participation Advisory Group (IPAG), which is being established to focus on issues specifically related to new technologies and business models, and consumer participation. IPAG will have between five and eight members comprising people with an interest and expertise across the electricity sector, evolving technologies and business models, and consumer choice and competition.
- The Market Development Advisory Group (MDAG), which is being established to focus on further evolving the ‘machinery’ of the electricity market. MDAG would also have between five and eight members comprising people with deep experience and interest in the electricity sector.

We intend to call for nominations for Chairs of the new groups in early 2017 and shortly thereafter call for nominations for members.

We also receive significant input from industry stakeholders through our consultation processes. We also receive input from our contracted service providers, who have a major role in implementing Code amendments.

Once a Code amendment has been adopted by the Authority we work closely with the industry and our service providers to implement the changes effectively and efficiently.

Monitoring and compliance

Our market performance and compliance teams play a key role in assessing the effects of recent Code amendments. The market performance team carries out post-implementation reviews to assess whether the Code changes have had their intended effects on the market.

We also have an important business-as-usual function to monitor market performance. If an anomalous event or outcome occurs in the market or the broader electricity sector, we investigate it to determine the causes and whether something can or should be done to prevent such an event or outcome from occurring again¹¹. We will provide briefings to you about significant reviews closer to the time of report publication, or earlier if appropriate.

The compliance team monitors industry participants to assess the industry’s overall compliance with the requirements of the Act, regulations and Code.

We are also responsible for formally investigating and enforcing individual participants’ compliance with the Act, regulations made under the Act, and the Code.

¹⁰ The consultation paper and submissions are available at: <http://www.ea.govt.nz/about-us/corporate-projects/administrative-changes-to-advisory-groups/consultations/#c16158>

¹¹ Information about our enquiry, review and investigation process, and current and completed reviews is available at <http://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/>

Our compliance activities focus on ensuring the Act, regulations, and the Code are accurately and consistently applied. Participants are obliged to report breaches and we may also investigate issues and trends to identify breaches and their causes.

Most compliance decision-making is currently delegated to the Board's Compliance Committee, except when the Board decides to refer cases to the independent Rulings Panel or take prosecution action through the Courts.

The Rulings Panel assists with enforcing the Code by dealing with complaints about Code breaches, appeals against certain decisions made under the Code, and resolving certain disputes relating to the Code. If a complaint is upheld, the panel may impose penalties against participants, award costs or compensation, issue suspension or termination orders, or recommend Code changes. There are currently five rulings panel members, appointed by the Governor-General in accordance with a recommendation from the Minister of Energy and Resources (after consultation with the Minister of Justice and the Electricity Authority).

Information and education

Our work in this area focuses on improving the availability of data, information and tools to interested parties, to improve awareness and understanding of how electricity markets function.

Through our market analysis work we identify behaviours that are potentially inconsistent with our statutory objective. This work also provides appropriate feedback into the market development work. We may also undertake reviews of irregular events on our own initiative or as requested by the Minister under section 18 of the Act.

Our operational role

We are responsible for the day-to-day (real-time) efficient and reliable operation of the electricity system and markets.

We oversee the operation of the electricity system and markets through contracts with service providers¹²:

- **Transpower** manages the day-to-day operation of the electricity system as the system operator.
- **NZX** provides pricing, clearing and settlement, reconciliation, wholesale information and trading services. We are currently finalising a contract with NZX to provide a new Extended reserve manager role, to go live in 2017.
- **Jade** operates a registry that facilitates the switching of customers from one retailer to another.
- **Transpower**, through its subsidiary **Energy Market Services (EMS) Limited**, provides the Financial Transmission Rights (FTR) manager service.

Supporting the operation of the markets includes the following functions:

- maintaining the register of industry participants

¹² More information about service providers is included in appendix A.

- granting individual exemptions to the Code, where justified
- investigating and resolving alleged undesirable trading situations
- performance oversight of security policy and operation, including approving or declining security of supply policies and plans proposed by the system operator
- carrying out responsibilities for supply shortage declarations
- supporting the Security and Reliability Council.

Foundation documents

Our foundation documents are intended to promote regulatory predictability and credibility. They provide consumers, investors and industry participants with a transparent view of how we conduct our work.

Our published foundation documents are:¹³

- an *Interpretation of the Authority's statutory objective*, which sets out our interpretation of section 15 of the Act
- an *Advisory Group Charter*, specifying our policy on advisory groups and the Security and Reliability Council (SRC)
- a *Consultation Charter*, setting out our policy and processes for consulting interested parties on proposals to amend the Code and other matters, and the Code amendment principles we and the advisory groups will adhere to in considering proposals to amend the Code.

¹³ Available at www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents/

Section 4: Results for consumers

As noted earlier, section 15 of the Act requires the Authority to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

At the highest level we ask the following outcome-related questions:

- Will the lights stay on?
- Are prices reasonable?
- Do consumers have choice?
- Is innovation occurring?

Will the lights stay on?

New Zealand has a high proportion of hydro-electric generation, but a relatively low level of storage capacity in its hydro lakes. This means that our electricity supply can be vulnerable in 'dry years'. The Authority and previous Ministers have introduced a series of regulatory interventions to address security of supply issues.

These initiatives were tested during one of the driest six months on record in 2012 and further moderately dry spells in the summer months of 2013 and 2014. Hydro lake levels were carefully managed during all these periods, with the risk of power outages remaining well below 1% throughout those periods. This meant there were no calls for public savings campaigns and no lobbying through the media for ad hoc measures to suppress spot market prices. Most importantly, it meant New Zealand consumers could be more confident they will enjoy an uninterrupted electricity supply. We are keeping a vigilant eye on this area to see whether the positive trend continues.

The reliability of supply for individual consumers also depends on the reliability and resilience of the national transmission system and local distribution networks. The national grid has 99.969 per cent average service availability. This means consumers on average across New Zealand experience a loss of electricity supply of less than three hours per year. Of course, some consumers experience much longer outages in some years and other consumers experience no outages for many years.

Most of the transmission and distribution system has spare capacity built into it, particularly if it is supplying a large number of consumers.

For most cities and towns the transmission system is built for an 'N minus 1' scenario. This means the largest transmission asset can fail and the system will still provide power to the areas it serves. But if two or more assets fail at the same time, then outages can occur. It's like having a spare tyre in your car. Most car owners only ever carry one spare tyre. If they have one flat tyre, they can change it and carry on with their day. If they have two flat tyres, they might have to wait a bit longer for their car to be road worthy again.¹⁴

¹⁴ The transmission system serving Auckland is built for an 'N minus two' scenario, which means the two largest transmission assets can fail and the system will still provide power to Auckland.

In most cases the spare capacity is enough to cope with accidents and unpredictable events. On the odd occasion there can be an extraordinary event, such as someone shooting two transformers or a plane crashing through an entire transformer pole and taking out both wires, resulting in the loss of power to an entire region. The cost of reducing these risks is often very high.

Are prices reasonable?

Electricity prices are made up of two main components:

- **Energy**—the proportion of costs associated with generation and retail services. This is the competitive part of the market which is overseen by the Authority.
- **Lines**—the transmission and distribution networks. These are monopolies, subject to regulation by the Commerce Commission.

There are currently three different price measures for electricity:

- MBIE's Quarterly Retail Sales Survey price (QRSS)
- MBIE's Quarterly Survey of Domestic Electricity Price (QSDEP)
- Statistics NZ's electricity price index.

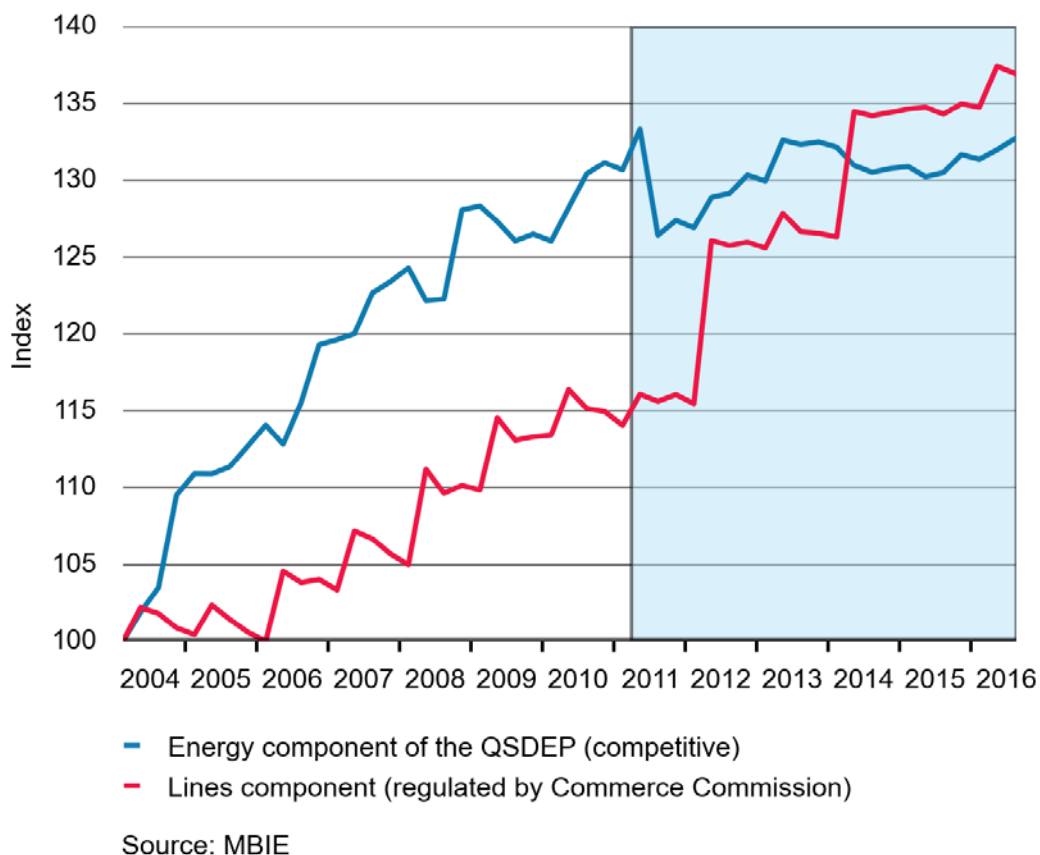
The most useful measure of electricity prices actually paid by households is MBIE's sales-based residential electricity price, called the QRSS price. The sales-based data is based on total national revenue and consumption volumes obtained from retailers each quarter. The combined data covers all residential consumers, on all tariffs and all levels of consumption, and takes retailer discounts into account. This means that the final figures are a strong indicator of the average cost per kilowatt-hour that was actually paid by residential consumers.

Average sales-based electricity cost data for the quarter-ended June 2016 indicates the average residential cost per unit of electricity used over the period was 3.0% higher in nominal terms than for the quarter-ended June 2015. The increase for the competitive part of the sector was 1.4%.

Significant pro-competition initiatives have been underway since mid-2011, such as the Authority's *What's My Number* advertising campaign which began on 29 May 2011. The initial impact of enhanced competition shows up in the prices that retailers offer to new customers. As the competitive pressure on retailers persists it becomes harder for them to charge their existing customers at a materially higher price than their new customers, and so the average price paid by households is also constrained over time.

The QSDEP measures average prices offered by retailers (using publicly advertised residential electricity tariffs for a consumer using 8,000 kWh of electricity per year, with a common connection to their network). The competitive part of the market (the energy component) has contributed very little to real total price changes since March 2011. Most of the increase in the QSDEP has come from increases in transmission and distribution costs—collectively known as lines charges. Lines charges are regulated by the Commerce Commission.

Figure 6 The energy and lines component of the QSDEP indexed (real)



Some households pay spot market prices for their electricity

Spot market prices change every half-hour and can vary quite dramatically depending on very short-term supply and demand conditions. Spot prices are typically considerably higher on average during winter than summer.

Most electricity retailers buy electricity from the spot market (at spot prices that vary every half-hour) but sell electricity to consumers at prices that are fixed for a year or longer. However, Flick Electric Limited (Flick) and Paua to the People Limited (Paua) are two electricity retailers that sell electricity to residential customers at the spot price¹⁵. Although Flick and Paua customers pay substantially less for electricity on average than they would on a traditional retail contract, they carry the risk of having to pay much higher prices over some periods of time.

While their customers might be happy with lower prices for most of the time, they could still be caught off-guard by periods of higher prices. If the spot price were to suddenly spike, or be at elevated levels for several months during a dry year, it may cause an unwelcome increase in a Flick or Paua customer's power bill. If the increased prices are significant or

¹⁵ Spot prices apply for the energy used. There are also distribution and transmission prices, plus a charge to cover retailer costs.

prolonged this could result in complaints by affected customers, which could be picked up by the media.

Paua and Flick go to considerable effort to explain the risks to their customers, and provide tools to notify their customers so that they can reduce their demand when prices increase substantially above normal levels. Flick entered the market in August 2014, has been growing at about 800 customers per month and currently has around 16,000 customers. Paua started very recently and currently has around 400 customers.

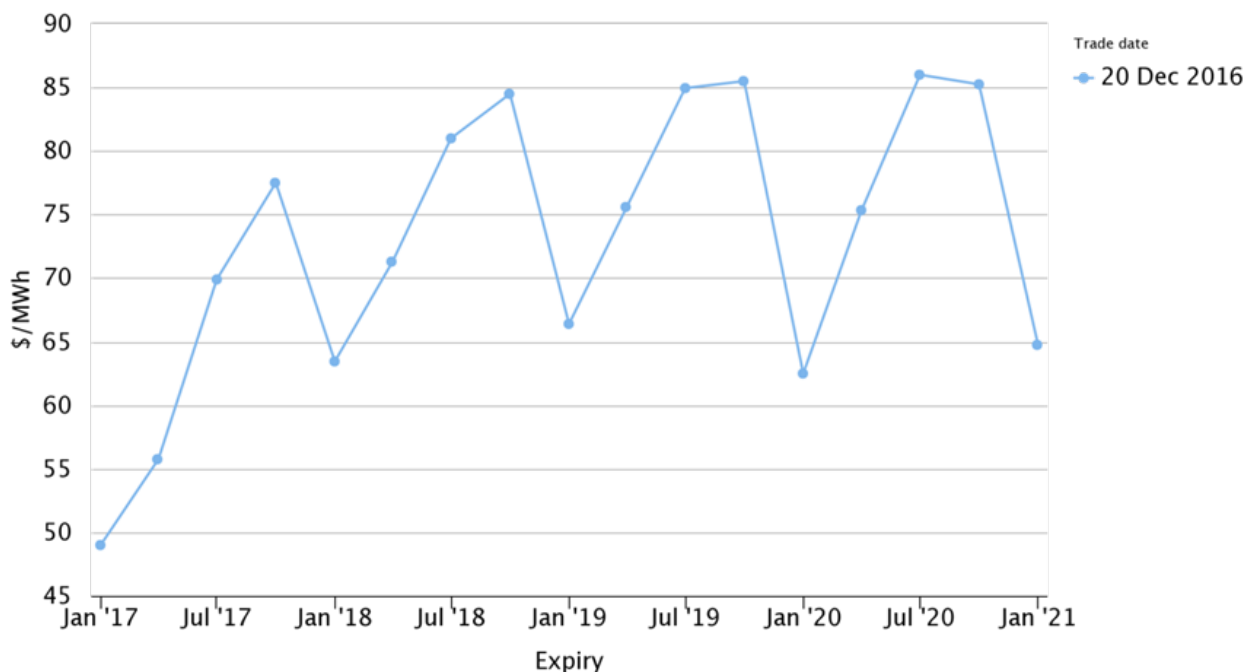
We are working to ensure that the media understand these new products in the market. This is particularly important as we expect there to be an accelerating level of innovation in the electricity sector in the next few years.

Longer-term electricity prices

The electricity futures market is one of several electricity hedge markets operating in New Zealand. The futures market sets prices for standardised contracts for up to four years ahead. Electricity retailers often pay close attention to futures prices when setting their prices for commercial and industrial customers. They also take into account broad trends in futures prices when setting their prices for residential and small commercial consumers.

Futures contracts, and other hedge contracts, allow buyers and sellers to efficiently manage the price risks they face on the spot electricity market. This can help facilitate market entry for new retailers and generators. The volume of futures contracts traded reached record levels in 2015, increasing 36 per cent on 2014's trading volume.

Figure 8 Forward price curve at Otahuhu



Source: www.emi.ea.govt.nz/r/tl4bx

Figure 8 shows settlement prices on the Australian Securities Exchange (ASX) quarterly baseload futures contracts at Otahuhu (Auckland); these are the most traded contracts on

the ASX. The forward price curve represents the market’s view on the level of spot electricity prices in the future—taking into account information such as future security of supply risks, demand growth and potential new generation build.

The forward price curve has a seasonal pattern, with prices typically lower over the summer period when demand is lower and inflows from snow-melt and rain fill up the hydro lakes and higher over the winter period when demand increases due to colder temperatures, requiring more thermal generation to be operated.

Do consumers have choice?

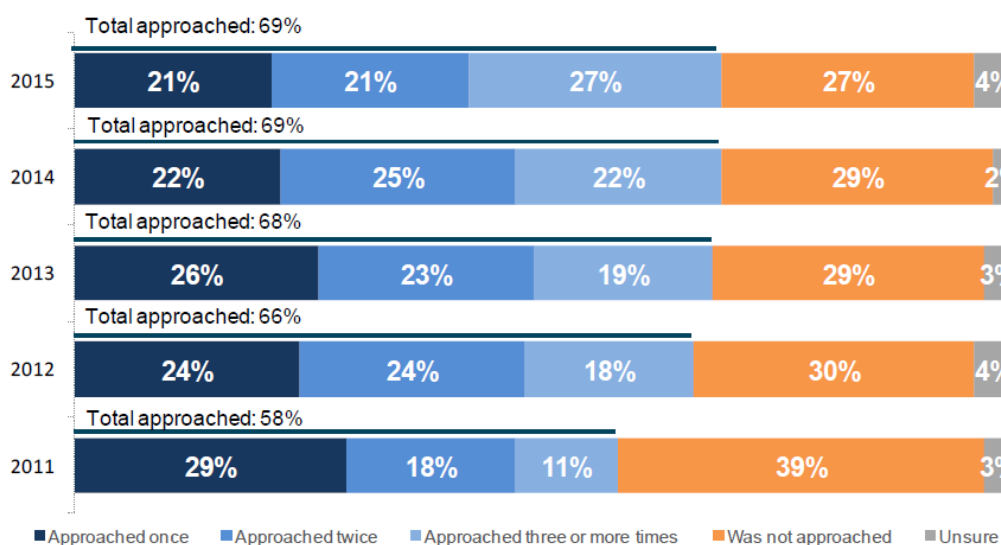
We run the award-winning *What’s My Number* marketing campaign, which aims to provide consumers with information about their ability to switch power companies, the ease of switching, and the potential savings that can be made on their power bills.

New Zealand has one of the highest switching rates in the world. In 2015, consumers switched electricity retailers 417,784 times—a new high. Of these, 384,841 were from residential consumers. Between 1 June and 31 August 2016, around 111,000 switches occurred.

High switch rates, however, are not a robust indicator of competition. For example, a low switch rate arising from retailers offering very similar tariffs would also be consistent with intense competition by retailers.

The Authority surveys consumers annually, asking them how many times they have been approached in the last two years by a different electricity retailer to switch to them. This survey measures how proactively retailers are competing for customers. The survey shows retailers have become much more proactive since the *What’s My Number* campaign began in 2011. Households were more likely to have been approached multiple times in 2015 compared to previous years, with 27 per cent reporting having been approached at least three times compared to 22 per cent in 2014 and 11 per cent in 2011.

Figure 9 Number of companies that approached consumers to switch (UMR Research – *Shopping Around for Electricity Retailers: A Quantitative Study among the General Public February 2015*)



Base: All respondents (n=1000)

At the end of November 2016 there were 34 retail brands on offer to residential consumers around the country. These brands were backed by one of 24 independent retailers. This is a new high.

Between July 2011 and November 2016, 19 new entrant retailers had started trading in the electricity market. We are aware of several other parties considering entering the New Zealand market.

The market share for small and medium sized retailers has increased since 2009 and continues to grow. Small and medium retailers now have over 170,000 customer connections. In comparison, the total market size of the largest five retailers has been steady in recent years.

Retailers are offering innovative pricing plans, pre-pay electricity options, and bundled product offerings to their customers. Consumers have more choice than ever, and that retailers are focused on providing greater flexibility to their customers.

Is innovation occurring?

Greater competition in the retail sector is resulting in greater innovation.

We have observed the following retail innovations over the last years:

- **Powershop** was launched in 2009, backed by Meridian Energy. Poweshop provided innovative pricing plans backed by online and mobile tools for their customers to track how much power they use, and make energy use decisions.
- **Contact Energy** offer a range of packages aimed at consumer needs – for example plans focussed on flexibility, certainty or maximising discounts.
- **Flick and Paua** offer residential consumers a tariff that charges half-hourly spot electricity prices to consumers, plus a fixed daily charge and variable charges to cover their retailing costs and lines charges.
- **Pulse Energy's** offer to residential consumers to cap the energy component of their prices for five years.
- **Trustpower** bundles energy with telecommunications and internet services.
- **Mercury Energy's** Good Energy Monitor (called GEM) allows consumers to have greater control over their energy usage.
- **Mercury Energy's** Glo-Bug is a pre-pay service that uses the smart metering system to quickly and visibly inform customers they're running out of credit. The Glo-Bug product instantly disconnects customers when they run out of credit and instantly re-connects them when they've paid money into their account, avoiding costly re-connection fees.

In our 13 December 2016 briefing to the Minister, we also noted the following highlights from current market offerings:

- **Pioneer Energy** is promising to beat incumbents' offers, lock-in prices for two years, and no contract.
- **Contact** and **Genesis** are both running contests for new and existing customers, with \$15,000 to \$20,000 of prizes.
- **Meridian** has introduced an electric vehicle plan.
- **Mercury** is advertising discounted electricity bills for buyers of e-bikes. [REDACTED]
[REDACTED] This information has been redacted because making it available would be likely unreasonably to prejudice the commercial position of the person who is the subject of the information.
- **Electric Kiwi** is guaranteeing savings in the first year of joining.
- Retail comparison website **Glimp** is doing about 500 price comparisons per month, although not all retailers are represented on the Glimp website.
- Apps and online tools are nearly universal across the retail market.

Much of this innovation has been enabled by the rollout of smart meters. As at 30 November 2016, 73.1 per cent of New Zealand's electricity connections have smart meters— and an increasing number of innovative electricity retailers are relying on this technology to deliver new customer services.

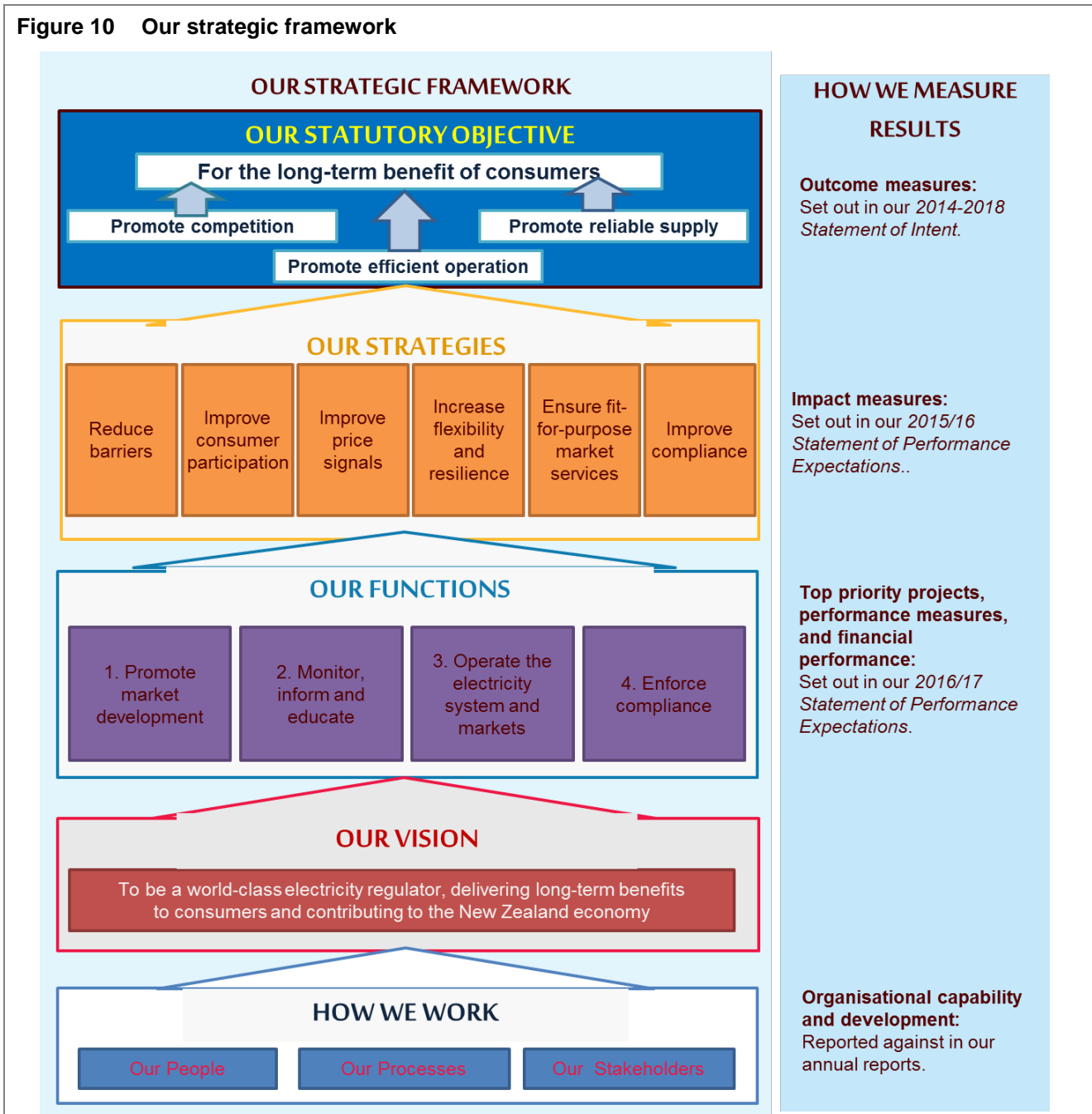
New Zealand's rollout of smart meters is unique around the world in that it is being managed competitively by electricity retailers without any cost to Government or consumers. Government mandated approaches have been adopted in most other countries with smart meters, which have often led to much higher costs and some rollouts have stalled. Australia is adopting New Zealand's approach in this area because of our success.

Section 5: Our strategic direction

Our *Statement of Intent 2014–2018* (SOI) was published in June 2014. The SOI sets out our long-term strategic intentions for a four-year period. Our *Statement of Performance Expectations* (SPE) outlines our plan for the 2016/17 financial year to help us deliver the strategy. It includes information about our key projects and business as usual functions, as well as our forecast financial statements. We also publish on our website a more detailed work programme, setting out our projects and their key deliverables for the 2016/17 year.

These documents are available on our website¹⁶. Copies can be provided if required.

Figure 10 Our strategic framework



¹⁶ See <http://www.ea.govt.nz/about-us/strategic-planning-and-reporting/>

Our journey so far

We were established on 1 November 2010. Our initial focus was on completing and implementing the changes required by section 42 of the Electricity Industry Act 2010 (the Act). This included a strong focus on improving reliability of supply and on initiatives to enhance retail market competition. A notable success was the creation of the What's My Number campaign, which had an immediate and ongoing impact.

We then moved our focus to ways we could improve wholesale market competition, including through an enhanced hedge market. We continued work to enhance retail competition. This included projects to improve the transparency of electricity charges and to make it easier for consumers to confidently find the best deal in the market.

In 2015/16 we placed an increased focus on the efficiency limb of our statutory objective, including looking at the efficient operation of the electricity industry and the efficient pricing of distribution services. Our work on efficient transmission pricing was inherited from the Electricity Commission in November 2010.

The next few years

In addition to completing our review of the guidelines for transmission pricing in 2016/17, we are also looking at two broad areas that could have a significant impact over the medium term: the implications of new technology and potential security of supply issues.

In regard to new technology, the electricity industry faces potentially far-reaching changes in the near future from evolving technology. These technologies could create a wide range of options for how electricity is generated and used, giving consumers far greater choice and individual control than ever before. It could also have significant implications for market participants, with the potential for new players to enter and grow market share.

The uptake of these technologies is expected to result in significant change for the electricity industry and require changes to the Electricity Industry Participation Code 2010 (Code) and our market systems. The Authority aims to:

- ensure there are no unwarranted barriers to the adoption of new technologies, whether by existing market participants, new entrants or consumers
- ensure, as far as practicable, that decision makers face efficient prices for inputs and outputs regarding new technologies.

Security of supply issues arose in the second half of 2015 when Contact Energy and Mighty River Power announced the closure of the Otahuhu B and Southdown thermal generation plants. At the same time, Genesis Energy was considering the future of its remaining coal-fired plants at Huntly. It has now announced these units will be retained until at least 31 December 2022.

The electricity market is facing unprecedented uncertainty about future levels of demand for electricity due to the world prices received by some of New Zealand's largest industrial consumers but also due to potential uptake of new generation, such as solar panels and battery storage technology.

In light of the uncertainties about future demand and supply the Authority is reviewing its customer compensation and stress testing regimes to ensure they are consistent with

delivering ongoing security of supply. We are also continuing our active monitoring of all market developments and we are advancing several projects that will promote an efficient level of security of supply.

Next steps in our planning

Our strategic direction will be set out in our draft 2017-2021 SOI, which will be provided to you for comment in April 2017.

At the same time we will provide our draft SPE, which will provide the one-year view of the key projects, outputs and financial performance to deliver the strategy.

Our 2017/18 Work Programme will be published in June or July 2017. The Authority is not required to publish its work programme but we do so in the interests of transparency and to enhance stakeholder engagement. Our work programme is a listing of key projects, their purpose, and deliverables for the year. The primary audience is our key stakeholders from the industry and consumer representatives. These groups are interested in the details of our activities.

Reporting on progress

We provide you with four-monthly reports on progress against the SPE, any matters raised in letters of expectations, and other matters covered in the Output Agreement¹⁷.

Annual reports are provided to you for tabling in Parliament. We will provide you with a draft of our annual report for information as part of our final four-month report¹⁸.

We publish four-monthly reports on progress against the work programme. The work programme and reports are provided to you for information¹⁹.

¹⁷ An enduring output agreement was agreed with the previous Minister in June 2015. We are happy to provide a copy if needed.

¹⁸ The latest annual report is available at <http://www.ea.govt.nz/about-us/strategic-planning-and-reporting/annual-report/>

¹⁹ The work programme and periodic reports are available at <http://www.ea.govt.nz/about-us/strategic-planning-and-reporting/our-work-programme/>

Section 6: Key areas of focus for the year ahead

The 2016/17 work programme sets out all of our major projects. The work programme is arranged into programmes that align with our strategic focus, in particular addressing the implications of evolving technologies and far-reaching innovation in the electricity industry.

The Authority has five market development work programmes:

- (a) Evolving technologies and business models. This programme covers initiatives to reduce barriers to the development and use of evolving technologies and new business models across the supply chain. This includes barriers that secondary networks and generators experience when dealing with distributors.
- (b) Consumer choice and competition. This programme covers initiatives to promote competition and empower consumer choice in the retail market.
- (c) Pricing and cost-allocation. This programme covers initiatives to promote efficient pricing in markets and for monopoly services.
- (d) Risk and risk management. This programme covers initiatives to promote efficient management of capacity and energy risks through the physical electricity and hedge markets.
- (e) Operational efficiencies. This programme covers initiatives to improve the operation of the electricity markets that are not covered in the above work programmes.

Major projects within these programmes are explained below.

Programme A: Evolving technologies and business models

This programme covers initiatives to reduce inefficient barriers to the development and use of evolving technologies and new business models across the supply chain. This includes reducing inefficient barriers to:

- any consumers purchasing directly from the wholesale electricity market or directly from local generators
- mass-market demand response (DR) and aggregators of mass-market DR
- mass-market distributed energy resources (DERs) and aggregators of mass-market DERs. DERs include traditional distributed generation, batteries, micro-grids and 'prosumer' situations.²⁰

This programme aligns with our *reduce barriers* strategy in the SPE and in Figure 10 on page 25.

²⁰ Distributed generation is generation connected to a distribution network, rather than to the transmission grid. Micro-grids are small-scale networks that aim to supply consumers on the network from generation located on the network. Prosumers is a term often used to refer to consumers that are also producers (ie, consumers that have their own generation).

Consumer access to markets

New and evolving technologies are expected to facilitate greater participation in electricity markets, and offer consumers far greater choices about when and how they use electricity. A growing number of consumers are installing smart appliances that can be programmed remotely, and there are a range of apps for monitoring electricity usage.

We want to understand if changes need to be made to our market systems and processes to allow new types of businesses—such as demand-response aggregators, distributed energy resources (DERs) and energy services companies—to enter the market and expand. We are also reviewing whether there are other barriers to participation, such as the contractual arrangements that distributors have for using their monopoly networks.

Why? The market environment is rapidly changing and offers many benefits; but the current market arrangements reflect the old environment, the ‘traditional’ supply chain. Consumers and their agents require more efficient means of accessing electricity markets in order for the potential benefits of participation to be realised.

Distribution pricing review

We will be considering ways to improve the efficiency of distribution pricing arrangements to achieve better operational and investment efficiency in the distribution sector and the broader electricity market. Further detail about this project was provided on page 8 of this briefing.

Why? The need to ensure distribution networks are priced more efficiently is pressing due to technological change, particularly the growth in the installation of photovoltaic (PV) distributed generation, the spread of electric vehicles and battery storage units, and greater consumer use of automatic demand management tools. Research commissioned for the Authority, and published in 2015, estimates that distribution charges could rise by up to 30% in the next 10 years if no action is taken, resulting in a 10% increase in residential retail bills.

Programme B: Consumer choice and competition

This programme covers initiatives to promote consumer participation through the retail market. Aspects relating to prosumers and/or consumer participation directly in wholesale markets are covered in programme A. This programme aligns with our *improve consumer participation* strategy and in the strategic framework in figure 10 on page 25.

What’s My Number

What’s My Number is a marketing campaign that aims to provide consumers with information about their ability to switch power companies, the ease of switching, and the potential savings that can be made on their power bills.

The initial What’s My Number campaign ran from May 2011 to April 2014. In April 2014, the Authority decided to continue the campaign through to June 2017. Funding was approved in the 2014 Budget. The focus of the refreshed campaign is to encourage consumers to make a habit of checking they are on the best power deal for their circumstances. The campaign will be further enhanced once consumers have easier and quicker access to data through the retail data project.

Why? We seek increased retail competition through increased consumer awareness of savings to be made by shopping around for electricity and that it is easy to switch.

Default distributor agreement

We are developing a proposal to require each distributor—if it contracts with retailers using some types of distribution arrangements—to have a default distribution agreement (DDA) in which the core terms are mandated by the Authority. Once DDAs are finalised, retailers will be able to insist on the DDA being the contract they have with the distributor if they are unable to reach agreement on an alternative arrangement.

Why? Distributors are monopoly providers of electricity networks which retailers have to use if they want to compete for customers connected to the distributor's network. The Authority's assessment is that current distribution agreements inhibit competition and innovation and impose higher than necessary transaction costs on distributors and retailers, which are passed on to consumers.

Programme C: Pricing and cost allocation

This programme covers initiatives to promote efficient pricing in markets and for monopoly services. This programme aligns with our *improve price signals* strategy and in the strategic framework in figure 10 on page 25.

Transmission pricing review

The Commerce Commission determines the overall revenue Transpower is allowed to charge for transmission services, which amounted to \$917m in 2015/16.

The Authority sets the guidelines for Transpower to allocate its revenue requirements among its customers, which is called the transmission pricing methodology (TPM). The Authority has been reviewing the TPM guidelines since it inherited the project from the Electricity Commission in November 2010 and expects to issue a final decision in April 2017. Further detail about this project was provided on page 7 of this briefing.

Why? The current TPM is unsustainable as it sends the wrong price signals to transmission users, resulting in wasteful investment, and produces odd outcomes. For example, transmission charges to major industrial consumers in the lower South Island have increased greatly since 2008 but have fallen for major industrial consumers in the upper North Island. This is odd because most of the expensive upgrades to the national grid were made to deliver more transmission reliability (and lower electricity prices) to upper North Island consumers, not to lower South Island consumers.

The current TPM penalises remote communities as they often have to pay for very large transmission assets serving them (despite often having low levels of reliability) whereas large cities receive much higher levels of reliability from transmission assets that are paid for by all New Zealand consumers, including by consumers in remote regions. Also, fast-growing regions are cross-subsidised by slow-growing or declining regions.

The current TPM also discourages the development of South Island generation, which is virtually all renewable sources of generation, relative to North Island generation even when doing so would be lower cost to the economy. Moreover, the current TPM has the effect

that expansion in the capacity of the grid encourages the development of distributed generators, including diesel plants, to avoid using the grid. Again this is very odd.

Any proposals for revising the TPM—or indeed for keeping it as it is—are highly contentious because of the large amount of money the TPM allocates each year. Parties that are benefiting from the perverse outcomes of the current TPM tend to favour its retention and those positively exploiting them for significant financial gain can be vociferous in their objection to improving the long term outcomes for consumers from changing how transmission is paid for.

Despite the strong objections from some stakeholders many of them actually agree with the Authority's proposal to replace two of the current charges in the TPM with two new charges: an area-of-benefit charge and a residual charge. The main objection from Auckland stakeholders is not about whether an area-of-benefit charge should be adopted, but about whether it should be applied only to forthcoming transmission investments or also to existing transmission investments.

Spot market refinements

Generators that are larger than 10 megawatts²¹ (MW), or are connected to the transmission grid, compete in the spot market for the right to generate electricity to satisfy demand. The spot market sets prices for half-hour trading periods throughout the day and night, for every day of the year and for 250 locations on the transmission grid. The system operator dispatches generation (ie, instructs it to generate) for 5-minute periods. Hence, each half-hour trading period contains six 5-minute dispatch periods.

Currently, spot prices are not finalised until two or more days after each half-hourly trading period. This means that the prices published in advance of, and during, the trading period are indicative and not the prices actually paid and received by spot market buyers and sellers.

The Authority is considering refinements to the spot market that would result in final spot prices being determined 5-minutes ahead of each dispatch instruction. This refinement would provide market participants with more price certainty, assisting them to make better-informed decisions about their electricity consumption.

Why? To reduce barriers to retail competition and demand-response businesses arising from current spot market arrangements. Refinements to the spot market have the potential to enhance competition in both the hedge and retail markets. There are also significant reliability benefits from potential increases in demand-side participation in the spot electricity market.

Distributed Generation Pricing Principles (DGPPs)

The Authority released on 17 May 2016 a proposal to remove the DGPPs from the Code. We announced on 6 December 2016 that we have decided not to remove the DGPPs from the Code.

Instead, we are amending the Code so that generation connected to local distribution networks—called distributed generation—will no longer receive 'avoided cost of

²¹ Electrical power is measured in watts (W), kilowatts (kW), megawatts (MW) or gigawatts (GW).

transmission' (ACOT) payments if that generation does not defer or avoid transmission costs.

Why? Over the last eight years, the rate of ACOT payments has increased by 79%. Effectively, New Zealand consumers are subsidising the owners of distributed generation, which is increasing prices on consumers. Perversely, under the current ACOT rules the more transmission capability the less we need the distributed generation but the higher the rate of the ACOT subsidy paid to distributed generation. The Authority's Code amendment will largely end the subsidy aspect of the current ACOT arrangements, remove inefficient incentives on the investment in, and operation of, distributed generation, and will enhance competition. It will also reduce prices for consumers.

Programme D: Risk and risk management

This programme covers initiatives to promote efficient management of capacity and energy risks. This programme aligns with our increase flexibility and resilience strategy and in the strategic framework in figure 10 on page 25.

Security outlook

In 2015/16 we carried out a high-level review of regulatory arrangements for security of supply. Two mechanisms that contribute to security of supply were identified for review: the customer compensation regime and the stress testing regime.

The customer compensation scheme requires electricity retailers to pay their customers \$10.50 per week for every week that an official conservation campaign occurs. In broad terms, the Authority requires an official conservation campaign—encouraging consumers to reduce their electricity consumption—to occur when the risk of running out of controlled hydro storage is likely to exceed 10 per cent. Note that running out of controlled storage does not mean the power system has run out of power altogether as New Zealand has significant and growing supplies of uncontrolled storage that hydro generators can use when their controlled storage reach certain risk levels.

The \$10.50 per week compensation requirement is intended to remove incentives that electricity retailers had, prior to introducing the scheme in 2011, to lobby government for conservation campaigns as a 'free option' to limit their exposure to high spot prices driven by falling hydro storage. When their customers responded to those campaigns by reducing their electricity consumption, retailers that had not otherwise hedged their exposure benefited through reduced spot market prices.

The stress testing regime requires parties purchasing from the spot electricity market—primarily electricity retailers and several industrial consumers—to calculate their exposure to high spot prices in scenarios defined by the Authority for each forthcoming quarter. Spot market purchasers must disclose their quarterly stress test reports to their own boards and to an independent party appointed by the Authority (the stress test registrar). The Authority receives quarterly stress test reports from the registrar in a form that does not identify any individual participant. The Authority publishes those reports on its website.

The stress testing regime was introduced in 2011 primarily to reduce the scope for opportunistic lobbying by participants (adversely affected by high spot prices) to socialise the cost of their poor risk management decisions by successfully obtaining government intervention to reduce spot market prices. Reducing the scope for 'political hedging'

enhances their incentives to appropriately manage their spot price exposure with financial hedge contracts.

Why? While both regimes appear to be robust and provide strong incentives to ensure supply risks are efficiently managed, the Authority decided it was prudent to review them because of the recent and potential future closures of thermal generation plants.

Hedge market development

The hedge market allows generators and purchasers to manage the risk of price movements in the spot market by entering into hedge contracts. The market has grown significantly since late 2010 when the Electricity Industry Act required us to facilitate measures to increase hedge market activity. The development of the hedge market has been led by participants with support from the Authority and has encompassed a wide range of initiatives. We are committed to maintaining this momentum and further developing the value of the hedge market to participants.

Why? We want good availability of a range of hedge contracts to ensure ‘a level playing field’ for all retailers and generators. Any initiatives undertaken in this area are expected to reduce barriers to entry and expansion for retailers. Similarly, we want market participants to have sufficient information and motivation to make decisions that ensure an efficient level of security of supply for 2019 and beyond.

Efficient procurement of extended reserve

Automatic under-frequency load shedding (AUFLS, pronounced “awfuls”) is a last resort mechanism to restore the balance between electricity demand and supply. If a power station suddenly and unexpectedly stops generating electricity—for example, because of a mechanical failure at the station— then the transmission system is kept in balance by the activation of instantaneous reserve²². But if activation of those reserves is not sufficient to fix the problem, then the system cuts-off the demand (aka. load) of a selected group of North Island lines companies and major industrial consumers to counterbalance the reduction in supply. This is AUFLS in action.

We are currently working to develop and deliver a new extended reserve regime to address problems with the current AUFLS regime. The new extended reserve regime will provide a more reliable and efficient method for restoring the balance between supply and demand when sudden and unexpected events occur that disturb the electricity system.

Why? There is currently no maximum amount of load that can be provided for AUFLS. Therefore, there may be too much of a reduction in load which could, in effect, tip the balance even further in the wrong direction. The changes will significantly improve the efficiency and reliability of the extended reserve regime, and increase power system security and reduce the likelihood of a North Island black out.

²² Instantaneous reserve is similar to extended reserve in that it ensures the ongoing reliability and resilience of the electricity system in the event of a large loss of supply. However, it is the first tier of support—it can be activated instantaneously—whereas extended reserve is the second tier support.

Section 7: Litigation

The Electricity litigation fund appropriation enables the Authority to participate in litigation effectively and without delay. The fund is accessed in accordance with specific criteria, which are listed in the output agreement.

The following cases are currently being covered by the litigation fund in 2016/17:

- Trustpower filed papers in the High Court at Wellington asking for judicial review of the Authority's decision not to grant any of Trustpower's requests for an extension of time to make submissions in relation to the Transmission Pricing Methodology (TPM) and Distributed Generation Pricing Principles (DGPP) reviews. The High Court dismissed the application in its judgement issued on 2 December 2016.
- On 31 August 2016, Vector Limited and Entrust filed declaratory judgment proceeding in the High Court at Wellington naming the Authority as the defendant. They are seeking a declaration that the Electricity Industry Act does not permit the Authority to amend the Code so as to require distributors to offer a Default Distribution Agreement (DDA) containing core terms prescribed by the Authority and operational terms consistent with principles and policies set by the Authority. The hearing is set down for May 2017.

Appendix A: Board, leadership team and organisational structure

Our Board

The Authority Board is made up of between five and seven members appointed by the Governor-General. Members hold office for a term of up to five years and may be reappointed.

Current Authority members are Dr Brent Layton (Chair), Susan Paterson (both reappointed for terms of five years, expiring 1 November 2020) and David Bull and the Hon. Roger Sowry (both reappointed for terms of five years, expiring 1 June 2017). MBIE is conducting a process to appoint a replacement for Elena Trout who resigned on 19 August 2016.

Dr Brent Layton (Chairperson)



Dr Layton is a former senior fellow and chief executive of the New Zealand Institute of Economic Research (NZIER).

He has been a director or chair of organisations in sectors as diverse as banking and finance, health, scientific research, electricity, food processing, transport and information technology. He is a former member of the Board of Transpower and of M-co, the company that established the New Zealand electricity market in 1996.

As a consultant, prior to joining the Authority, Dr Layton's work spanned macro and microeconomics and corporate finance. Much of his work involved regulatory economics and responses to regulatory change. At various times he advised the Major Electricity Users Group, most of the major generators and retailers, a number of the major industrial users of electricity and the Commerce Commission.

In 2009, Dr Layton chaired the Ministerial Review of the performance and governance of the electricity market.

David Bull



David's experience in our electricity sector includes two decades as a power system engineer at the Electricity Corporation of New Zealand. He was a member of the board of the Electricity Commission when the Authority replaced the Commission on 1 November 2010.

He is experienced in central government processes and stakeholder and community relationships, having previously worked for Local Government and Community Services in the Department of Internal Affairs.

He was also a Wellington City Councillor or Wellington Regional Councillor for 15 years.

Susan Paterson ONZM



Susan is a pharmacist and MBA graduate from London Business School.

She has senior management experience in a number of companies in New Zealand, and during a decade in the USA and Europe, where she was also a strategy consultant with Boston-based Index Group.

Susan was project director for the Wholesale Electricity Market Development Group (WEMDG) in the early 90s, a director of EECA and spent over eight years on the Transpower Board from 1999.

Susan has 17 years' board experience and holds a number of directorships and board positions.

Current board roles include:

- Chair and shareholder of Theta Systems Limited
- Director of Goodman Property Aggregated Limited
- Director of Les Mills NZ Limited
- Committee member of the Auckland Branch of the Institute of Directors
- Independent director of Sky Network TV Ltd
- Board Commissioner of the Tertiary Education Commission
- Chair of The Home of Cycling Charitable Trust
- Director of Arvida Group Limited
- Chair of the Government Sector Workforce Engagement Programme
- Beneficiary of the Auckland Energy Consumer Trust.

Hon. Roger Sowry ONZM



Roger was a Member of Parliament from 1990 to 2005. From 1996 to 1999, Roger was Minister of Social Welfare and Associate Minister of Health. When he retired from Parliament in 2005, Roger became chief executive of Arthritis New Zealand.

Roger is currently a private consultant with Saunders Unsworth specialising in the management of public policy issues.

Current board roles include:

- Chair of TeamTalk Limited
- Chair of Homecare Medical

- Chair of Council of WELTEC and Whitireia Community Polytechnic
- Member of the Advisory Board of Indue Limited.

Board committees

The Board has three committees: the Audit and Finance Committee, the Compliance Committee and the System Operations Committee.

The Audit and Finance Committee advises on the quality and integrity of the Authority's financial reporting, including managing the relationship with the external auditor. It also considers whether appropriate governance, policies and operating processes are in place to identify and manage risk, and oversees and assesses the internal audit process. Members are Susan Paterson (Chair), Dr Brent Layton and the Hon. Roger Sowry.

The Compliance Committee makes decisions on alleged breaches of the Act, various regulations and the Code. It determines appropriate enforcement responses, whether settlements should be approved or further investigation undertaken, and makes recommendations to the Board regarding the laying of formal complaints with the Rulings Panel and instigating prosecutions. Members are the Hon. Roger Sowry (Chair), David Bull and Susan Paterson.

The System Operations Committee oversees the performance monitoring of the system operator, identifies any emerging system security risks and addresses any other matters relating to the system operator's obligations under the Code. Members are David Bull (Chair), Dr Brent Layton and Susan Paterson.

Organisational structure and management

Chief Executive: Carl Hansen



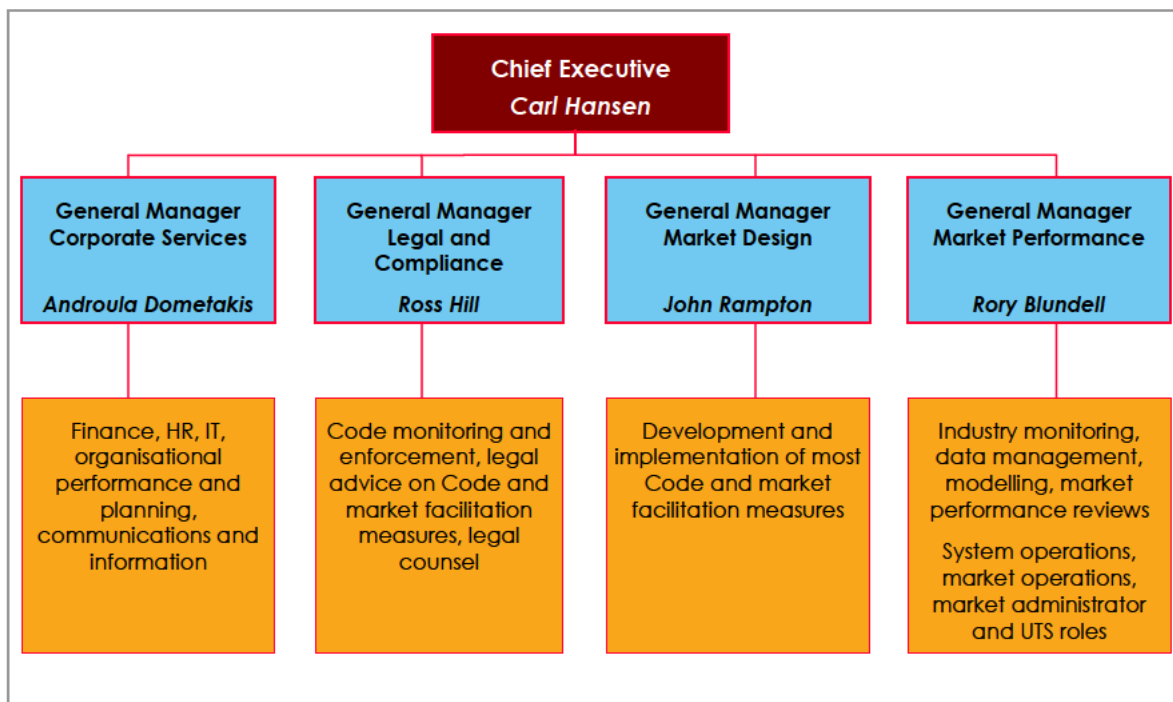
Carl Hansen has been Chief Executive of the Electricity Authority since it was established in November 2010.

Previously, Carl was involved in the evolution of the New Zealand electricity market as a senior executive and director, independent adviser and economist.

He has chaired sector technical and advisory groups and acted as principal adviser to a number of industry bodies.

Carl spent almost a decade with market services company M-co, originally as chief economist and then as chief executive.

Figure 11 Organisational structure



Our statutory functions

Section 16 of the Act sets out our functions. Broadly, these are to:

- register industry participants
- develop and administer the Code
- monitor and enforce compliance with the Code, Act and the Electricity Industry (Enforcement) Regulations 2010 (Regulations)
- facilitate market performance through information, best-practice guidelines, and related services
- undertake sector reviews
- act as Market Administrator and contract with market operation service providers
- promote consumer switching
- monitor sector performance against the Authority's statutory objective.

Section 18 of the Act requires us to carry out reviews at the written request of the Minister on any matter relating to the electricity industry. The Authority has completed one report requested under section 18: the inquiry into the Penrose substation fire of October 2014. The report was published on 26 November 2015²³.

²³ The report is available at <http://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/2014/section-18-review-of-auckland-power-outage-5-october-2014/>

Service providers

The **system operator** is responsible for the real-time operation of the power system, including scheduling and dispatching electricity, in a manner that avoids undue fluctuations in frequency and voltage on the transmission grid. System operator responsibilities include giving instructions as to when and how much electricity to generate (ie, it dispatches generation) so that injections of electricity into the system match uptake by electricity consumers at each moment in time. The system operator also publishes the generator dispatch schedules, and is responsible for the operation of security of supply forecasting, monitoring and emergency management functions.

The system operator is also responsible for ongoing security monitoring and emergency management. The system operator can seek funds from the Authority's security management appropriation if needed for:

- increased monitoring and management responsibilities in the event of an emerging security situation
- planning and running an official conservation campaign.

The **wholesale information and trading system** (WITS) is used to transfer information among wholesale market participants, especially the uploading of bids and offers.

The **reconciliation manager** allocates volumes of electricity to generators and purchasers based on metering information supplied by participants.

The **pricing manager** calculates and publishes final prices, which are used by the clearing manager to calculate invoices.

The **clearing manager** invoices and settles physical electricity sales and purchases identified by the reconciliation manager, ancillary service payments and any financial hedges required to be taken into account in the prudential calculation. It also maintains prudential security requirements.

The **registry** is a database that identifies every customer point of electricity connection to a local or embedded network. It enables customer switching between traders and contains key information for the reconciliation process.

The **FTR manager** was established in 2013. The FTR manager is charged with running regular auctions of financial transmission rights (FTRs), which are a locational hedge product.

The Authority currently carries out the role of **market administrator**, providing several operational and administrative services to the market under the Code. We are in the process of considering devolving some of the responsibilities to service providers.

Extended reserve manager (will be a new service provider). In early 2015, the Authority selected NZX Limited as its preferred supplier for the role of extended reserve manager. The extended reserve manager is responsible for developing and running the process to select the blocks of load that are to be used as extended reserve. We are working with the extended reserve manager and the system operator to develop and deliver the new extended reserve regime by Q3 2017.

Appendix B: Rulings Panel, SRC and advisory groups

Rulings Panel

The Act continues the Rulings Panel (the industry dispute resolution and disciplinary body established under the Electricity Governance Regulations 2003) and sets out its membership, functions and funding arrangements.

The Governor-General appoints panel members.

The Rulings Panel is Peter Dengate Thrush (Chair), Geraldine Baumann (Deputy Chair), Susan Roberts, Nicola Wills and John O'Sullivan.

Security and Reliability Council (SRC)

The Act sets requirements to establish the Security and Reliability Council and other advisory groups.

The Act requires the Authority to publish a Charter on advisory groups. The charter was published on 14 February 2011.

The Security and Reliability Council provides independent advice to the Authority on the performance of the electricity system and the system operator and reliability of supply issues. Members are Mike Underhill (Chair), Nigel Barbour, Barbara Elliston, Vince Hawksworth, Anne Herrington, Bruce Turner, Guy Waipara and Erik Westergaard.

Advisory groups

The Authority currently has two standing advisory groups: the Wholesale Advisory Group and Retail Advisory Group. The groups comprise members from the industry and consumer representatives. They provide input to market development activities, particularly at the early investigation and analysis stages²⁴.

As described on page 14, we are in the process of replacing these advisory groups with the Innovation and Participation Advisory Group (IPAG) and the Market Development Advisory Group (MDAG).

Additional advisory and technical groups

From time to time other advisory and technical groups have been established. Information about these groups is available in the Annual Report and on our website.

²⁴ Information about advisory and technical groups is available at: <http://www.ea.govt.nz/development/advisory-technical-groups/>