ELECTRICITY AUTHORITY
TE MANA HIKO

2016/17

ANNUAL REPORT

For the period 1 July 2016 to 30 June 2017

Purpose of this Annual Report

This Annual Report is the Electricity Authority's formal report to Parliament on its results for the period 1 July 2016 to 30 June 2017.

The report contains information required by sections 150–155 of the Crown Entities Act 2004. Further information about the Authority and its work is available from: www.ea.govt.nz

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Glossary and abbreviations

There are many technical terms used in the electricity sector and some of these occur in this report. To assist readers, a glossary and list of abbreviations used in this report is provided at the end of the report. In addition, the Authority has a glossary of common electricity industry terms on its website at www.ea.govt.nz/glossary

BY THE NUMBERS

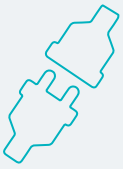
In the 2016/17 financial year there were

5

new retailers in the market

More than **150** people attended our distribution pricing conference

We celebrated



20 YEARS

of New Zealand's wholesale electricity market

Since making our website responsive, mobile and tablet sessions have increased by

65%

Small to medium-sized electricity retailers gained

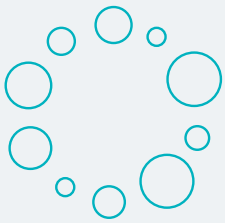
33,900

connections in the 2016/17 financial year

The change to distributed generation pricing principles is expected to save consumers many

MILLION$ OF DOLLAR$ PER YEAR

OUR WORK ADDRESSES THE ISSUES THAT MATTER TO CONSUMERS



Do consumers have choice?

Competition can lead to large value gains for consumers in the long term, by driving companies to continually look for new and better ways to serve customers and to adapt quickly to technological innovations.

Page 23 shows a summary of progress against the competition limb of our statutory objective.

Page 37 shows the contributions we've made under our 'Improve consumer participation' strategy.

Will the lights stay on?

Reliability is important because homes and businesses are highly dependent on having a continuous supply of electricity.

Page 26 shows a summary of progress against the reliability limb of our statutory objective.

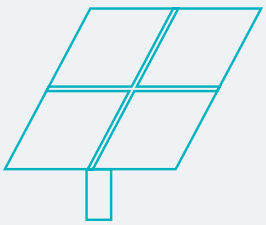
Page 41 shows the contributions we've made under our 'Increase flexibility and resilience' strategy.

Are prices reasonable?

We want prices to reflect the costs of the services consumers use, so that consumers get the benefits of the efficiency gains and their own choices can be more efficient.

Page 29 shows a summary of progress against the efficiency limb of our statutory objective.

Page 39 shows the contributions we've made under our 'Improve price signals' strategy.



Is innovation happening?

New and evolving technologies are changing the way people engage with electricity markets—they increasingly have more choice and control than ever before.

On **Page 13** our Chief Executive, Carl Hansen, discusses the work we've done in the 2016/17 financial year to make way for innovation in the electricity sector.

Page 35 shows the contributions we've made under our 'Reduce barriers' strategy.

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CHAIR'S FOREWORD

I am pleased to present the Electricity Authority's seventh Annual Report.

The Authority and NZX celebrated 20 years of New Zealand's wholesale electricity market in October 2016. While many of the foundations set in 1996 still remain, the market has evolved considerably over those 20 years and our job now is to ensure it remains flexible for the future.

The electricity industry is moving away from the linear supply model, to a more dispersed model where new technology and business models enable smaller-scale consumers and other parties to participate in the market. These changes could create a wide range of options for how electricity is generated and used, giving consumers far greater choice and control than ever before. The changes could also have significant implications for market participants, with the potential for new and disruptive players to enter and grow market share.

Electricity industries in most developed economies are facing two key challenges, largely:

- How to move away from the standard linear supply model to a more diverse and distributed supply model?
- How to maintain appropriate levels of system reliability and security while integrating more renewable generation?

CELEBRATING

20 YEARS

OF NEW ZEALAND'S WHOLESALE ELECTRICITY MARKET

NZX

ELECTRICITY AUTHORITY TE MANA HIKO

How to move from a linear to a diverse and distributed supply model?

In June 2017, the Competition Committee of the Organisation for Economic Co-operation and Development (OECD) held a hearing on this issue. Taken together, the expert reports prepared for the hearing suggested that countries should take a list of actions and address a range of issues to facilitate the adoption of new technologies. This list read very much like a description of the policies the Electricity Authority has adopted, or is currently pursuing.

The development of the New Zealand electricity market has not been based on promoting or entrenching the major players that are the usual components of the linear arrangements. It has been aimed at promoting competition, reliability and efficiency by ensuring the playing field is level for all sorts of generation and retailing. Although New Zealand appears to be well placed for making the most of new technologies, if the OECD's expert reports are a reasonable guide, there is still much work for the Authority to do.

We need to:

- finish the reform of transmission pricing guidelines to ensure pricing is more cost-reflective and service-based
- continue to have distributors lead changes to distribution tariffs to make them more cost-reflective and service-based
- tweak the spot market to make actionable data about what prices will be more readily available to producers and consumers
- improve access by consumers and their agents to their consumption data
- make it easier for consumers to transact with multiple parties so they can buy off and sell to different parties, eg, sell their solar surplus peer-to-peer, but buy from one or more retailers when they are a net purchaser
- explore whether there are inefficient barriers faced by consumers who may choose to bypass retailers and buy and sell off the spot market directly.

	1996	2016
	Most consumers had little or no choice of supplier on their network.	Consumers could choose from up to 31 different retail brands in 2016. There is diversity in the range of plans and packages available.
	New Zealand had come close to forced black-outs in 1992, and dry years still posed a real risk.	Record dry periods in 2012 and 2013 were managed with no consumer impact. A sophisticated and innovative range of security of supply initiatives are in place.
	The wholesale market began with nodal pricing and very few generating companies selling into the wholesale market.	There were record levels of trading in 2016, with 25 generating companies selling into the wholesale market, and 47 traders purchasing from the wholesale market.
	There were very limited trading options for managing risk.	There is substantial trading through the over-the-counter market (including cross-hedging by generators to manage hydro risks), a vibrant and rapidly growing futures market, and fast-developing financial transmission rights (FTR) market.
	When customer switching began in 1999, it was a tedious and time-consuming process – and it got worse! In some cases, it took around 200 days for a customer to switch suppliers.	New Zealand leads the world for customer switching rates. On average, it takes just three to four days for the switch to take place.
	New Zealand had 7,800 MW of installed generation capacity.	In 2016 New Zealand had 9,963 MW of installed capacity with most growth in renewable wind and geothermal generation.

In 2016/17 we focused a considerable amount of effort on several initiatives to reduce inefficient barriers for new technology and business models. This included our review of distribution pricing, a pivotal change to distributed generation pricing principles, and a recent consultation paper to seek industry feedback on enabling 'mass participation' in the electricity market. The Chief Executive provides progress updates on these initiatives in his introduction (see page 13).

How to maintain reliability while integrating more renewable generation?

Many countries around the world are being driven by their desire to reduce greenhouse gas emissions from their electricity sectors and are balancing that with maintaining a secure supply of electricity. New Zealand has a high proportion of hydro-electric generation and relatively low storage capacity in its hydro lakes. This means our electricity supply can be stressed in 'dry years'.

In recent years, there were some thermal plant closures and the future of Genesis Energy's coal-fired plants at Huntly was uncertain. Although Genesis will retain the Huntly units until at least December 2022, security of supply remains a primary focus for the Authority.

We continue to focus on this area to ensure settings such as the stress testing and customer compensation regimes deliver the right outcomes (discussed on page 42).

In addition, the Authority is working with the Australian Securities Exchange (ASX) to introduce cap futures products. These should facilitate managing both dry-year risks to hydro supply and physical capacity issues. The buyers of the caps will be covered against high spot prices and the sellers will receive payments that would, if they chose to do so, help finance generating capacity—which can offset dry-year or capacity risks.

Looking to the future

The electricity industry is very complex. Electricity markets around the world are reasonably young and have not been well developed in many countries. The risks of unintended outcomes from poorly designed regulatory changes are high and the consequences can be very serious for consumers and the development of the industry.

In this context, the consultation and advice from groups with a wide range of practical and analytical skills is essential.

The Authority Board decided in January 2017 to establish two new advisory groups to keep up with evolving technologies and innovative business models. The Innovation and Participation Advisory Group (IPAG) will address issues related to innovation in technology and business models in the electricity sector, and consumer participation. And the Market Development Advisory Group (MDAG) will address further evolution of the 'machinery' of the electricity markets.

The Board appointed Lindsay Cowley as IPAG chair and James Moulder as MDAG chair; we expect to appoint group members in August 2017. Advisory groups provide invaluable advice to support our market development activities and we look forward to working with the new groups.

We welcomed four new Electricity Authority Board members in the second quarter of 2017. Allan Dawson, Sandra Gamble, Mark Sandelin and Lana Stockman were each appointed for five-year terms. Collectively, they have experience in energy regulation and governance, corporate governance, electrical engineering, and law and board directorship. Each also brings strong leadership, communication and relationship management skills to the table and I look forward to working with them to bring about long-term benefits for consumers.

As we move into the 2017/18 financial year, we are guided by our *2017–2021 Statement of Intent (SOI)* and our *2017/18 Statement of Performance Expectations (SPE)*; both were published in June 2017. The SOI contains our long-term strategic intentions and the SPE contains our short-term priorities for the coming year. We also published an educational video about who we are, what we are doing and where we are going. Both documents and the video are available under the 'About Us' section of our website.

Words of thanks

I would like to thank departed Board members Elena Trout, David Bull and the Hon. Roger Sowry. Their contributions over the last seven years since the Authority was established have been immense, covering a range of fields from civil and electrical engineering, to policy, business strategy and public relations. David and Roger were also members of the Electricity Commission, which the Authority replaced. I have greatly appreciated their willingness to share their expertise and engage in robust discussion.

I would also like to thank those who took the time and effort to contribute through submissions, informal discussions, the provision of technical input or participation in advisory groups. In particular, I would like to wholeheartedly thank the Retail Advisory Group and Wholesale Advisory Group chairs and members for their substantial contributions and input.

Finally, I would like to thank the Authority staff and the Chief Executive and his management team for their contributions to the Authority's work programme.

Brent Layton
Chair

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BOARD

Brent Layton ***(Chair)***

Susan Paterson ONZM

Allan Dawson

Sandra Gamble

Mark Sandelin

Lana Stockman

SENIOR LEADERSHIP TEAM

Carl Hansen ***(Chief Executive)***

John Rampton ***(General Manager Market Design)***

Rory Blundell ***(General Manager Market Performance)***

Ross Hill ***(General Manager Legal and Compliance)***

Androula Dometakis ***(General Manager Corporate Services)***

STATEMENT OF RESPONSIBILITY

The Board is responsible for the preparation of the Electricity Authority's financial statements and statement of performance, and for the judgements made in them.

It is responsible for any end-of-year performance information provided by the Electricity Authority under section 19A of the Public Finance Act 1989.

It has the responsibility for establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of financial and performance reporting.

In the Board's opinion, these financial statements and statement of performance fairly reflect the financial position and operations of the Electricity Authority for the year ended 30 June 2017.

Signed on behalf of the Board:

Brent Layton
Chair

Electricity Authority
30 August 2017

Mark Sandelin
Audit and Finance Committee Chair

Electricity Authority
30 August 2017

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CHIEF EXECUTIVE'S REPORT

In 2016/17 we developed our comprehensive programme of work aimed at identifying and removing inefficient barriers to mass participation in the electricity industry, and we also initiated reforms to our advisory groups to help us in this work. These changes aim to promote a competitive, reliable and efficient electricity industry for the long-term benefit of consumers and New Zealand.

Making way for innovation

Evolving technologies and innovative business models are increasingly blurring the traditional boundaries in the electricity industry between retail, wholesale and transport activities. A key priority for us this year, and for the next few years, is to remove inefficient barriers to mass-market forms of generating, storing, transporting and purchasing electricity. This includes removing barriers to residential consumers purchasing directly from the wholesale electricity market or from local generators.

With this in mind, we reoriented our work programme in 2016/17 to review every aspect of the electricity industry that could potentially present inefficient barriers to evolving technology and new business models—including our market facilitation measures, administration and operational processes, our compliance arrangements and all aspects of the Electricity Industry Participation Code 2010 (the Code). We also published a consultation paper in May 2017 to identify the 'gaps' in that programme and what further work needs to occur.

During the year we began assessing ways to improve consumers' access to and participation in markets, and investigating options to allow them to enter multiple trading relationships. We are aware of at least two participants who are running pilot 'peer-to-peer' trading platforms. For example, a house with solar panels could sell excess electricity to another household nearby, instead of selling to a retailer. We're looking forward to further engagement with participants on these issues.

Consumers have choice

As described on page 36, five new retailers entered the market in 2016/17. With more retailers, consumers have more choice to shop around if their current retailer isn't working well for them.

Looking back over the year, small to medium-sized electricity retailers gained 33,953 connections, lifting their share of connections to just over 10% for the first time. The stand-outs among this group were Electric Kiwi (adding 9,886 connections), Flick Electric (11,428), and Pulse Energy (6,778). Among the five largest retailers, only Mercury gained significant numbers of customers (adding 12,520 connections).

The rapid growth of many small and medium-sized retailers indicates many newer retailers are offering attractive deals to grow their business and many consumers are taking advantage of those deals. With all of this choice, it is important that consumers understand the quality and reliability of their electricity is the same whatever retailer they choose, and the same applies for the mix of electricity from renewable sources. We took an active approach to get these messages out during 2016/17, and will do so again this year.

The *What's My Number* campaign continues to promote the benefits of comparing and switching retailers. We seek to increase retail competition through increased consumer awareness of possible savings from shopping around for electricity, and that it is easy to switch. Survey results from 2016 show the campaign continues to raise awareness of the benefits of comparing and switching retailers, and that consumers value an independent website for this purpose. Customers who switch are not only finding better deals, they are adding competitive pressure to the retail electricity market, which benefits most consumers.

Working to achieve more efficient levels of reliability and security of supply

Wider access to electricity reserves

In November 2016 the Authority and system operator launched a national market for instantaneous reserve. This allows the market to call upon a wider range of spare generating capacity or potential demand reductions if there is a sudden generation or transmission outage. This initiative has achieved significant efficiency gains by reducing the total amount of reserve procured.

We are also working with the extended reserve manager and the system operator to implement a new extended reserve regime for the North Island. Extended reserves (by contrast to instantaneous reserves) deal with very infrequent events, such as two or more large generators failing at the same time. The extended reserve manager and system operator both consulted with industry regarding the detailed design of the new regime in October 2016, and in February 2017 we published our decision to proceed with the new regime.

This new regime will provide a more efficient method for restoring the balance between supply and demand when sudden and very large events occur that disturb the electricity system in the North Island.

The changes will increase system security and will further reduce the very low likelihood of the North Island experiencing a total black-out. The project has now entered the implementation phase. Extended reserve arrangements for the South Island do not require review at this time.

Cap products to improve security of supply

Financial instruments, such as financial cap products, can also improve competition, reliability and efficiency by achieving more robust, transparent and regular pricing of supply risks. Parties that want a cap product pay an 'insurance premium' to protect themselves against high spot market prices. We have been working with the ASX to design and set up two cap products:

- A capacity-shortage cap product, which has a strike price of $300 per megawatt-hour (MWh). The primary purpose of this cap product is to offer protection against very high spot market prices (eg, $5,000 per MWh), which typically occur for very short periods of time when there is a shortage of generation capacity available to the market.

- An energy-shortage cap product, which has a strike price of $130 per MWh. The primary purpose of this cap product is to offer protection against high spot market prices occurring over many weeks and months due to dry weather conditions and low hydro lake levels (this reflects an energy shortage rather than a generation capacity shortage).

We expect the ASX to list both products by December 2017.

Effective management of dry-year risk

In addition to our work on cap products, we reviewed two other mechanisms that influence security of supply: the customer compensation scheme (CCS) and the stress testing regime. These reviews are described on page 42.

Just as we completed those reviews the South Island hydro lakes began to track well below average due to many months of very dry weather in the lower South Island. The system operator began closely monitoring the situation, planning for the possibility of a further deterioration in security of supply and undertaking some actions to help the situation.

Thermal generation increased substantially in response to higher spot market prices and also because Meridian Energy activated a 'swaption' contract it had negotiated with Genesis Energy in early 2016. Often spot market prices were higher in the South Island than in the North Island, leading to large southward flows over the high voltage direct current (HVDC) link and allowing the hydro generators in the south to conserve their hydro lake levels. These flows over the HVDC link keep South Island prices lower than they would be otherwise.

At the time of writing the 2017 security of supply event looks to be over, and our preliminary view is the electricity market has once again worked effectively to manage the dry conditions.

Prices should reflect costs

We focus on improving efficiency because it leads to lower costs for New Zealand consumers. Consumers should see electricity prices that reflect the services they're using and the costs of supplying those services, and in 2016 we made good progress towards making that a reality.

Distribution pricing should encourage people to use technology in a way that benefits all consumers. We believe industry participants should lead this process because each distributor faces a unique set of circumstances. In August 2016 we held a distribution pricing conference in Wellington where over 150 attendees represented a range of consumers, organisations and viewpoints. The conference provided a valuable opportunity to discuss and debate the way forward.

Following the conference we advised distributors that we expected them to publish plans by 1 April 2017 for introducing more efficient pricing. Going forward, distributors must report every six months and advise progress against their plans. We believe distributors have made good progress with their work in this area, but they will need to step up their efforts to continue to make good progress.

We appreciate the effort the Electricity Networks Association and its members are putting into developing their pricing reforms, and we appreciate the focus the Electricity Retailers Association and its members have brought to these issues. We commend both sides of the market for their recent efforts to adopt a coordinated approach, and remain optimistic the industry-led approach will deliver good outcomes for consumers.

Our transmission pricing methodology (TPM) review was put on hold in April 2017. We were very disappointed to halt our decision-making process "at the eleventh hour". While this was an unfortunate setback, our priority is to ensure we have the right information to make the right decisions for consumers. Given the complexities of the TPM review, we have postponed the development of a new cost-benefit analysis, to allow our new Board members to get up to speed on the wide-ranging aspects of the review and decide how they wish to progress the matter.

In late 2016 we completed a review of the distributed generation pricing principles (DGPPs). We decided to review the DGPPs to ensure the pricing and charging arrangements for distributed generators promote our statutory objective. More details, and the expected benefits, are provided on page 40.

We also made progress towards making prices in the spot market more accurate. In August 2016 we developed the details of a real-time pricing system and began consultation on the design details in August 2017. Spot market prices are currently finalised two or more days after generators have supplied the market and consumers have used the electricity—so prices are currently finalised two or more days after real-time. By producing more accurate prices in real-time, participants will receive more price certainty and can make better decisions about their electricity use.

Our monitoring and compliance activity

If irregular events or outcomes happen in the market or the broader electricity sector, we investigate them to determine the causes and whether something can or should be done to prevent recurrence. Our compliance team also investigates allegations of breaches of the Code, and will proactively investigate any matters that it considers could be breaches of the Code.

In the 2016/17 year we decided to review some inefficient activity and practices in the wholesale and retail markets—the results of our reviews are available on our website. For one of those cases we issued a strong warning letter, but the number of serious breaches formally investigated in 2016/17 was four, down from six in 2015/16 and 18 in 2014/15. We also started a review in March this year into the reasons for a significant electricity outage on 2 March 2017, due to the activation of extended reserves in the South Island. The review will examine the recovery process and the risk management around associated outages.

We proactively conducted four reviews in 2016/17, including a review into how a new approach (introduced in 2012) to price forecasting was performing, and why spot market prices during night-time periods were higher than had been observed in the past.

We also undertook a significant project in 2016/17 to review our participant audit regime. This was to ensure the purpose of the regime was well defined, and to better align the regime with our statutory objective and auditing best practice. More details about this project are on page 46.

Making our information more accessible

We are committed to making all our information as accessible and easy to use as possible. This is increasingly important as we're seeing more people than ever visiting the consumer section of our website. In September 2016 we made a significant change to the Authority's website to allow people to better access our information from their tablet and mobile devices. Responsive websites create a better user experience because they respond and adapt to the size of the screen they're being viewed on, eg, a desktop computer, tablet or mobile. Since making our website responsive, mobile and tablet sessions have increased by 65%, from 1,891 in the month of June 2016, to 3,135 in the month of June 2017.

Our Electricity Market Information (EMI) website continues to serve the electricity industry and other interested parties, such as journalists, with a comprehensive source of data, metrics and analytical tools. In addition, third party providers, as listed on page 38, have been utilising our data to support the tools they're building for consumers, such as price comparison services.

In 2016/17 the Authority and wider electricity industry navigated some challenges, utilised many opportunities, and created plenty of impactful results. On page 9 the Chair highlighted the guiding roles of our *2017–2021 SOI* and our *2017/18 SPE*. Both documents play an important role in managing the Authority's priorities and workload, and maintaining our strategic direction in support of the outcomes we seek: a competitive, reliable and efficient electricity industry for the long-term benefit of consumers and New Zealand.

We are well placed to have a successful year in 2017/18 and I look forward to working with you all.

Carl Hansen
Chief Executive

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STRATEGIC FRAMEWORK

Our measurement framework follows the strategic framework in our *2014–2018 Statement of Intent (SOI),* and is summarised in **Figure 1**.

The following pages provide a summary of performance against our statutory objective (Part 1), our strategies (Part 2), our functions (Part 3), and how we work (Part 4).

Note: we have updated our strategic framework in our *2017–2021 SOI and 2017/18 Statement of Performance Expectations (SPE)*, which are both available at www.ea.govt.nz/about-us/strategic-planning-and-reporting.

OUR STRATEGIC FRAMEWORK HELPS US TO ENSURE EVERYTHING WE DO IS FOR THE LONG-TERM BENEFIT OF CONSUMERS AND NEW ZEALAND

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Figure 1: Our strategic framework

HOW WE MEASURE RESULTS

Outcome measures:
Set out in our *2014-2018 SOI*. Reported against in pages 22–31 and Appendix A.

Impact measures:
Set out in our *2015/16 SPE*. Reported against in pages 34–46.

Top priority projects and performance measures:
Set out in our *2016/17 SPE*. Reported against in the Our Functions section of this document – pages 48–60.

Note: These functions are those covered by the Electricity industry governance and market operations appropriation (page 48). We have two other appropriations that are not used in the normal course of events:

- Security management (page 58): funds actions by the system operator to address emerging or actual security events. Our function in relation to this appropriation is limited to reviewing any funding requests.
- Electricity litigation fund (page 59): provides for costs and expenses for litigation. We do not deliver services or functions under this appropriation.

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PART ONE

REPORT ON OUTCOMES

REPORT ON OUTCOMES

This part of the Annual Report sets out our statutory objective in the Electricity Industry Act 2010, and the outcome measures we monitor.

Outcome measures are set out in our *2014–2018 SOI*.

OUR STATUTORY OBJECTIVE
Outcome measures

OUR STRATEGIES
Impact measures

OUR FUNCTIONS
Performance measures

OUR VISION

HOW WE WORK
Processes and inputs

The outcomes we achieved for the long-term benefit of consumers and New Zealand

The competition, reliability and efficiency limbs of our statutory objective are used as our high-level outcomes for measurement purposes. We measure progress through empirical analysis of competition, reliability and efficiency metrics. We also measure progress with public and stakeholder perception surveys.

The measurement of these high-level results is complex, with multiple influencing factors. The cause-and-effect relationship between our work and measurable change in electricity markets is not straightforward, and may take several years to become clear. Factors outside the control of the Authority have a major influence, leading to significant year-to-year variations in results.

Our outcome and impact measure results therefore need to be analysed over the medium to longer term. Our analysis of results may therefore cover multiple years, not just 2016/17.

This is a summary of progress to date against the competition, reliability and efficiency limbs of our statutory objective. See Appendix A for more detailed trend information.

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COMPETITION

We focus on workable competition for buying and selling electricity.

We encourage competition in all electricity-related markets, including the retail electricity market, the spot market, hedge markets, the metering market and all ancillary service markets (instantaneous reserves, frequency keeping, voltage support and black start). Where possible, we also encourage competition in transmission and distribution services.

We facilitate or encourage increased competition in the markets for electricity and electricity-related services, taking into account long-term opportunities and incentives for efficient entry, expansion, exit, investment and innovation in those markets.

Competition can lead to large value gains for consumers in the long term, by driving firms to continually look for new and better ways to serve customers and to adapt quickly to technological innovations. Competition also assures consumers they are paying reasonable prices. New retailers entering the market and existing retailers creating new and innovative offerings are signs of healthy competition, which benefits consumers. Innovative retailers seek to better understand their customers and invest in new technologies and new partnerships to provide more value to their customers.

High-level results sought	How we track results	Target	Result
Widespread confidence among consumers in the competitiveness of electricity markets	**Perception surveys:** Percentage of survey respondents with an opinion on the matter who rate the electricity industry as neutral or better against the statements:	Overall improvement in survey results since Authority intervention began in 2011	Overall improving trend. See **Figure 2**.
	"The current level of competition among electricity generators ensures they build the most efficient power stations and generate electricity as cheaply as possible"		2011 result: 45% 2014 result: 51% 2017 result: 54%
	"The current level of competition between electricity retailers ensures that prices consumers pay only rise in line with costs to the electricity companies"		2011 result: 44% 2014 result: 45% 2017 result: 50%
Overall improvement across a suite of statistics on electricity market competition	Measures covering residential, spot, hedge and ancillary service markets. Statistics will also address entry and exit data, dynamic efficiency, and information about investment and innovation	Overall improvement in suite of competition statistics	There is an improvement in the suite of competition statistics*

Notes

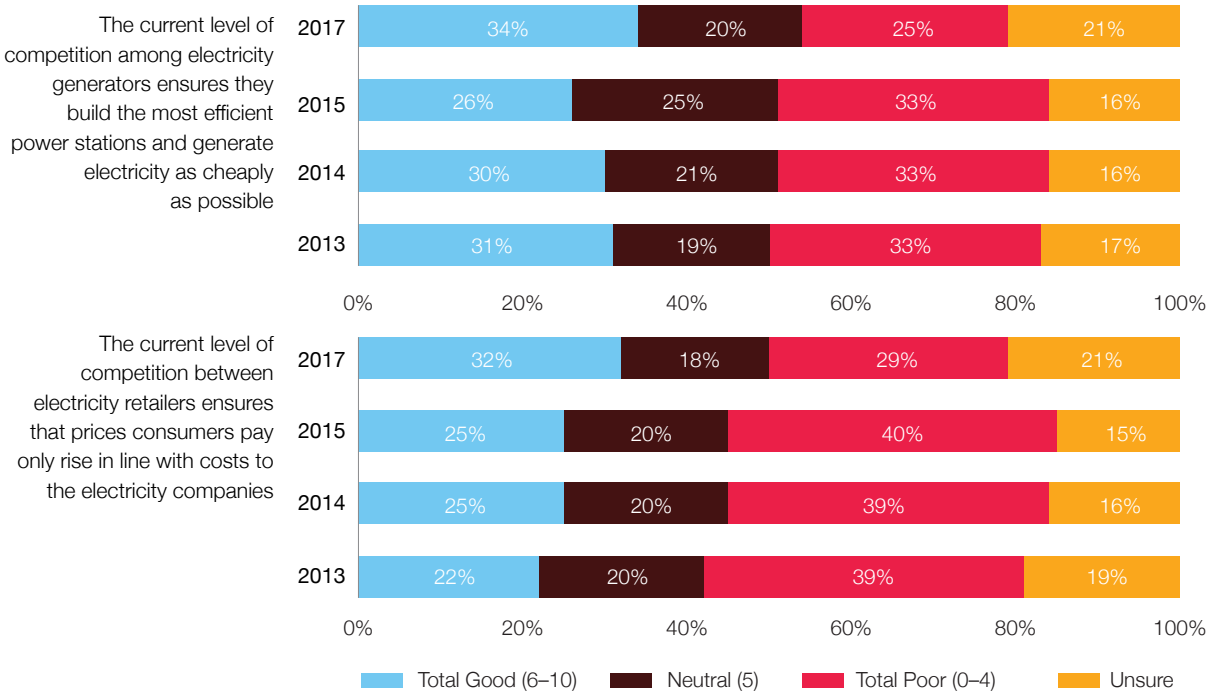
* The following suite of statistics and summary results to date are:[1]

1. Retail market concentration (HHI statistic)	**Improving trend**
2. Retail market share (CR4 statistic)	**Improving trend**
3. Net pivotal analysis	**The most net pivotal generator is still only net pivotal less than two per cent of the time.**
4. Hedge market concentration (HHI statistic)	**HHIs increased towards the middle of 2017 because of the dry winter. But HHIs were low overall for both monthly and quarterly contracts.**
5. Concentration in the ancillary services market (HHI of reserves statistic)	**The HHIs increased in both islands over the summer of 2016/17, possibly due to low storage, but have fallen since then.**
6. Number of retailers' approaches to consumers with offers to induce switching (measured by survey)	**Approaches increased up until 2014 then fell in 2016. It is too early to determine if this is a trend.**

1 See **Appendix A** for a list of the statistics and detailed report against each. See the glossary for explanations of these statistics.

Figure 2 shows the results for competition-related questions in our public perception surveys. It shows that perceptions of competition have increased for the retail market, and have increased for the link between competition and efficient power station construction. The surveys will be carried out every two years. The latest survey was completed in February 2017.

Figure 2: Perception survey results for competition questions—survey of residential consumers



Source: *UMR research report for the Electricity Authority: CRE aspirations: UMR omnibus results, February 2017.*

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RELIABILITY

We seek efficient levels of supply reliability for consumers.

Reliable supply refers to both the reliability of supply (in terms of the physical continuity and quality of supply) and the security of supply (ie, the risk of supply shortages, placing upward pressure on electricity prices).

We facilitate and encourage industry participants to develop and operate the electricity system efficiently to manage security and reliability in ways that minimise total costs while being robust to adverse events, such as a severe drought, major storms, an earthquake or a cyber-attack. Being resilient to adverse events includes having a good business continuity plan to ensure Code obligations are still met.

Reliability is important because homes and businesses are highly dependent on having a continuous supply of electricity to operate computers, phones, lights, heating, cooling, and other appliances and equipment. The home of the future will use electricity very differently. As consumers increasingly embrace new and evolving technologies, they need—and expect—personal levels of reliability.

High-level results sought	How we track results	Target	Result
Widespread acceptance among consumers of efficient levels of supply reliability	**Perception surveys:** Percentage of survey respondents with an opinion on the matter who rate the electricity industry as neutral or better against the statements:	Overall improvement in survey results since Authority intervention began in 2011	Overall improving trend. See **Figure 3**.
	"There is a reliable supply of electricity each day, that is, a good balance is achieved between the cost of power cuts versus the cost of maintaining electricity supply"		2011 result: 60% 2014 result: 74% 2017 result: 75%
	"There is enough electricity to meet ongoing needs, that is, a good balance is achieved between the cost of having some power stations sitting idle most of the time against the cost and risk of power shortages when there is a long drought that limits hydro-generation"		2011 result: 51% 2014 result: 62% 2017 result: 61%
Overall improvement across a suite of statistics on efficient levels of reliable electricity supply	Measures of security and reliability, covering short-term service interruptions on the distribution network, transmission system reliability, resilience to emergency events (including dry years) and assessment of efficient investment in reliability	Overall improvement in suite of statistics on the efficiency of security and reliability levels	There is an improvement in the suite of reliability statistics*

Notes

* The following suite of statistics and summary results to date are:[2]

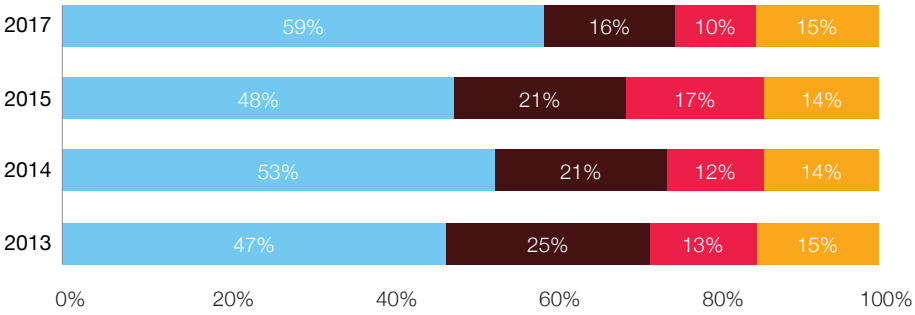
7. Pricing in scarcity events reflects opportunity cost, as measured by case-by-case analysis	**One event in June 2016 investigated and enforcement action taken.**
8. Effective management of dry years or emergency events, as measured by case-by-case analysis	**We will consider a review of winter 2017.**
9. Capacity and energy margins are within efficient bounds or are moving towards those bounds, as measured by the annual security assessment	**Standards set by the Authority are being exceeded.**
10. Investigation of reliability events does not identify systemic issues, as measured by case-by-case analysis	**One review underway the South Island AUFLS event on 2 March 2017.**

2 See **Appendix A** for a list of the statistics and detailed report against each. See the glossary for explanations of these statistics.

Figure 3 shows the results for reliability-related questions in public perception surveys carried out over the last three years. Perceptions of reliability improved in 2017 for both the reliability questions. These surveys will be carried out every two years. The latest survey was completed in February 2017.

Figure 3: Perception survey results for reliability questions—survey of residential consumers

There is a reliable supply of electricity each day, that is, a good balance is achieved between the cost to consumers of power cuts versus the cost of maintaining electricity supply



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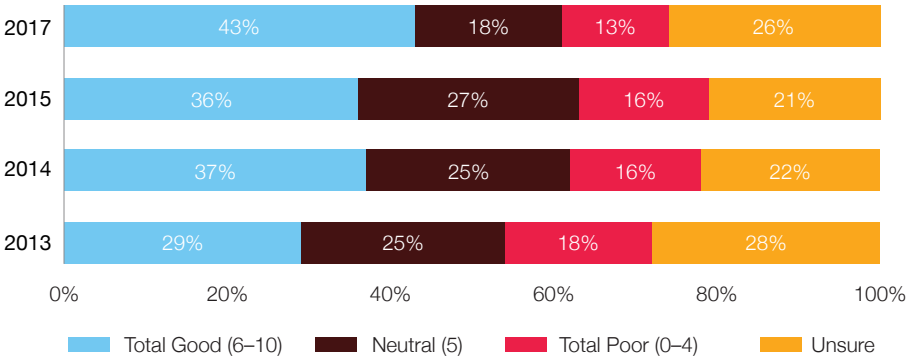

Source: *UMR research report for the Electricity Authority: CRE aspirations: UMR omnibus results, February 2017.*

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EFFICIENCY

We are continuously focused on efficiency improvements in the electricity industry.

We are seeking wholesale and retail electricity markets, and transmission and distribution arrangements, that are efficient mechanisms for coordinating electricity production and consumption, and for facilitating timely and innovative investment in the electricity system.

Efficiency measures apply in particular to parts of the market without workable competition (as a good level of efficiency is expected to follow in the other parts of the market where there is workable competition). We take into account the transaction costs of market arrangements, the administration and compliance costs of regulation and the Commerce Act (1986) implications for the non-competitive parts of the electricity industry.

We want consumers to face prices for the various types of service they receive. We also want those prices to reflect the costs of the services consumers use, so that they get the benefits of the efficiency gains and their own choices can be more efficient.

From an operational point of view, efficiency is important because it means that existing resources and investments are utilised, and better outcomes are more likely to be achieved.

High-level results sought	How we track results	Target	Result
Widespread recognition by consumers that electricity markets and transmission and distribution arrangements are efficient	**Perception surveys:** Percentage of survey respondents with an opinion on the matter who rate the electricity industry as neutral or better against the statements:	Overall improvement in survey results since Authority intervention began in 2011	Overall improving trend. See **Figure 4**.
	"The New Zealand electricity market ensures that the right mix of power stations is built in time to meet growing demand for power"		2011 result: 43% 2014 result: 54% 2017 result: 56%
	"The New Zealand electricity market ensures electricity is generated and supplied efficiently"		2011 result: 66% 2014 result: 72% 2017 result: 77%
Overall improvement across a suite of statistics on electricity system and market efficiency	Measures relate to monitoring whether prices relate to costs at all times Measures will include the costs and benefits of operating the electricity system and markets	Overall improvement in suite of statistics on operational efficiency	There is an improvement in the suite of efficiency statistics*

Notes

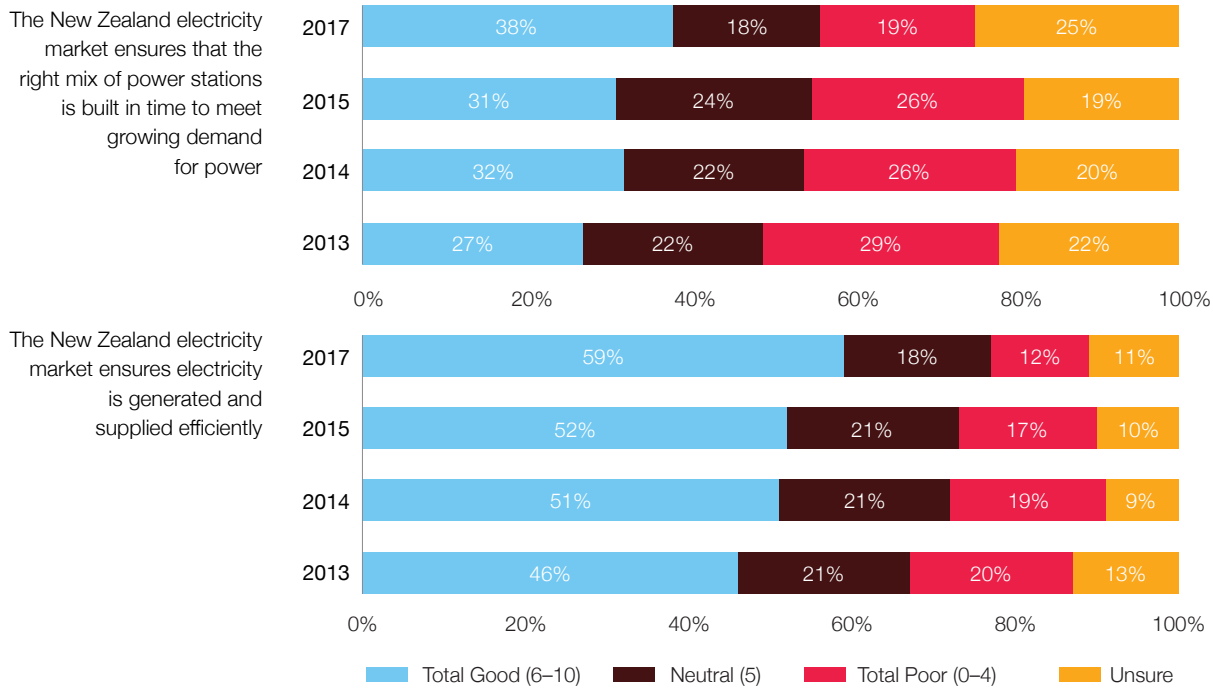
* The following suite of statistics and summary results to date are:[3]

11. Robust futures prices	**Market performing as expected.**
12. Dry-year prices reflect storage levels, as assessed by case-by-case analysis	**Market performance in winter 2017 not yet assessed.**
13. Exceptional prices are justified by underlying fundamentals, as assessed by case-by-case analysis	**Market performing as expected. High prices on 2 June 2016 were investigated and enforcement action taken.**
14. Reducing constrained-on compensation	**Constrained-on costs have been falling since 2011.**
15. Increased occurrence of demand bids setting spot prices	**Not yet measured.**

3 See **Appendix A** for a list of the statistics and detailed report against each. See the glossary for explanations of these statistics.

Figure 4 shows the results for efficiency-related questions in public perception surveys carried out over the past four years. It shows that perceptions are improving for both questions. The surveys will be carried out every two years. The latest survey was completed in February 2017.

Figure 4: Perception survey results for efficiency questions—survey of residential consumers



Source: *UMR research report for the Electricity Authority: CRE aspirations: UMR omnibus results, February 2017.*

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PART TWO

REPORT ON STRATEGIES AND IMPACTS

REPORT ON STRATEGIES AND IMPACTS

This part of the Annual Report sets out the Authority's contributions to the changes we are trying to bring about.

Impact measures were included in our *2016/17 SPE.*

OUR STATUTORY OBJECTIVE
Outcome measures

OUR STRATEGIES
Impact measures

OUR FUNCTIONS
Performance measures

OUR VISION

HOW WE WORK
Processes and inputs

We work across the six broad strategies shown in Figure 1 (page 19) to achieve our strategic intentions.

The strategies are summarised on the following pages, along with a report against the impact measures we use to track progress.

The impact measures for each of our strategies are a mix of quantitative analyses and qualitative assessments. These impact measures were initially set out in our *2014–2018 SOI* and were updated in our *2015/16 SPE*. These are medium-term strategies and therefore progress is tracked over multiple years.

More information about some of the projects mentioned in this section is available in Part 3 of this report.

We also publish a detailed report outlining our progress against all the projects in our work programme.[4]

4 Available at: www.ea.govt.nz/about-us/strategic-planning-and-reporting/our-work-programme

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STRATEGY 1. REDUCE BARRIERS

We want to facilitate the entry, expansion and exit of parties in electricity markets to improve competition and, as a result, efficiency.

New retailers entering the market and existing retailers creating new and innovative offerings are signs of healthy competition.

Our work aims to allow for more participation, and identify and reduce inefficient barriers to developing and using evolving technologies and business models across the electricity supply chain.

Impact measures	Result	
a. A more level playing field for all retailers.*	○ ○ ●	Initiatives to date have demonstrably levelled the playing field, including through allowing for the participation of new business models such as third-party energy companies. Evidence shows increasing competition through increased entry into the retail market, and expanding small retailers.
b. Improved information availability.	○ ○ ●	Initiatives have improved access to information and education for participants, and for a broad base of consumers. A significantly wider range of information has been made available to these stakeholders.
c. Improved spot market risk and risk management.**	○ ○ ●	Both the range of products and volumes traded have increased substantially since the Authority was established.
d. Improved participation in ancillary services markets.***	○ ○ ●	A range of initiatives have reduced ancillary service costs. Operation of the HVDC in frequency-keeping control mode have reduced frequency-keeping costs, and the introduction of a national market for instantaneous reserves has reduced reserve costs. Work is progressing on other initiatives to improve ancillary service markets.

Notes:

* A level playing field occurs when the rules and regulatory practices treat all players neutrally. The SOI measure, 'Reduced set-up costs for new retailers', is now covered by this broader measure.

** The buying and selling of wholesale electricity is done via a 'pool' for each half hour for each grid point of connection, where electricity generators offer electricity to the market, and retailers and direct-connects (a consumer directly connected to the national grid) bid to buy electricity. This market is called the spot market. This can expose buyers to very high (or very low) prices at times. Risk management is used to manage the risk of high and low prices, eg, through futures/hedge contracts.

*** The system operator contracts individual participants to provide five ancillary services essential to maintaining the common quality of electricity supply. These services are black start, over-frequency reserve, frequency-keeping reserve, instantaneous reserve and voltage support. Improving the ability and willingness of participants to compete in these markets will improve reliability and efficiency.

A level playing field between retailers means more and varied choices for consumers. Our work to create **a more level playing field for all retailers** included:

- continuing to consider whether to mandate a default distributor agreement to ensure that distributors treat all retailers evenly, and make it easier for retailers to expand into new regions, and to ensure that the use of systems agreement terms do not impose undue barriers on retailers from competing
- consulting on what distributors need to do to facilitate a level playing field, particularly in contestable deliverables (our 'enabling mass participation' project).

Having access to information is important because it helps consumers, industry participants and stakeholders generally to innovate and make better decisions. Our work to **improve information availability** included:

- considering measures to enhance the disclosure of wholesale market information that can influence forward prices to facilitate an active hedge market
- launching, in collaboration with NZX, the new Wholesale Information Trading System (WITS) Data Hub (see page 44)
- continuing our active programme of participant education, which includes the pilot of an online resource centre to make guidelines more accessible and enable a degree of self-learning
- enhancing our corporate website to provide accessibility on mobile devices, such as tablets and mobile phones, and launching an animated video about our role and the work we're doing.

We want to make it easier for participants to manage spot market risk because it means their customers and stakeholders are more likely to be protected from the impact of potential risks. Our work to **improve spot market risk and risk management** included investigating and making ongoing enhancements to the hedge market, including:

- working with ASX to develop cap products to encourage the provision of infrequently dispatched generation plant and additional risk management tools for retailers and large customers
- investigating whether and how the clearing manager could take ASX positions into account when assessing a wholesale market participant's wholesale market minimum prudential security level.

There are five ancillary services and they are designed to support the electricity system. Our work to **encourage participation in ancillary services markets** included:

- reviewing the benefits of introducing a national market for frequency keeping and/or introducing incentives for governor response
- implementing a national market for instantaneous reserves to enable the transfer of instantaneous reserves from one island to the other via the HVDC link. This solution went live in October 2016.

Enabling mass participation

Currently, the vast majority of people buy their electricity from a power company. However, in the future people may expect to be active players with more choices in the electricity market. In May 2017 we published a consultation paper seeking views on opportunities for more participation across the electricity supply chain, and on changes needed for consumers to benefit from innovation.

Entry, exit and regional expansion

As at 30 June 2017 there were 29 parent companies operating in New Zealand (compared to 22 at 30 June 2016, 19 at 30 June 2015 and 14 at 30 June 2014). As some parent companies operate more than one electricity brand, there were 40 retail brands available at 30 June 2017. The more brands consumers can choose from, the harder those brands have to compete with each other.

New electricity brands typically start in one of the larger cities and then expand further across the country. Between January and December 2016, consumers in 15 out of 16 regions had access to new brands—the West Coast was the only region that didn't experience any retail brand expansion. This compares favourably to 12 of 16 regions in 2015, and 16 of 16 regions in 2014.

Five brands entered the market in the 2016/17 financial year: Ecosmart, Electrica, EnergyClub NZ, NextGen Energy and Orbus. Some brands also exited the market, such as Electra Energy, which was purchased by Pulse Energy in 2017. Also, in July 2016 Trustpower announced that their Energy Direct brand would cease to operate—Energy Direct customers transitioned to Trustpower or switched to an alternate provider.

Sources: www.emi.ea.govt.nz/r/lef1v and www.emi.ea.govt.nz/r/cjgv2

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STRATEGY 2. IMPROVE CONSUMER PARTICIPATION

Consumer participation is important because competitive markets are enhanced when consumers effectively engage and actively participate in the process of buying and selling goods and services.

Consumers who actively participate in markets put pressure on suppliers to compete more vigorously and to innovate. We want to make it easier for consumers to choose the electricity supplier and tariff that is right for them. We also aim to enable consumers to use new technologies when it is efficient to do so.

Impact measures	Result	
a. Increased consumer awareness, understanding and motivation to participate in markets.	○ ○ ●	Switching remains high, with 24% of consumers switching energy company or planned to in the past 12 months and 60% indicating that switching is easy (compared to 59% in the 2015 survey). In total, 55% made some choice to review or switch their plan or provider (down from 59% in the 2015 survey).[5]
b. Increased consumer participation in both wholesale and retail markets.	○ ○ ●	There are strong indications of continued healthy levels of consumer participation—in particular there has been strong growth in the use of spot retailers.

If consumers are aware and motivated, they are more likely to investigate their options and shop around. Our work to **increase consumer awareness, understanding and motivation to participate in markets** included continuing the *What's My Number* campaign to provide information to consumers about:

- the ability to switch power companies
- the ease of switching
- the potential savings that can be made on their power bills.

We want to encourage consumer participation (such as shopping around or switching) because it means retailers have to compete with each other by providing different services and reconsidering their prices. Our work to **increase consumer participation in both wholesale and retail markets** included:

- further developing a more efficient method for calculating spot prices using real-time pricing and more accurate hours-ahead spot price forecasts
- encouraging the efficient use of dispatchable demand as a means to allow consumers to participate more directly in the spot market through:
  - » ensuring the correct incentives in the spot market for dispatchable demand (DD) constrained-on/off payments
  - » potentially enabling an aggregator to aggregate load over several GXPs and several retailers
- exploring the feasibility of allowing multiple traders to operate at an ICP to create an opportunity for new services, eg, community-owned and other small scale generators, to enter the market without requiring commercial arrangements with parties they are likely to be competing against.

5 Figures taken from the Electricity Authority's Electricity Consumers' Survey conducted by UMR Research in December 2016.

Switching adds competitive pressure

Every switch adds pressure on retailers to compete for customers, provide innovative services and reconsider their prices—which is great news for electricity consumers.

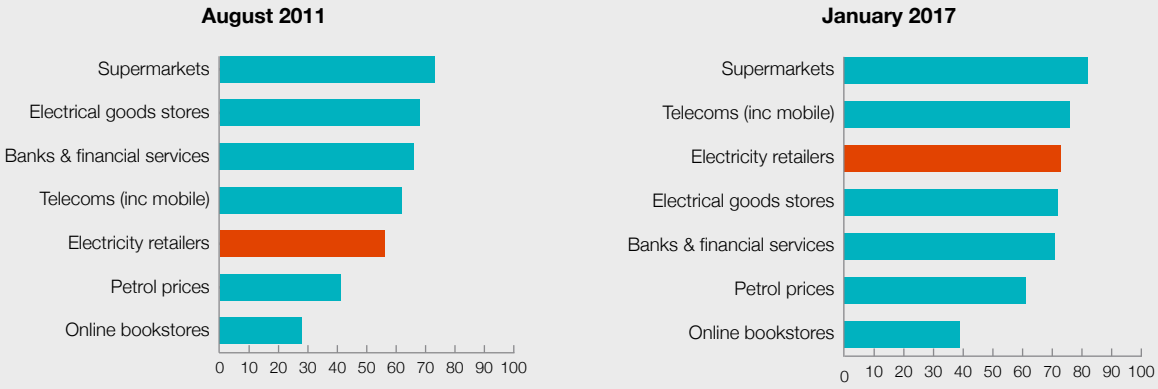
High switch rates by themselves are not a robust indicator of intense competition. It needs to be considered along with a range of other indicators when assessing the state of competition. For example, a low switch rate arising from retailers offering very similar tariffs would also be consistent with intense competition by retailers.

SWITCHING TRENDS BY CALENDAR YEAR:

2016	**414,544**	2014	**385,452**	2012	**356,746**
2015	**417,647**	2013	**396,534**		

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

Surveys indicate that consumers' view of the competitiveness of the electricity market has increased over time.



Source : Electricity Authority – UMR survey (sample size = 750)

New opportunities for consumers

To drive innovation and choice, we provide public access to certain data in our registry.

Some third parties use our data to support the tools they're building and deliver new services to consumers, as explained below:

- Glimp, originally a broadband comparison website, launched their 'Power Comparison' tool in July 2016. Glimp's tool is similar to *What's My Number*, and also shows projected monthly costs.
- Saveawatt launched the 'New Zealand's Big Winter Switch' campaign in early 2017, which encouraged consumers to collectively auction their business to New Zealand's electricity retailers to secure the best deal possible.

We expect activity like this to increase awareness and improve consumer participation in the market, which puts further pressure on retailers.

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STRATEGY 3. IMPROVE PRICE SIGNALS

We want to improve price signals to help inform the investment and consumption decisions of industry participants and consumers.

We also work to establish markets (where efficient and practicable) and disseminate price data and information.

Impact measures	Result	
a. Increased range of products or services with prices.*	○ ○ ●	The range of products has increased significantly since the Authority was formed in 2010. Work has continued to enhance and expand products and services, including cap products.
b. Increased accuracy of price forecasts.**	○ ○ ●	Initiatives to date provide actual and anecdotal evidence of increased accuracy. Further initiatives are underway such as improving the system operator's medium–term demand forecast.
c. Reduced instances of inefficient prices, including during scarcity events.***	○ ○ ●	High prices on 2 June 2016 were investigated and compliance action taken. Offer behaviour was found to be inconsistent with a high standard of trading conduct. A review will be published in early 2017/18 looking at trading on 2 June 2016 as well as other similar events, and how the wholesale electricity market performed in regard to those events. Offer behaviour on 8 December 2016 is the subject of an ongoing compliance investigation.
d. More efficient price signals for residential and small and medium enterprise (SME) consumers.	N/A	Projects underway. Measurable results may not be possible for several years.

Notes:

The SOI measure 'Improved efficiency in transmission and distribution networks' has been removed as we are unable to measure it at this stage.

* For example, the ASX New Zealand electricity futures market has a quarterly hedge product with prices listed for every quarter for 3.5–4 years in the future, which are traded and settled daily. The Authority encourages the development of new products to meet consumer risk management needs, such as new hedge products on the futures market.

** The wholesale electricity market produces forecast electricity prices ahead of and during each half-hour trading period. Prices are typically finalised two days after the trading period. The Authority seeks to ensure that the design and operation of the wholesale electricity market encourages accurate forecast prices.

*** Sometimes instances of inefficient pricing are covered by the Code and result in a compliance process and these sorts of events are also included in this measure.

An increased range of products or services with prices means consumers and market participants have more choice to find a product or service that meets their needs. Our work to **increase the range of products or services with prices** included:

- continuing to investigate methods to allow participants to use a futures position to offset energy market prudential security requirements
- working with the ASX to introduce cap products, to give market participants access to products that help to manage dry-year and generation outage risks. We expect the ASX to list the cap products by 31 December 2017.

It's important for price forecasts to be accurate because many market participants and stakeholders rely on forecasts to make operational and investment decisions. Our work to **increase the accuracy of price forecasts** included considering ways to improve the accuracy of hours-ahead forecasts of spot market prices.

We want to reduce inefficient prices as much as possible because inefficient prices don't accurately reflect market conditions, making it harder for consumers and participants to make efficient decisions. Our work to **reduce instances of inefficient prices, including during scarcity events**, included investigating high prices on 2 June 2016. The Board concluded the event did not constitute an undesirable trading situation and, instead, requested a market performance review. The review has looked at trading on 2 June 2016, as well as other similar events, and how the wholesale electricity market performed in regard to those events. It will be published in early 2017/18.

Residential and SME consumers benefit from efficient price signals because they can make better decisions about how and when they consume electricity. Our work to **create more efficient price signals for residential and SME consumers** included:

- the transmission and distribution pricing projects, where the focus is on ensuring these prices are service-based and cost-reflective
- consulting on, and completing, a review of the DGPPs, leading to more efficient signals for distributed generation and more efficient investment, and the operation of distributed generation.

Million dollar savings for consumers

Distributed generators (DGs) are generators connected to a local electricity distribution network, rather than the national grid. Medium and large-scale DGs earn income by supplying electricity to the wholesale electricity market and, under a set of default rules, they can also receive side payments from distributors.

Distributors make these side payments because if DGs are connected to the distributor's network, the distributor can avoid paying some transmission charges that it would otherwise have to pay to Transpower (the national grid owner). As a result, a DG might be built in a location where it is not needed, simply to take advantage of this side payment. These unnecessary investments actually add to future transmission costs, which end up being paid by consumers as part of their electricity bills.

On 6 December 2016, we decided to change the default rules so that side payments will only be made when DGs actually reduce transmission costs to consumers and improve the reliability of supply they receive.

For new generators, this change was introduced immediately. For existing generators, we will progressively introduce the change in different parts of the country from 1 April 2018, to be fully implemented by 1 October 2019.

Once fully implemented, the change is expected to save consumers many millions of dollars per year. It will significantly reduce the subsidy aspect of the current arrangements, remove inefficient incentives on the investment in (and operation of) distributed generation, and enhance competition.

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STRATEGY 4. INCREASE FLEXIBILITY AND RESILIENCE

We want to enable the electricity sector to respond efficiently to change.

Change may be brought about, for example, by changing market circumstances, unexpected events, or new technologies and business practices.

It also includes ensuring security of supply arrangements provide the information and incentives that participants need to make efficient decisions.

Impact measures	Result
a. The customer transfer process works effectively in the event of retailer default.	○ ○ ● No retailer defaults have occurred since the process was introduced. A review of the effectiveness of the arrangements will only take place if there is a default and the process is used.
b. Improving the cost and effectiveness of the frequency management regime.*	○ ○ ● Reduction in frequency-keeping requirements due to frequency-keeping controls (FKC) and multiple frequency-keeping mean that the costs of frequency keeping have fallen dramatically.

Notes:

The SOI measure 'Effective management of security of supply events' has been removed as it duplicated an outcome measure on page 20 of the 2014–2018 SOI.

* Frequency management services are ancillary services contracted by the system operator (see glossary for more information).

We want **the customer transfer process to work effectively** to ensure consumers have an uninterrupted electricity supply during the transfer process.

It's important for the frequency management regime to be cost-effective because the New Zealand grid is maintained at a specific frequency on a second-by-second basis. Our work to **improve the cost and effectiveness of the frequency management regime** included:

- reviewing future frequency-keeping service requirements with the use of HVDC FKC
- reviewing low and high voltage fault ride-through Asset Owner Performance Obligations to make sure these are fit-for-purpose with the changing generation mix.

Security of supply—ongoing monitoring and vigilance

In the last decade, New Zealand has experienced seasons when relatively little water flowed into South Island hydro lakes. We work closely with Transpower to monitor and assess security of supply. We also work with others to ensure industry participants have access to the information they need to make wise investment decisions, and incentives to maintain supply to their customers.

Currently, two mechanisms contribute to security of supply: the customer compensation scheme (CCS) and the stress testing regime. The CCS requires electricity retailers to pay their customers $10.50 per week for every week that an official conservation campaign occurs. The stress testing regime requires parties purchasing from the spot electricity market—electricity retailers and several industrial consumers—to calculate their exposure to high spot prices in scenarios defined by the Authority for each forthcoming quarter.

Although both mechanisms are robust and fit-for-purpose, we decided to review both in light of recent and potential thermal plant closures. In October 2016, we published consultation papers on both reviews. We have reviewed submissions on these consultations and the Board has made a decision about some modest refinements to the stress test regime, and considered refinements to the CCS. We intend to announce the decisions shortly, along with publishing the supporting reasons for them.

We want to keep the lights on

The HVDC is commonly known as the 'Cook Strait cable'. It carries electricity in both directions between the North and South Islands. Losing the cable would be a dire situation for New Zealand because most electricity is generated in the lower South Island, and most electricity is needed in the upper North Island.

In March 2017 Transpower provided a report to the Authority confirming the HVDC is physically resilient.

In fact, there are actually three cables under Cook Strait—so if one cable was lost, the impact would be minimal. In addition, the cables are laid out separately on the sea bed, which makes inspections easier and reduces the likelihood of all three cables being damaged.

Transpower's report also outlined their operational response and the potential security of supply implications. Overall, the risks are well understood and managed.

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STRATEGY 5. ENSURE FIT-FOR-PURPOSE MARKET SERVICES

We want to ensure fit-for-purpose market services to support the efficient and effective operation of the wholesale and retail electricity markets.

The purpose of this strategy is to ensure that our market operations service providers and the system operator provide efficient, effective, flexible and scalable systems and services.

We work with our market operations service providers and the system operator to provide services and systems that:

- increase market efficiency through enabling interoperability to participant systems, adapting to changes in IT technology and automating transaction processes
- ensure effective market operation through appropriate system reliability and resilience
- facilitate market development through the use of flexible and scalable systems.

Impact measures	Result	
a. Market services are resilient to adverse events, as measured by case-by-case analysis.	○ ○ ●	Analysis was not required or undertaken during 2016/17 because no adverse events affected the delivery of market services. However, providers undertake regular testing of disaster recovery and business continuity planning to increase their resilience to adverse events.
b. Effective implementation of market development initiatives, as measured by case-by-case analysis, including participant feedback.	○ ○ ●	One implementation project was underway this year (extended reserve) and this is ongoing with the transition to the new system scheduled to commence in April 2018.*
c. Cost of significant system changes/ enhancements independently reviewed for value-for-money.	○ ○ ●	As part of our implementation of the new extended reserve manager role, an external audit of cost increases was undertaken. Overall the costs were found to be reasonable.

Note:

The SOI measure 'Participants consider services meet their needs' has been removed as it duplicated output measures for market services.

* In the 2015/16 financial year we renewed four market operator service provider agreements with NZX, and our system operator service provider contract with Transpower.

Reliable, robust and secure service

Following a robust tender process we reappointed Jade Software as the registry manager supplier; the seven-year agreement was effective from 1 May 2017.

The registry manager plays a significant role—they are responsible for facilitating real-time consumer switching, supporting negotiations between traders, providing electricity industry statistics, and being a secure channel between retailers, distributors and metering equipment providers.

Jade has proven their ability to maintain a deep understanding of the electricity industry and its participants, and translates this into a highly reliable, robust and secure service. We are confident the registry platform developed by Jade, and managed by their team on an ongoing basis, will remain resilient.

Modernised service improves data access

In October 2016, and in collaboration with NZX, we released the new WITS Data Hub.

The WITS Data Hub contains an upgraded and modernised version of the WITS Free to Air interface; an online service providing daily and historical data about the New Zealand electricity market. The new interface makes data more accessible and easier for interested parties, including consumers, to analyse and visualise data in new ways, and to encourage innovation.

The new interface allows users to customise how they view data, is easy to navigate and is fully usable on mobile devices. We anticipate that additional features will be developed in the coming months.

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STRATEGY 6. IMPROVE COMPLIANCE

Improving compliance plays a key role in ensuring the integrity of the electricity markets.

We take a risk-based and proportionate approach to compliance, recognising that most industry participants want to comply with their regulatory obligations voluntarily, or can be encouraged or induced to do so.

Our focus is on facilitating voluntary compliance by providing information, education, encouragement and assistance. Serious compliance matters are formally investigated and may be subject to enforcement action.

Impact measures	Result	
a. Downward trend in frequency of non-compliance (same type of event, same participant).	○ ○ ●	The underlying trend of breach notifications is a continuing small reduction.
b. Downward trend in the number of serious breaches.	○ ○ ●	The number of serious breaches formally investigated this year was four, down from six in 2015/16 and 18 in 2014/15. Because the number of investigations remains small, and some are one-off breaches, we do not consider a trend has emerged.
c. Increased awareness of the Act, regulations and Code among participants.	○ ○ ●	Previously awareness levels were assessed using an annual survey. The 2017 survey has been replaced by targeted reviews. Overall awareness levels are considered good. Longer-term monitoring is required to establish clear trends.

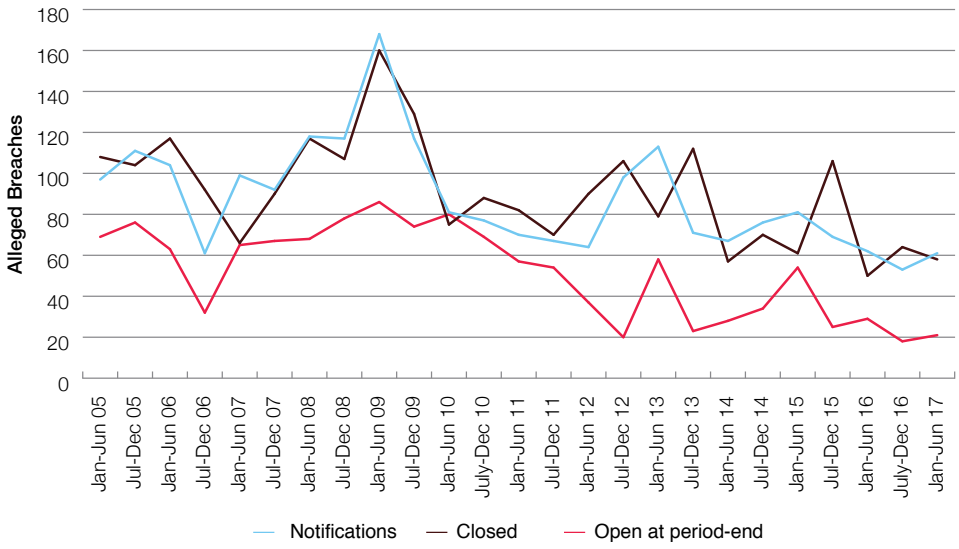
To create a **downward trend in the frequency of non-compliance**, we continued to monitor the progress of non-compliant participants in 2016/17.

Figure 5 shows the number of breach notifications, closed cases and open at period end. We do not consider that a **trend in the number of serious breaches** has emerged. We will continue to investigate serious breaches and any underlying causes or trends during 2017/18.

We take a proactive approach to improving **awareness of the Act, regulations and Code among participants**, so our work to create this in 2016/17 included:

- encouraging awareness through seminars, meetings, site visits, workshops and publishing information through guidelines, fact sheets and case studies
- using the *Compliance Update* to inform industry participants of key decisions by the Authority's Compliance Committee
- assessing awareness levels by conducting targeted reviews and long-term monitoring to establish clear trends.

Figure 5: Compliance—breach notifications, closed and open at period-end



Source: Electricity Authority

Reduced cost and effort

Electricity market participants are regularly audited to ensure they are complying with the Code, and ensure the integrity of their processes. Audits also ensure that buyers in the electricity market are correctly invoiced for purchases, and that participants comply with Code requirements. The participant audit regime covers these aspects and has been in place since 2008.

Effective compliance has obvious benefits for industry participants and consumers. But it's just as important to ensure compliance processes, such as the audit regime, are efficient.

In early 2015 we began a review of the participant audit regime to ensure the regime's purpose was well defined. Our end goal was to improve compliance and reduce the cost and effort associated with the regime for both the participants and the Authority.

We consulted with affected parties in October 2016 and February 2017, and in May 2017 published a collection of risk registers and updated a collection of audit guidelines. We also amended the Code, effective 1 June 2017, to introduce operational enhancements and better align audit regime governance with international best practice.

We expect to see results in the 2017/18 financial year.

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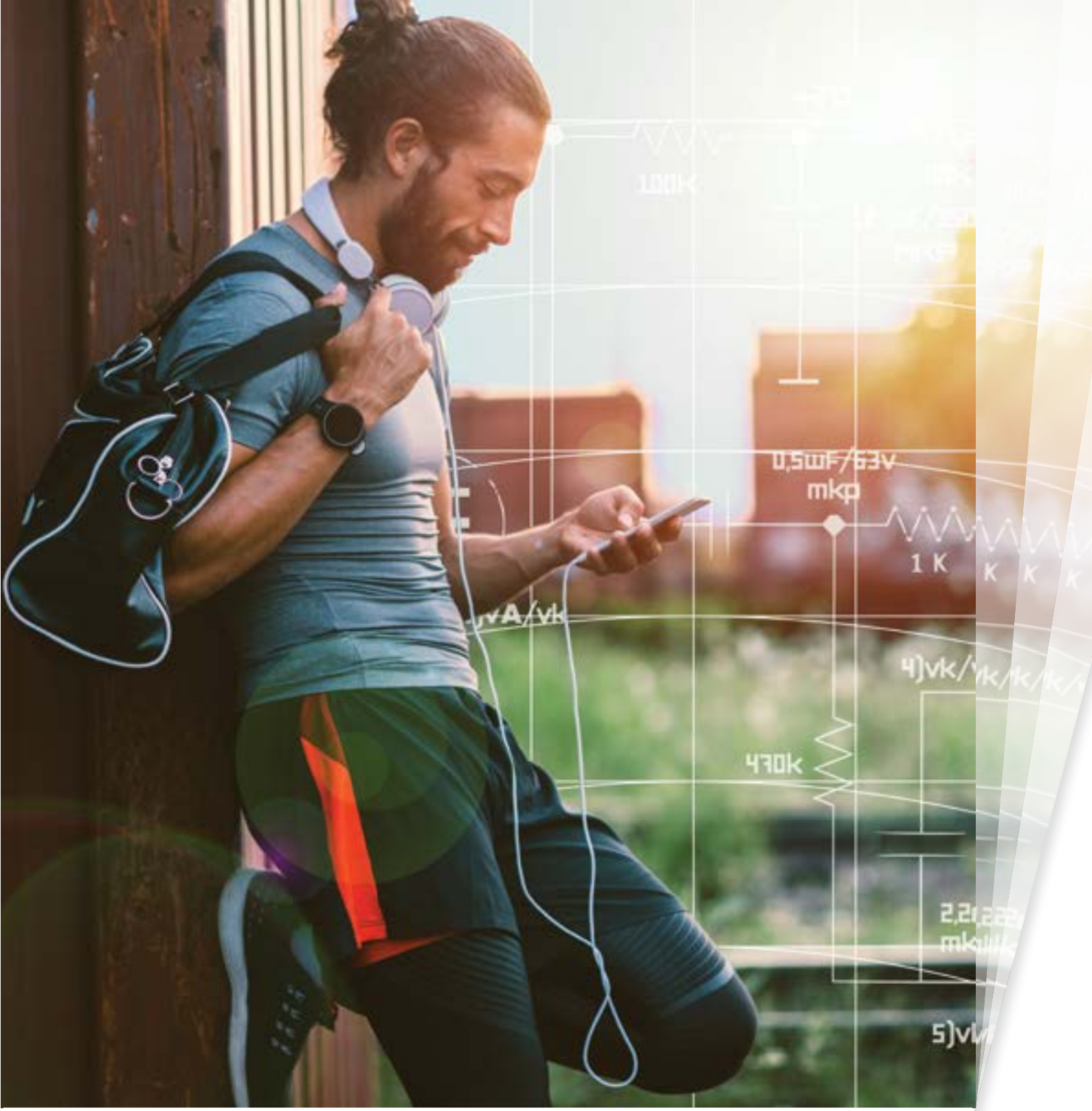

PART THREE

STATEMENT OF PERFORMANCE

STATEMENT OF PERFORMANCE

This part of the Annual Report sets out the Authority's performance for its functions.

Forecast service performance was set out in our *2016/17 SPE*.

Our strategic intentions and strategies are delivered through our functions—the services we provide.

Our targets and results for 2016/17 are outlined below. Performance measures for our functions were included in the *2016/17 SPE*.

The bold performance measures in the tables that follow are those contained in the Estimates.[6]

Electricity industry governance and market operations

What is intended to be achieved

This appropriation is intended to achieve effective promotion of competition in, reliable supply by, and the efficient operation of the electricity industry for the long-term benefit of consumers.

Scope of appropriation

This appropriation is limited to formulating, monitoring and enforcing compliance with the regulations and Code governing the electricity industry and other outputs in accordance with the statutory functions under the Electricity Industry Act 2010 (the Act); and delivery of core electricity system and market operation functions, carried out under service provider contracts.

Our functions under this appropriation

This appropriation funds our operations, including Board members' costs, the Rulings Panel, the Security and Reliability Council, advisory groups and the operation of the electricity system and market operations as detailed below. This includes our four main functions, which are specified in the sections that follow:

6 The Estimates of Appropriations for the Government of New Zealand for the Year Ending 30 June 2017 is the Government-level budget, available at www.treasury.govt.nz/budget/2016

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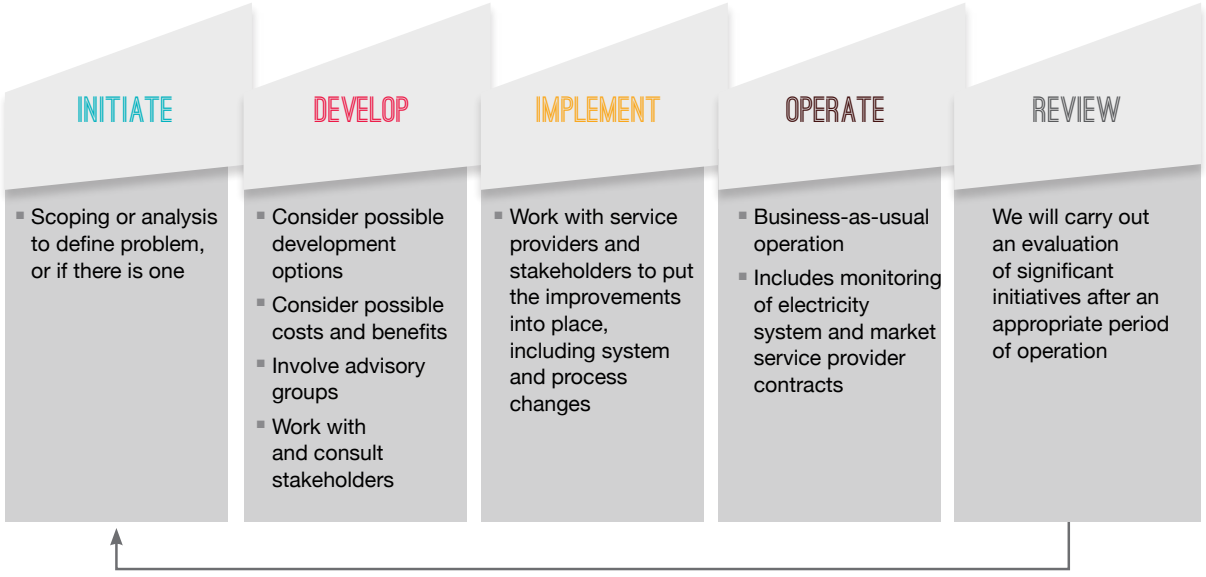
1. **Promote market development:** we promote development of the electricity markets by making amendments to the Code and through market facilitation measures.[7]
2. **Monitor, inform and educate:** we monitor market behaviour, make data, information and tools available, and educate consumers and participants.
3. **Operate the electricity system and markets:** we are responsible for the day-to-day operation of the electricity system and markets, delivered through contracts with service providers.
4. **Enforce compliance:** we monitor, investigate and enforce compliance with the Act, relevant regulations and the Code.

Figure 6: Our market development cycle

Our market development cycle, shown in Figure 6, ensures that market improvement initiatives are effectively implemented and the results assessed.



7 Market facilitation measures are actions we can take short of amending the Code or recommending changes to regulations. This can include working directly with participants to develop desired results, education programmes, and the publication of guidelines and of model agreements.

1. Promote market development

Our market development work promotes competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

We have two key tools at our disposal to develop the market: amending the Code; and adopting market facilitation measures. We use these tools to ensure market arrangements are appropriate for today's needs and flexible enough to enable tomorrow's innovations.

We use post-implementation reviews of key projects to assess whether our initiatives deliver the expected benefits. We also carry out overall monitoring of the performance of the market under our monitor, inform and educate function (see page 52).

The Wholesale Advisory Group (WAG), Retail Advisory Group (RAG), stakeholders, and contracted service providers have all made significant contributions to our market development work.

Top priority projects

Strategy	Project	Scheduled timeframe for 2016/17	Result for 2016/17
Reduce barriers	**Hedge market development**	Work with ASX to design and set up a cap product with robust and frequent pricing. Evaluate if ASX positions can offset energy market prudential security requirements. Decide enhancements to arrangements for ASX products.	 **Partially achieved.** Cap products: The Authority has worked with the ASX to design and set up two cap products for listing – strike prices of $130 and $300 respectively. We expect the ASX to list the cap products by 31 December 2017. Prudential offset: NZX (clearing manager), ASX and the Authority have undertaken work on evaluating if ASX positions can offset energy market prudential security arrangements. The evaluation was completed within 2016/17, with publication expected in the first quarter of the 2017/18 year. ASX enhancements: Project was put on hold because it became apparent it was important to get the caps listed before further enhancements were made to existing products.
Reduce barriers	**Spot market refinements**	Real-time pricing: complete consultation on Code amendment proposal, if required. Hours-ahead market: complete assessment of options and decide whether to develop a Code amendment proposal. Start development of Code amendment proposal, if required.	 **Partially achieved.** Real-time pricing: Off target on timing. Delayed because of: ■ our request that the system operator re-test and verify its initial cost estimate for RTP ■ the decision to have the proposed design assured by representatives from PJM Interconnection, an internationally recognised authority. A consultation paper with a detailed Code amendment proposal will be published in July 2017. Hours-ahead market: We completed an assessment, including consultation, and in June 2017 decided not to develop a Code amendment proposal.

Strategy	Project	Scheduled timeframe for 2016/17	Result for 2016/17
Improve consumer participation	**Consumer access to markets**	Identify issues and scope potential options for: ▪ data and data exchange ▪ multiple trading arrangements at an ICP ▪ barriers to consumer participation in electricity markets.	**Achieved.** Data and data exchange: We have scoped the problem and issues. We have developed a consultation paper and expect to consult on the issues in the first quarter of the 2017/18 year. Multiple trading arrangements at an ICP: The issues have been identified and options scoped. An issues paper is being developed and is expected to be published in the 2017/18 year. Barriers to consumer participation in electricity markets: The issues have been identified and the next step was undertaken, which was the release of an issues paper in May 2017.
Improve consumer participation	***What's My Number* programme**	Successful programme delivery, as indicated by the annual survey for the 2016 calendar year.	**Achieved.** The 2016/17 campaign was successfully delivered in two phases. The 2016 survey results show that the campaign continues to raise awareness of the benefits of comparing and switching retailers, and that consumers value an independent website for this purpose.
Improve price signals	**Transmission pricing investigation**	Complete decision and reasons paper. Finalise transmission pricing guidelines.	**Not achieved.** Off target on timing. Delayed because of issues with the cost-benefit analysis undertaken on the Authority's behalf.
Improve price signals	**Distribution pricing review**	Hold a conference in August 2016 to discuss the work to date and results of consultation in 2015/16. Determine next steps by the first quarter of the 2017 calendar year.	**Achieved.** Conference held. Next steps were approved by the Board in October 2016.
Increase flexibility and resilience	**Security outlook**	Consult on and complete decisions on initial reviews of the customer compensation and stress testing regimes.	**Achieved.** Consultations on the review of both measures closed on 6 December 2016. The Board considered the issues raised in submissions. Final decisions were made and will be released in the 2017/18 year.

Performance measures

Desired result	Target	Result for 2016/17
Top priority market development projects, as listed in the SPE (and above), achieve planned deliverables for the year	**80%**	**Not achieved.** Four projects achieved their targets, two partially achieved and one did not achieve its targets.
Code development decisions meet statutory requirements and internal quality standards, including cost-benefit assessment, as assessed by external review.	**Key consultation and decision papers: 75% rated as very good, 100% as good or very good against quality of regulation standards.***	**Achieved:** Four papers were externally reviewed. All papers (100%) received 'good' or 'very good' ratings. Three papers (75%) were rated as 'very good'.
	Key consultation and decision papers: 75% rated as very good, 100% as good or very good against writing quality standards.**	**Achieved.** Eight papers were externally reviewed. All papers (100%) received 'very good' ratings.
No legal challenges that result in an Authority decision being overturned.***	Zero (0) successful challenges.	**Achieved.** There were no successful legal challenges in the year.
Code amendments deliver intended benefits and impacts on market behaviour.	Post-implementation reviews show that market behaviour altered in intended direction identified when the Code or market facilitation measure was approved. In 2016/17 we plan to complete one to two post-implementation reviews.	**Not achieved.** Post-implementation review completed on switch save protection scheme. The review showed that the change did not achieve intended benefits and impacts on market behaviour.

Notes:

- Measures in **bold** are those in the Estimates published as part of the 2016 Budget. See www.treasury.govt.nz/budget/2016

* The standards include meeting the requirements of section 39 of the Act and the processes and standards included in our foundation documents, available at www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents. Assessment is by external expert reviewers using a five-point scale of: very poor, poor, average, good, very good.

** Assessment is by external expert reviewers using a five-point scale of: very poor, poor, average, good, very good.

*** This measure relates to Code amendment decisions, which may be challenged in court through judicial review. Our processes and all subsequent decisions are expected to be able to withstand scrutiny through the judicial review process.

2. Monitor, inform and educate

Our market monitoring, information and education work focuses on improving the availability of data, information and tools and improving awareness and understanding of how electricity markets function. Transparency and understanding are vital to ensure the competitive, reliable and efficient operation of the electricity market.

Our market analysis function improves understanding by identifying behaviours that are potentially inconsistent with our objective. It also provides appropriate feedback into the market development work.

We may also undertake reviews of any matters relating to the electricity industry that are specified by the Minister under section 18 of the Act.

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Performance measures

Desired result	Target	Result for 2016/17
Robust investigation, analysis and reporting on anomalous events.	Minimum of two reports completed per annum.	**Achieved.** Three reports completed and published. One report completed and still to be published.
	Key reports rated as good or very good against writing quality standards.*	**Achieved.** *Review of high prices on 2 June 2016* and *Review of pricing and load control by The Lines Company* were both rated as 'very good' by the external reviewer.
Reviews requested by the Minister under section 18 of the Act.	Reports under section 18 of the Act rated as good or very good by independent peer review.*	N/A The Authority received no requests under section 18.
Electricity market performance reviews that provide an understanding of progress against our statutory objective.	Electricity market performance review of 2016 completed by 31 March 2017.	In the past we have published annual reviews of the results being delivered by the electricity markets. In 2016/17 we have moved to publication of market performance information on an ongoing basis on our website. This allows stakeholders to more easily access up-to-date information.
	Electricity market performance review rated as good or very good against writing quality standards.*	N/A Due to the changes in the way we produce these reports, it is no longer appropriate to review these against writing quality standards.
Making information available to enable consumers to understand electricity market performance.	Increase the amount of information available to consumers via the Authority's website.	**Achieved.** Increased information available.**
	Increase the number of visits to the consumer section of the Authority's website by 5%.	**Achieved.** Visits increased by 214% from 15,390 to 48,343.***
Making available data, insights and analytical tools.	Develop and make available six or more new reports on the EMI website.****	**Achieved.** Seven new reports were published in 2016/17.

Notes:

* Assessment is by external expert reviewers using a five-point scale of: very poor, poor, average, good, very good.

** Reporting is based on new or updated content placed on the 'Consumers' section of the website during the year. New pages: 'Will I still get my local energy trust rebate if I switch electricity retailer?', 'Why is my electricity bill higher in winter?', 'How could spot prices affect my bill?' Updated pages: 'What are my rights as an electricity consumer?', 'How do I switch electricity companies', 'Is a spot price contract right for me?'.

*** The 'My Meter' page accounts for 45% of page views between 1 July 2016 and 30 June 2017. However, it is likely that industry participants (rather than consumers) are the primary users of this page. If we exclude the 'My Meter' results, the increase in visits to the Consumers' section of the Authority's website is 115%.

**** The EMI website is explained, and available, at www.emi.ea.govt.nz

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3. Operate the electricity system and markets

We are responsible for the day-to-day (real-time) efficient and reliable operation of the electricity system and markets. To achieve this, we contract out all the functions of:

- The **system operator** who 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.[8]
- The **wholesale information and trading system** (WITS) which is used to transfer information among participants, especially the uploading of bids and offers.
- The **reconciliation manager** who allocates volumes of electricity to generators and purchasers. It uses metering information supplied by participants and calculates unaccounted for electricity.
- The **pricing manager** who calculates and publishes final prices, which are used by the clearing manager to calculate invoices.
- The **clearing manager** who 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**, 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** who conducts regular auctions of FTRs, which are a locational hedge product.
- In the 2017/18 year the new extended reserve manager service provider role will commence operations. This new role plays an important part in the operation of the new extended reserve regime, which is being implemented to improve the way in which the power system responds to major outages and other events.[9]

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

The security management output class, described on page 58, also contributes to the operation of the electricity system and markets.

Top priority projects

Strategy	Project	Scheduled timeframe for 2016/17	Result for 2016/17
Increase flexibility and resilience	**Extended reserve**	Complete consultation on selection methodology. Complete consultation on technical requirements schedule. Complete consultation on draft procurement schedule.	**Partially achieved.** We completed consultations on selection methodology and technical requirements schedule in November 2016. Consultation on draft procurement schedule is off target on timing. Planned to be released in September 2017.
Ensure fit-for-purpose market services	**Registry service provider tender**	Negotiations with the preferred tenderer completed by September 2016. New agreement becomes effective in May 2017.	**Achieved.** Project completed. The new agreement became effective on 1 May 2017.

8 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.

9 For more information on service provider contracts, which include detailed performance specifications, and reports, see the operations section of our website www.ea.govt.nz

Performance measures

Desired result	Target	Result for 2016/17
Electricity system and market services performance will be assessed by monitoring provider performance to ensure that contract, Code and other relevant performance obligations are met.	**Contract, Code and performance standards met.***	**Achieved.** Monitoring shows market operation service provider performance requirements are being met.**
	Annual audits of market service providers do not reveal any significant issues.	**Achieved.** Annual audits completed.*** No material issues identified.
	The percentage of system operator and market service users who rate the overall services provided as good or very good.****	**Achieved.** 81% of respondents to the user survey rated overall performance as good or very good using a five-point scale.
Market administrator services delivered in accordance with Code.	No significant breaches as a result of the Authority carrying out its market administration function.*****	**Achieved.** No significant breaches in the year.
Successful implementation of Code amendments or market facilitation measures.	At least 90% of implementation projects meet timeframe and budget targets for the year.	**Not achieved.** The implementation project outlined above (extended reserve) has met two out of three of its timeframe targets for the year as well as its budget target for the year.

Notes:

- Measures in **bold** are those in the Estimates published as part of the 2016 Budget.

* Performance standards for the system operator include the principal performance obligations (PPOs), which are contained in the Code, available at: www.ea.govt.nz/code-and-compliance/the-code. Breaches of the PPOs are investigated by the Compliance team. Measurement of contract performance includes the annual assessment of the system operator's performance published on our website at www.ea.govt.nz/operations/market-operation-service-providers/system-operator/annual-system-operator-reviews-and-assessments MOSP Code and contract performance standards, including availability standards, vary between the various providers. Details are available on the Authority's website.

** The Authority monitors the performance of market operation service providers—including the system operator—through regular reporting and review. The Authority also undertakes an annual review of how the system operator is performing its role; this reflects the role's important contribution to the New Zealand electricity industry and its significant cost to the Authority. The most recent annual review of system operator performance is for the year ended 30 June 2016. It concludes that the system operator continued to make meaningful changes which contributed to a clear trend of improving performance. Copies of the annual reviews are available at the Authority website.

*** The annual audit for the registry service provider covered the period 1 March 2016—26 January 2017. All other audits of market service providers covered the period 1 March 2016—28 February 2017.

**** Measured by user surveys carried out by the system operator and market service providers. Users are asked to rate services using a five-point scale of: very poor, poor, average, good, very good.

***** Breaches by the market administrator are investigated by the Compliance team. The absence of breaches is an indicator that standards are met. A significant breach is one that results in at least a warning letter to the CEO.

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4. Enforce compliance

We are responsible for monitoring, investigating and enforcing compliance with the Act, regulations made under the Act, and the Code.

Performance measures

Desired result	Target	Result for 2016/17
Percentage of investigations decided within 12 months of the investigation being opened. *	**100%****	**Achieved.** 100%
Percentage of investigations decided within eight months of the investigation being opened.	90%	**Achieved.** 98%
Percentage of investigations decided within four months of the investigation being opened.	85%	**Achieved.** 96%
Sound compliance processes followed.	All reports to the Compliance Committee comply with the Authority's quality standards and case management procedures.	**Achieved.**

Note:

- Measures in **bold** are those in the Estimates published as part of the 2016 Budget.
* Investigations in this context include all fact finding enquiries as well as formal investigations.
** The target for 2016/17 excludes cases on hand at 1 July 2016 that are over six months old.

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Electricity industry governance and market operations: Appropriation and cost breakdown

Actual 2015/16 $000	Electricity industry governance and market operations appropriation	Actual 2016/17 $000	Budget 2016/17 $000
72,520	Revenue from the Crown	73,152	76,037
72,520	Expenditure	73,152	76,037

The above table includes the amount approved in the Government's Estimates of appropriations for 2016/17 of $76.037 million; representing the maximum expenditure that can be incurred. The following table provides a breakdown of the components of this expenditure.

Actual 2015/16 $000	Electricity industry governance and market operations expenditure	Actual 2016/17 $000	Budget 2016/17 $000
23,903	System operator—operating expenses	25,351	25,760
17,287	System operator—capital-related expenses	18,867	20,130
41,190	**System operator expenses**	**44,218**	**45,890**
2,016	Service provider—clearing manager	2,188	2,245
1,430	Service provider—wholesale information and trading system	1,710	1,604
1,591	Service provider—pricing manager	725	736
1,077	Service provider—reconciliation manager	866	882
550	Service provider—registry	563	562
807	Service provider—FTR manager	868	914
–	Service provider—extended reserves manager	–	25
2,228	Service provider—depreciation and amortisation	1,247	1,799
197	Service provider—IT costs	122	151
9,896	**Other service provider expenses**	**8,289**	**8,918**
2,959	**Facilitating consumer participation expenses**	**2,493**	**2,500**
5,413	Authority operations—external work programme support	4,745	4,952
9,654	Authority operations—personnel	9,926	9,895
3,408	Authority operations—other operating costs	3,481	3,882
18,475	**Authority operating expenses**	**18,152**	**18,729**
72,520	**Total expenses**	**73,152**	**76,037**

Security management appropriation

What is intended to be achieved

This appropriation is intended to achieve enhanced security of supply in the electricity system during periods of emerging or actual security situations. These are expected to be rare. This appropriation will not be drawn on in the normal course of events.

Scope of appropriation

The appropriation is limited to the management of electricity supply emergency events by the system operator, if required, including:

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

Security management is a multi-year appropriation for the period 2012/13 to 2016/17. Expenses under this appropriation can only be incurred by the system operator. The Authority itself cannot incur expenses under this appropriation.

Our functions under this appropriation

The system operator is responsible for ongoing security monitoring and emergency management.[10] The security management functions of the system operator include the preparation of the emergency management policy, which is incorporated into the Code by reference following our review and approval. The policy sets out the steps the system operator will take, and encourage industry participants to undertake, during an extended emergency.

Our primary role in respect to security of electricity supply is to ensure that the Code promotes an efficient level of supply reliability. This includes specifying the functions of the system operator, how the functions are to be performed, and to set requirements for transparency and performance. We also monitor system operator performance. This work is covered under the **promoting market development** and **operating the electricity system and markets** functions respectively of the electricity industry and market operations appropriation (see pages 50 to 57).

Our role in respect to this security management appropriation is limited to addressing requests from the system operator to use these funds. Our approval of any request is subject to an agreed process and criteria. The process requires the system operator to provide evidence that there is an actual or emerging security event, and to describe the actions it intends to take using the funds and how the use of these funds will be monitored. Agreeing this information in advance can help enable the Authority to assess the effectiveness of the actions and the funding during and after the event.

The system operator will seek our approval for funding from this appropriation on a case-by-case basis, when it considers increased monitoring or security management actions are justified. However, the system operator can incur up to $300,000 of costs in this area without prior Authority approval.

Performance measures

Security management contributes to our reliability outcome (see pages 19 to 20 of the *2014–2018 SOI*). The effective management of dry-years and emergency events, as measured by case-by-case-analysis, is one of a suite of statistics we use to measure whether there are efficient levels of reliable electricity supply. Should the system operator seek funding under this appropriation to manage a dry-year or emergency event, its utilisation of that funding would be reviewed as part of the subsequent analysis. The results of the review would be published on our website and a summary would be reported in the outcomes section of our Annual Report. However, there were no such events during 2016/17.

Given that the relevant outcome and function performance measures are already captured elsewhere, the measures below are limited to those that demonstrate that the Authority has fulfilled its obligations in relation to this appropriation.

10 Section 8(2) of the Electricity Industry Act 2010 states that as well as acting as system operator for the electricity industry, the system operator must: (a) provide information, and short- to medium-term forecasting on all aspects of security of supply; and (b) manage supply emergencies. Information about the system operator's security management role is available on its website at www.systemoperator.co.nz/security-supply

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Desired result	Target	Result for 2016/17	
Decisions in relation to the security management appropriation made in accordance with the agreed process and criteria. *	**Process and criteria met.**	N/A	No applications were received under this appropriation.
	Decisions made on requests from the system operator for funding under this appropriation within 15 working days.	N/A	No applications were received under this appropriation.

Notes:

- Measures in **bold** are those in the Estimates published as part of the 2016 Budget.
- * Funding decisions by the Electricity Authority follow the process and criteria agreed between the Electricity Authority and the system operator.

Appropriation

Actual 2015/16 $000	Security management appropriation*	Actual 2016/17 $000	Budget 2016/17 $000
–	Revenue from the Crown	–	1,200
–	Expenditure	–	1,200

Notes:

* This is a multi-year appropriation of $6 million over five years (commencing on 1 July 2012 and expiring on 30 June 2017). This appropriation is not routinely utilised; however, annual budgeted amounts are provided for in the Authority's *2016/17 SPE*, to provide consistency with the appropriations contained in the Government's Estimates documents for Vote Business, Science and Innovation.

Electricity litigation fund appropriation

What is intended to be achieved

This appropriation is intended to ensure that the Authority is able to participate in litigation effectively and without delay.

Scope of appropriation

This appropriation is limited to the costs and expenses the Authority incurs in participating in litigation.

Our functions under this appropriation

Our functions under this appropriation include defending cases against the Authority and taking enforcement action under our enforcing compliance function.

Performance measures

Desired result	Target	Result for 2016/17
The Electricity Authority uses the litigation fund in accordance with the criteria for use of the fund.*	**Criteria met.**	**Achieved.**

Notes:

- Measures in **bold** are those in the Estimates published as part of the 2016 Budget.
- * The criteria are set out in the output agreement between the Minister of Energy and Resources and the Authority.

The following cases were covered by the fund in 2016/17:

- On 29 July 2016, 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. On 2 December 2016, the High Court issued its decision declining Trustpower's application. The Court declined to interfere for the reasons the Authority advanced in submissions, namely that the claim was premature and, in any event, nothing had gone 'off the rails' in terms of process.
- On 31 August 2016, Vector Limited (Vector) and Entrust filed declaratory judgment proceedings in the High Court at Wellington naming the Authority as the defendant. They are seeking a declaration that the Electricity Industry Act 2010 does not permit the Authority to amend the Code to require distributors to offer a default distribution agreement containing core terms prescribed by the Authority and operational terms consistent with principles and policies set by the Authority. The matter was heard by the High Court on 23 and 24 May 2017. As at the end of June 2017, the decision had not been delivered.
- On 31 October 2016, Trustpower reorganised itself into separate companies under a scheme of arrangement. Under Part 15 of the Companies Act, the High Court has to approve the arrangement. We were involved because we need to ensure that Trustpower's obligations and liabilities continue to be enforceable. For example, Trustpower owes wash-up obligations under the Code for up to 14 months. Discussions with Trustpower as to the best way to achieve this resulted in a change to Trustpower's application to the High Court to include a specific provision covering Trustpower's obligations under the Electricity Industry Act, Electricity Industry (Enforcement) Regulations and the Code.
- On 14 February 2017, Unison Network Limited appealed to the High Court against the Rulings Panel's decision that it had jurisdiction to hear Solar City New Zealand Limited's complaint that Unison's tariffs for retailers with residential customers on its network who have installed distributed generation breaches Part 6 of the Code. The Authority was named as the second respondent in the appeal. On 19 June 2017, the High Court delivered its judgment allowing Unison's appeal. The High Court agreed with Unison and the Authority that the Rulings Panel had no jurisdiction to hear Solar City's complaint.

Appropriation

Actual 2015/16 $000	Electricity litigation fund appropriation	Actual 2016/17 $000	Budget 2016/17 $000
7	Revenue from the Crown	256	444
7	Expenditure	256	444

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PART FOUR

ORGANISATIONAL CAPABILITY

ORGANISATIONAL CAPABILITY

This part of the Annual Report sets out the Authority's performance for its functions.

Our vision is to be a world-class electricity regulator, delivering long-term benefits for consumers and contributing to the New Zealand economy. We have an ongoing capability development programme to achieve our vision. This programme also addresses central agency expectations for ensuring value-for-money, performance improvement actions, and the Government's Better Public Services Programme.

Our path to world-class organisational capability focus covers:

- our stakeholders
- our people
- our processes.

Our stakeholders

We have a strong track record in working with stakeholders, including consumer representatives, industry participants and other government agencies. This is vital in assisting us develop effective improvements to the New Zealand electricity market.

We publish our foundation documents on our website to provide stakeholders with information on how we interpret the statutory objective, consult, develop Code and market facilitation measures, and how we work with advisory groups[11]. We continue to evolve both the range of stakeholders we work with and the methods we use to engage with them, so we can ensure high standards continue to be met.

We are increasingly focused on ways to communicate and engage with New Zealand consumers. We look for opportunities to explain how the electricity market works and how it is performing. We use online and media channels to help us explain our work and, in particular, the long-term benefits we are seeking for consumers and New Zealand. For example, as mentioned on page 9 we published an educational video in late June 2017. Feedback indicates that consumers rated the video favourably as a channel to communicate the Authority's work.

11 The foundation documents are available at www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents

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Our people

We value our people and strive to provide an open and supportive workplace and culture that enables a high level of contribution.

Good employer

Our staff contribute to a range of policies and processes to ensure that we are a good employer. We invite staff to comment on draft documents, participate in formal working groups, and host regular staff meetings and forums. We value staff participation and comment on cross-organisational issues. We also seek feedback and monitor engagement through an annual survey.

We have a comprehensive process to review and renew policies at Board level.

Leadership, accountability and culture

The Senior Leadership Team provides leadership across all aspects of organisation development. This includes using equal employment opportunity principles in recruitment, developing and recognising cultural, ethnic and minority interests, and guiding staff in the application of policies, guidelines and values.

Our culture is open and we encourage people to exchange views in an informal and open environment. We aim for extremely high standards for our work, in keeping with the importance of the issues that we consider.

We expect staff to meet high professional standards in both work ethic and workplace behaviour. These reflect our organisational values of integrity, openness, excellence, our people and boldness.

Recruitment, selection and induction

We want to perform at the highest level possible, which means we seek to recruit and retain the best person for each role. Our recruitment process ensures roles are open to both internal and external applicants. The process is transparent, fair and mindful of equal employment opportunity principles and processes. The human resources team and senior staff support and demonstrate these principles.

We provide a comprehensive induction programme for all new staff, which includes industry briefing sessions, meetings with senior managers, site visits and introductory information through online sources and face-to-face meetings. The aim of our induction programme is to enable new staff to become positive contributors as soon as possible.

Employee development, promotion and exit

All staff have a development plan and progress against this is monitored quarterly. Development involves training, coaching, involvement in project teams and work that challenges established limits, and opportunities to act in more senior roles. We run a range of in-house training programmes that are available to all staff.

Where possible roles are expanded and challenges presented to prepare staff for opportunities at a higher level. All vacancies are advertised internally and development plans support preparation for future roles. Succession planning identifies potential career paths and staff for more targeted development.

Staff who choose to leave the organisation are offered exit interviews and complete exit questionnaires, and aggregate responses are reviewed for possible improvements to the way we do things.

Flexibility and work design

We are open to considering non-standard work arrangements where these are reasonable and practical. We also support staff dealing with exceptional circumstances, including those returning from parental leave, injury or serious illness during their integration back into the workforce.

We offer an informal regime of flexible work hours for staff. This includes both start and finish times, but also some give and take when it comes to personal appointments and an informal time in lieu process. This flexibility is highly valued by staff.

Our roles are designed to include challenging opportunities with goals that can be achieved within normal work hours. We operate a highly interactive environment where rigorous debate is encouraged and valued, and cross-group interaction is the norm.

Remuneration, recognition and conditions

We take the time to recognise achievements and celebrate our successes and regularly present a staff values award. This is a chance to celebrate staff who have made an exceptional contribution and are living the values.

We run annual salary reviews for all staff, which are moderated to make sure the process is fair, consistent, objective and mindful of the wider climate. We also use independent job evaluation and market information.

We are mindful of our position as an independent Crown entity and seek a balance between providing conditions of employment that are sufficient to attract, retain and develop staff without excessive spending.

Prevention of harassment and bullying

All staff receive code of conduct and harassment policy information during their induction. This information outlines acceptable standards of behaviour, the process to address issues and the consequences of unacceptable behaviour. We have processes in place to deal promptly and fairly with any potential harassment or bullying.

A safe and healthy environment

A health and safety committee made up of both staff and managers reviews, develops and implements emergency plans, training and staff support programmes. Committee members are also responsible for identifying, recording and ensuring the elimination of hazards. The Senior Leadership Team and Board both receive regular risk reports.

We encourage an active and healthy lifestyle supported by an employee assistance scheme, access to occupational health professionals for workstation set-up, resilience training and support information on the staff intranet.

Workplace profile

We have a talented team with diverse backgrounds, skill sets and knowledge. This is invaluable to our success in completing our challenging work programme. As at 30 June 2017 the Authority has a permanent staff of 61, comprising 22 female and 39 male staff.

Our multicultural staff have origins in New Zealand, of both European and Maori heritage, Europe, North America, Asia and the Pacific Islands. The Authority does not currently employ any staff who would be considered physically disabled, although the organisation supports some medically challenged staff. The average age of employees is 43 years.

Our processes

We strive to ensure that our systems, tools and processes support international best practice. This will lead to improved efficiency, productivity and quality.

Regulatory framework

The Act provides our overarching regulatory framework.

We have published our foundation documents, which elaborate on the framework provided by the Act. These are the *Interpretation of the statutory objective, the Charter for advisory groups and the Consultation charter.*[12]

A key function is setting the rules for the market through voluntary arrangements or the Code. The *Consultation charter* describes the process for amending the Code, including our Code amendment principles. These principles emphasise clear problem identification and quantified cost-benefit assessments, plus tie-breaker principles that apply when cost-benefit assessments are inconclusive.

Value-for-money

We manage our funding prudently. We carefully balance efforts to restrain our spending with the need to progress important work in a timely and robust fashion. The Board continues to commit to holding its own operating costs constant, and transparently reports on this. We also continue to work hard with our service providers to ensure value-for-money for the services provided.

Improving effectiveness and efficiency crosses all functional areas.

The cost-effectiveness of our work is assured through the following:

- Appropriation consultation: planned work priorities and appropriations are scrutinised through public consultation in accordance with section 129 of the Act.
- Robust use of planning, project management and procurement disciplines.

12 The foundation documents are available at www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents

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- Review of cost drivers: work priorities, costs and benefits for major projects and business-as-usual activities are closely scrutinised as part of the development of a detailed internal work programme. Costs and benefits are further addressed as part of project planning for significant projects. Value-for-money and performance improvement initiatives are included in the internal work programme.
- Assessment of proposed Code amendments and market facilitation measures: benefits and costs of proposed Code amendments are scrutinised through public consultation in accordance with our *Consultation charter*.
- Joint procurement: where practical and cost-effective, we work with other agencies on joint procurement and shared services.
- Taking up all-of-government procurement offerings, where applicable.
- We currently share IT support services with the Commerce Commission.
- We explore other shared services opportunities as these arise.

Authority planning and reporting

The Crown Entities Act 2004 sets out our major planning and reporting requirements, including preparing and publishing the *SOI, SPE* and Annual Report.

Each year we seek input from our stakeholders to assist with developing our statutory plans and our more detailed work programme. Under section 129 of the Act, we consult levy payers on our proposed appropriations. This generally takes place over the October to December period. We use feedback received to develop appropriations recommendations to the Minister, our statutory plans and our work programme.

In addition, we also publish our work programme, which includes key market development projects, and four-monthly reports on progress.

Contributing to wider government initiatives

We have an ongoing commitment to contributing to all-of-government initiatives such as those led by the Government Chief Information Officer and Government Chief Privacy Officer, and procurement advice provided by MBIE.

We keep up to date with, and ensure we follow, best practice guidance and requirements.

Risk management

We have a proactive risk management framework. The Board maintains an overview of the policy and reviews the risk register regularly.

The Board's Audit and Finance Committee advises on the quality and integrity of the Authority's financial control environment, 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.

Directions issued by ministers

Procurement

On 22 April 2014, the Minister of State Services and Minister of Finance issued a direction under section 107 of the Crown Entities Act 2004 to apply the Government Rules of Sourcing with effect from 1 February 2015 and under the guidance of MBIE as Procurement Functional Leader.

The Authority is committed to following the government rules of sourcing and is progressively signing up to panel contracts as appropriate. In the 2016/17 financial year the Authority joined the following panels:

- Domestic and international courier services
- External recruitment services
- Air travel services
- Webservices Panel Agreement.

New Zealand Business Number

On 10 May 2016, the Minister of State Services and Minister of Finance issued a direction under section 107 of the Crown Entities Act 2004 to support a whole-of-government approach to the New Zealand Business Number (NZBN).

The Authority has been classified as a Tier Three Agency. As such, we have to 'give effect' to some of the requirements, and 'have regard' to the others.

During this financial year the Authority has responded to one information request from the New Zealand Business Number (NZBN) Registrar, dated 1 March 2017. The purpose of the request was to assist with informing the Registrar's NZBN implementation progress report to Ministers.

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The Authority has made good progress in assessing systems and processes for NZBN application and has made moderate overall progress in implementing the first phase of expectations of a Tier Three Agency, recognition of the NZBN number.

Progress has been made with the following systems:

1. The Authority finance system was upgraded in March 2016 and a field to capture the NZBN number was established. Following this, the Authority has progressively added NZBN numbers to existing supplier information within the system, and the NZBN number is now captured when new suppliers are set up. However, we see limited value in automating the updating of supplier details through an API arrangement.
2. The Participant Register (register of participants in the industry) is currently held in an excel spreadsheet. A project has been scoped during the financial year to automate the capture of participants information and to also provide an API link to the NZBN register. The build of the new solution will take place during the 2017/18 financial year.

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PART FIVE

FINANCIAL STATEMENTS

FINANCIAL STATEMENTS

The financial statements report actual results against budget information in the Authority's *2016/17 Statement of Performance Expectations (SPE).*

These statements are provided in accordance with section 151 of the Crown Entities Act 2004.

Statement of comprehensive revenue and expense

for the period 1 July 2016 to 30 June 2017

Actual 2015/16 $000		Note	Actual 2016/17 $000	Budget 2016/17 $000
72,527	Funding from the Crown	2	73,408	76,481
539	Interest revenue		418	350
73,066	**Total revenue**		**73,826**	**76,831**
9,654	Personnel costs	3	9,926	9,895
2,542	Depreciation and amortisation	7,8	1,451	2,177
48,859	Service provider contracts		51,261	53,009
11,472	Other expenses	4	10,770	11,400
72,527	**Total expenditure**		**73,408**	**76,481**
539	**Total comprehensive revenue and expense**		**418**	**350**

Statement of changes in equity

for the period 1 July 2016 to 30 June 2017

Actual 2015/16 $000		Note	Actual 2016/17 $000	Budget 2016/17 $000
11,099	Balance at 1 July		11,638	11,599
539	Total comprehensive revenue and expense	5	418	350
11,638	**Balance at 30 June**		**12,056**	**11,949**

The accompanying notes form part of these financial statements. Explanations for major variances to budget are provided in **Note 22**.

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Statement of financial position

as at 30 June 2017

Actual 2015/16 $000		Note	Actual 2016/17 $000	Budget 2016/17 $000
	Assets			
	Current assets			
14,029	Cash and cash equivalents	6	15,101	13,080
62	Receivables and prepayments		223	200
279	GST receivable		59	–
14,370	**Total current assets**		**15,383**	**13,280**
	Non–current assets			
325	Property, plant and equipment	7	352	273
6,576	Intangible assets	8	6,934	6,596
6,901	**Total non–current assets**		**7,286**	**6,869**
21,271	**Total assets**		**22,669**	**20,149**
	Liabilities			
	Current liabilities			
7,565	Payables and accruals	9	7,101	7,000
796	Employee entitlements	10	855	1,000
–	GST payable		–	200
1,247	Appropriation repayable to the Crown	11	2,629	–
9,608	**Total current liabilities**		**10,585**	**8,200**
	Non–current liabilities			
25	Employee entitlements	10	28	–
25	**Total non–current liabilities**		**28**	**–**
9,633	**Total liabilities**		**10,613**	**8,200**
11,638	**Net assets**		**12,056**	**11,949**
	Equity			
9,011	Contributed capital		9,011	9,011
2,627	Accumulated surplus/(deficit)		3,045	2,938
11,638	**Total equity**		**12,056**	**11,949**

The accompanying notes form part of these financial statements. Explanations for major variances to budget are provided in **Note 22**.

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Statement of cash flows

for the period 1 July 2016 to 30 June 2017

Actual 2015/16 $000		Note	Actual 2016/17 $000	Budget 2016/17 $000
	Cash flows from operating activities			
73,774	Receipts from the Crown		76,037	76,481
539	Interest from investments		418	350
(1,806)	Repayment of appropriation to the Crown		(1,247)	–
(60,096)	Payments to suppliers		(62,655)	(64,409)
(9,590)	Payments to personnel		(9,864)	(9,895)
(284)	Goods and services tax (net)		220	–
2,537	**Net cash flows from operating activities**	**12**	**2,909**	**2,527**
	Cash flows from investing activities			
275	Receipts from the sale of fixed assets		–	–
(68)	Purchase of property, plant and equipment		(168)	(125)
(1,083)	Purchase of intangible assets		(1,669)	(1,998)
(876)	**Net cash flows from investing activities**		**(1,837)**	**(2,123)**
1,661	**Net increase/(decrease) in cash and cash equivalents**		**1,072**	**404**
12,368	Cash and cash equivalents at beginning of year		14,029	12,676
14,029	**Cash and cash equivalents at end of period**		**15,101**	**13,080**

The accompanying notes form part of these financial statements. Explanations for major variances to budget are provided in **Note 22**.

Statement of commitments

as at 30 June 2017

Service provider agreements exist for the clearing manager, pricing manager, reconciliation manager, registry manager, WITS manager, FTR manager and system operator.

In February 2016, the Authority and Transpower successfully completed negotiations for an updated electricity system operator service provider agreement. This new contract is effective from 1 July 2016 and has no fixed expiry date. The commitments included on page 71 represent the minimum payments due under the contract's notice period for termination, which at 30 June 2017 is four years.

The FTR manager service provider agreement commenced in June 2013 for an initial term of five years. In October 2015, following a competitive procurement process, new service provider agreements were entered into for the existing pricing manager, reconciliation manager, WITS manager, and clearing manager roles—these agreements are for an initial term of eight years to 30 June 2024. In January 2017, following a competitive procurement process, a new service provider agreement was entered into for the existing registry manager role—this agreement is for an initial term of seven years to 30 June 2024.

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Actual 2015/16 $000		Actual 2016/17 $000
	Operating commitments	
	Service providers	
51,306	Not later than one year	48,397
193,167	Later than one year but not later than five years	152,412
17,278	Later than five years	13,098
261,751		**213,907**
	Building lease	
512	Not later than one year	512
2,049	Later than one year but not later than five years	2,049
640	Later than five years	128
3,201		**2,689**
	Other operating commitments	
1,231	Not later than one year	793
–	Later than one year but not later than five years	250
–	Later than five years	–
1,231		**1,043**
266,183	**Total operating commitments**	**217,639**
	Capital commitments	
	Intangible assets	
715	Not later than one year	438
1,846	Later than one year but not later than five years	1,861
1,458	Later than five years	979
4,019		**3,278**
4,019	**Total capital commitments**	**3,278**

The accompanying notes form part of these financial statements.

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NOTES TO THE FINANCIAL STATEMENTS

1. Accounting policies

Reporting entity

The Electricity Authority (Authority) is an independent Crown entity as defined by the Crown Entities Act 2004 and is domiciled and operates in New Zealand. The relevant legislation governing the Authority's operations includes the Crown Entities Act 2004 and Electricity Industry Act 2010. The Authority's ultimate parent is the New Zealand Crown.

The Authority's primary objective is to provide services to the New Zealand public and it does not operate to make a financial return. Accordingly, it has designated itself a public benefit entity (PBE) for financial reporting purposes.

The financial statements for the Authority are for the period 1 July 2016 to 30 June 2017 and were approved by the Board on 30 August 2017.

Basis of preparation

The financial statements have been prepared on a going concern basis, and the accounting policies have been applied consistently throughout the period.

Statement of compliance

The financial statements of the Authority have been prepared in accordance with the requirements of the Crown Entities Act 2004, which includes the requirement to comply with New Zealand generally accepted accounting practice (NZ GAAP).

The financial statements have been prepared in accordance with, and comply with, Tier 1 PBE accounting standards.

Presentation currency and rounding

The financial statements are presented in New Zealand dollars rounded to the nearest thousand dollars ($000).

Standards issued that are not yet effective and have not been early adopted

In 2015, the External Reporting Board (XRB) issued Disclosure Initiative (Amendments to PBE IPSAS 1), 2015 Omnibus Amendments to PBE Standards, and Amendments to PBE Standards and Authoritative Notice as a Consequence of XRB A1 and Other Amendments. These amendments apply to PBEs with reporting periods beginning on or after 1 January 2016. The Authority has assessed these amendments as having no material effect on its 2016/17 financial statements.

In 2017, the XRB issued a further Disclosure Initiative, 2016 Omnibus Amendments to PBE Standards. These amendments apply to PBE's with reporting periods beginning on or after 1 January 2017. The Authority will apply these amendments in preparing its 30 June 2018 financial statements. The Authority expects there will be no material effect of applying these amendments.

Revenue
The specific accounting policies for significant revenue items are explained below.

Funding from the Crown
The Authority is primarily funded by the Crown. This funding is restricted in its use for the purpose of the Authority meeting the objectives specified in its founding legislation and the scope of the relevant appropriations of the funder.

The Authority considers there are no conditions attached to the funding and it is recognised as non-exchange revenue at the point of entitlement. Appropriations received from the Crown are recognised as revenue to the extent that expenditure has been incurred. Appropriations received but not spent are treated as a Crown creditor and shown in the statement of financial position as a provision for refund of appropriations to the Crown.

Levies
The Authority administers a levy on industry participants under the Electricity Industry (Levy of Industry Participants) Regulations 2010. Levies are paid directly to the Crown for reimbursement of funding provided to the Authority. Levies are not recognised as revenue in the Authority's financial statements.

Interest
Interest is earned on bank deposits and is recognised in the period to which it relates.

Operating leases
An operating lease is a lease that does not transfer substantially all the risks and rewards incidental to ownership of an asset to the lessee.

Lease payments under an operating lease are recognised as an expense on a straight-line basis over the lease term.

Cash and cash equivalents
Cash and cash equivalents include cash on hand, deposits held on-call with banks, and other short-term highly-liquid investments with original maturities of normally three months or less.

Receivables and prepayments
Short-term receivables and prepayments are recorded at their face value, less any provision for impairment.

A receivable is considered impaired when there is evidence that the Authority will not be able to collect the amount due. The amount of the impairment is the difference between the carrying amount of the receivable and the present value of the amounts expected to be collected.

Property, plant and equipment
Property, plant and equipment consist of the following asset classes: computer hardware, furniture and fittings, office equipment and leasehold improvements.

Property, plant and equipment are shown at cost or valuation, less any accumulated depreciation and impairment losses.

Additions
The cost of an item of property, plant and equipment is recognised as an asset only when it is probable that future economic benefits or service potential associated with the item will flow to the Authority and the cost of the item can be measured reliably.

Disposals
Gains and losses on disposals are determined by comparing the proceeds with the carrying amount of the asset. Gains and losses on disposals are reported net in the surplus or deficit.

Depreciation
Depreciation is provided on a straight-line basis on all property, plant and equipment at rates that will write-off the cost (or valuation) of the assets to their estimated residual values over their useful lives. The useful lives and associated depreciation rates of each asset class have been estimated as follows:

Computer hardware	3–5 years	20%–33%
Furniture and fittings	5 years	20%
Office equipment	5 years	20%
Leasehold improvements	Unexpired period of the lease	

Intangible assets
Software acquisition and development
Acquired software licences are capitalised on the basis of the costs incurred to acquire and bring to use the specific software.

Costs that are directly associated with the development of software are recognised as an intangible asset when the software becomes operational. Work in progress is recognised at cost less impairment.

Staff training costs are recognised as an expense when incurred.

Costs associated with maintaining software are recognised as an expense when incurred.

Costs associated with the development and maintenance of the Authority's corporate website are recognised as an expense when incurred.

Amortisation

The carrying value of an intangible asset with a finite life is amortised on a straight-line basis over its useful life. Amortisation begins when the asset is available for use and ceases at the date that the asset is derecognised. The amortisation charge for each financial year is recognised in the surplus or deficit. The value of additions made to an existing asset are amortised over the remaining useful life of the existing asset.

The useful lives and associated amortisation rates of each asset class are estimated as follows:

Computer software	3–9 years	11%–33%

Impairment of capital assets

The Authority does not hold any cash-generating assets. Assets are considered cash-generating where their primary objective is to generate a commercial return.

Property, plant and equipment and intangible assets that have a finite useful life are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss would be recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of the asset's fair value less costs to sell and value in use.

Payables and accruals

Short-term payables and accruals are recorded as exchange transactions at their face value.

Employee entitlements

Short-term employee entitlements

Employee benefits that are due to be settled within 12 months after the end of the period in which the employee renders the related service are measured based on accrued entitlements at current rates of pay.

These include salaries and wages accrued up to balance date, annual leave earned but not yet taken at balance date, and sick leave.

Annual leave earned but not yet taken is recognised as it accrues to employees at current rates of pay.

Sick leave is recognised to the extent that compensated absences in the coming year are expected to be greater than the sick leave entitlements earned in the coming year. The amount is calculated based on the unused sick leave entitlement that can be carried forward at balance date to the extent that the Authority anticipates it likely to be used by staff to cover those future absences.

A liability and an expense are recognised for bonuses where there is a contractual obligation or where there is a past practice that has created a constructive obligation and a reliable estimate of the obligation can be made.

Long-term employee entitlements

Employee benefits that are due to be settled beyond 12 months after the end of period in which the employee renders the related service, such as long service leave, have been calculated on an actuarial basis. The calculations are based on:

- likely future entitlements accruing to staff, based on years of service, years to entitlement, the likelihood that staff will reach the point of entitlement, and contractual entitlement information; and
- the present value of the estimated future cash flows.

Presentation of employee entitlements

Sick leave, annual leave and vested long service leave are classified as a current liability. Non-vested long service leave and retirement gratuities expected to be settled within 12 months of balance date are classified as a current liability. All other employee entitlements are classified as a non-current liability.

Superannuation schemes

Defined contribution schemes

Obligations for contributions to KiwiSaver and the State Sector Retirement Savings Scheme are accounted for as defined contribution superannuation schemes and are recognised as an expense in the surplus or deficit as incurred.

Provisions

A provision is recognised for future expenditure of uncertain timing when there is a present obligation (either legal or constructive) as a result of a past event, it is probable that expenditure will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made.

Equity

Equity is measured as the difference between total assets and total liabilities. Equity is disaggregated and classified into the following components:

- contributed capital
- accumulated surplus/(deficit).

Goods and services tax (GST)

All items in the financial statements are presented exclusive of GST, except for receivables and payables, which are presented on a GST-inclusive basis. Where GST is not recoverable as input tax, it is recognised as part of the related asset or expense.

The net amount of GST recoverable from, or payable to, the Inland Revenue Department (IRD) is included as part of receivables or payables in the statement of financial position.

The net GST paid to, or received from, the IRD, including the GST relating to investing and financing activities, is classified as a net operating cash flow in the statement of cash flows.

Commitments and contingencies are disclosed exclusive of GST.

Income tax

The Authority is a public authority and consequently is exempt from the payment of income tax. Accordingly, no provision has been made for income tax.

Measurement base

The financial statements have been prepared on a historical cost basis. The accounting policies that materially affect the measurement of financial performance, financial position and cash flows are set out below and have been applied consistently to all periods presented in these financial statements.

Critical accounting estimates and assumptions

In preparing these financial statements, the Authority has made estimates and assumptions concerning the future. These estimates and assumptions may differ from the subsequent actual results. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, or future financial years, are discussed below.

Estimating useful lives and residual values of intangible assets

At each balance date, the estimates of useful lives and residual values of intangible assets are reviewed. Assessing the appropriateness of these estimates requires a number of factors to be considered such as the condition of the assets, expected period of use of the assets by the Authority, and expected disposal proceeds from the future sale of the assets.

A revision to the estimate of the useful life or residual value of an asset will affect the amortisation expense recognised in the surplus or deficit, and carrying amount of the asset in the statement of financial position.

Budget figures

The budget is derived from the *2016/17 Statement of Performance Expectations*, as approved by the Authority's Board.

The budget figures have been prepared in accordance with Tier 1 PBE accounting standards, using accounting policies that are consistent with those adopted by the Board in preparation of the financial statements. All budget figures are unaudited.

2. Crown appropriations

The Authority has been provided with funding from the Crown for specific purposes as set out in the Electricity Industry Act 2010 and in the scope of the appropriations as set out in Vote Business, Science and Innovation. Appropriations are recognised as revenue to the extent that they are spent.

	Actual 2016/17 $000	Actual 2015/16 $000
Electricity industry governance and market operations	73,152	72,520
Security management	–	–
Electricity litigation fund	256	7
	73,408	**72,527**

3. Personnel costs

	Actual 2016/17 $000	Actual 2015/16 $000
Salaries and contractors	9,590	9,301
Contributions to defined contribution plans	352	370
Increase/(decrease) in annual and long service leave provision	(16)	(17)
	9,926	**9,654**

Employer contributions to defined contribution plans include contributions to KiwiSaver and the State Sector Retirement Savings Scheme.

4. Other expenses

	Actual 2016/17 $000	Actual 2015/16 $000
Facilitating consumer participation	2,493	2,959
External work programme support	4,745	5,413
Litigation fund	256	7
Auditor fees for external audit	47	46
Auditor fees for procurement probity services	–	20
Advisory and working group fees	22	22
Board members' fees	560	550
Rulings Panel fees	103	87
Operating lease expenses	514	528
Travel expenses	196	222
Other operating expenses	1,834	1,618
	10,770	**11,472**

5. Total comprehensive revenue and expense

The Authority may elect to retain interest revenue and other revenue in order to maintain an appropriate level of working capital. The Authority has exercised this option in the period 1 July 2016 to 30 June 2017, and the operating surplus of $0.418 million has been used to increase equity.

	Actual 2016/17 $000	Actual 2015/16 $000
Interest revenue	418	539
	418	**539**

6. Cash and cash equivalents

The carrying value of cash at bank and short-term deposits with maturities of normally three months or less approximates their fair value.

	Actual 2016/17 $000	Actual 2015/16 $000
Cash in current account	151	529
Cash on call in interest-bearing money market account	1,450	1,500
Cash on three-month term deposit	13,500	12,000
	15,101	**14,029**

7. Property, plant and equipment

There are no restrictions over the title of the Authority's fixed assets, nor any fixed assets pledged as security for liabilities.

	Computer hardware $000	Office equipment $000	Furniture and fittings $000	Leasehold improvement $000	Total $000
Cost or valuation:					
Balance at 1 July 2015	2,465	207	334	730	**3,736**
Additions	34	5	29	–	**68**
Disposals	(1,694)	(9)	–	–	**(1,703)**
Balance at 30 June 2016	**805**	**203**	**363**	**730**	**2,101**
Balance at 1 July 2016	805	203	363	730	**2,101**
Additions	155	8	5	–	**168**
Disposals	(143)	(14)	–	–	**(157)**
Balance at 30 June 2017	**817**	**197**	**368**	**730**	**2,112**
Accumulated depreciation:					
Balance at 1 July 2015	1,936	189	211	598	**2,934**
Depreciation expense	201	6	44	19	**270**
Eliminate on disposal	(1,419)	(9)	–	–	**(1,428)**
Impairment losses	–	–	–	–	**–**
Balance at 30 June 2016	**718**	**186**	**255**	**617**	**1,776**
Balance at 1 July 2016	718	186	255	617	**1,776**
Depreciation expense	73	6	43	18	**140**
Eliminate on disposal	(143)	(13)	–	–	**(156)**
Impairment losses	–	–	–	–	**–**
Balance at 30 June 2017	**648**	**179**	**298**	**635**	**1,760**
Net carrying value:					
At 1 July 2015	529	18	123	132	**802**
At 30 June 2016 and 1 July 2016	87	17	108	113	**325**
At 30 June 2017	**169**	**18**	**70**	**95**	**352**

8. Intangible assets

There are no restrictions over the title of the Authority's intangible assets, nor any intangible assets pledged as security for liabilities.

	Software and systems $000
Cost or valuation:	
Balance at 1 July 2015	25,427
Additions	1,083
Disposals	–
Balance at 30 June 2016	**26,510**
Balance at 1 July 2016	26,510
Additions	1,669
Disposals	–
Balance at 30 June 2017	**28,179**
Accumulated amortisation:	
Balance at 1 July 2015	17,662
Amortisation expense	2,272
Eliminate on disposal	–
Impairment losses	–
Balance at 30 June 2016	**19,934**
Balance at 1 July 2016	19,934
Amortisation expense	1,311
Eliminate on disposal	–
Impairment losses	–
Balance at 30 June 2017	**21,245**
Net carrying value:	
At 1 July 2015	7,765
At 30 June 2016 and 1 July 2016	6,576
At 30 June 2017	**6,934**

The Authority's intangible assets are comprised of acquired software, systems, and associated licences; the most significant of which is the software used in the operation of the electricity market. At 30 June 2017 this software had a cost of $24.271 million, net carrying value of $4.925 million, and an estimated remaining useful life of between four and eight years.

9. Creditors and other payables

Payables and accruals are non-interest bearing and are normally settled on 30 day terms, therefore the carrying value of payables and accruals approximates their fair value.

	Actual 2016/17 $000	Actual 2015/16 $000
Creditors	1,869	7,118
Accrued expenses	5,232	447
	7,101	**7,565**

10. Employee entitlements

A provision for sick leave was calculated and assessed as immaterial.

	Actual 2016/17 $000	Actual 2015/16 $000
Current portion		
Annual leave	561	574
Accrued salary	290	213
Long service leave	4	9
Total current portion	**855**	**796**
Non-current portion		
Long service leave	28	25
Total non-current portion	**28**	**25**
	883	**821**

11. Appropriation repayable to the Crown

The Authority receives funding by way of appropriations from the Crown. The Crown is reimbursed for this funding by levies collected from industry participants.

The Authority receives its appropriations monthly according to a funding profile agreed at the start of the financial year. At the end of the year, the difference between funding drawn down and total Authority expenditure is recorded as a payable or receivable with the Crown. If all appropriations are fully drawn down, the amount will be a payable representing unspent funding to be returned to the Crown.

	Actual 2016/17 $000	Actual 2015/16 $000
Net Crown appropriations drawn down	76,037	73,774
Less total Authority expenditure	(73,408)	(72,527)
Appropriation repayable to the Crown	**2,629**	**1,247**

12. Reconciliation of net operating surplus to net cash flows

	Actual 2016/17 $000	Actual 2015/16 $000
Net operating surplus	**418**	**539**
Add non–cash items		
Depreciation and amortisation	1,451	2,542
Increase/(decrease) in non–current employee entitlements	3	1
Total non–cash items	**1,454**	**2,543**
Add movements in working capital items		
(Increase) decrease in receivables and prepayments	(161)	78
Increase (decrease) in payables and accruals	(464)	155
Increase (decrease) in GST on operations	221	(282)
Increase (decrease) in employee entitlements	59	63
Increase (decrease) in provision for refund of appropriation	1,382	(559)
Net working capital movements	**1,037**	**(545)**
Net cash flow from operating activities	**2,909**	**2,537**

13. Employee remuneration

During the period 1 July 2016 to 30 June 2017, two employees received compensation in relation to cessation totalling $58,869 (2016: none).

Remuneration band	Actual 2016/17 $000	Actual 2015/16 $000
$100,000–$109,999	5	1
$110,000–$119,999	2	1
$120,000–$129,999	5	8
$130,000–$139,999	3	1
$140,000–$149,999	4	2
$150,000–$159,999	5	5
$160,000–$169,999	4	6
$170,000–$179,999	1	4
$180,000–$189,999	4	3
$190,000–$199,999	1	1
$200,000–$209,999	2	1
$210,000–$219,999	2	2
$220,000–$229,999	–	2
$230,000–$239,999	–	–
$240,000–$249,999	1	3
$250,000–$259,999	–	–
$260,000–$269,999	2	1
$270,000–$279,999	–	1
$280,000–$289,999	1	–
$370,000–$379,999	–	1
$400,000–$409,999	1	–
Total employees	**43**	**43**

In 2015/16 a resizing of the Chief Executive role was undertaken by Hay Group, at the request of the Authority's Board and with the support of the State Services Commission. The resulting salary adjustment was implemented in two stages, the first in 2015/16 and the final in 2016/17.

14. Board member remuneration

The membership of the Board underwent some change in the 2016/17 financial year. Since commencement of the Authority in November 2010 the Board had consisted of five members and during the year this increased to six members. The changes that occurred were as follows:

- one member, Elena Trout, resigned in October 2016
- two members terms, the Hon Roger Sowry and David Bull, ended in June 2017
- four new members were appointed; Allan Dawson and Sandra Gamble in April 2017, and Lana Stockman and Mark Sandelin in June 2017.

No Board members received compensation or other benefits in relation to cessation (2016: none). The Authority has directors' and officers' liability and professional indemnity insurance cover in respect of the liability or costs of Board members and employees.

	Actual 2016/17 $000	Actual 2015/16 $000
Brent Layton	262	252
David Bull	67	77
Susan Paterson	106	86
Hon Roger Sowry	43	48
Elena Trout	13	87
Allan Dawson	23	–
Sandra Gamble	27	–
Lana Stockman	11	–
Mark Sandelin	8	–
	560	**550**

15. Rulings Panel remuneration

The membership of the Rulings Panel remained unchanged during the year.

The total value of remuneration paid or payable to each Rulings Panel member:

	Actual 2016/17 $000	Actual 2015/16 $000
Peter Dengate Thrush	44	28
Geraldine Baumann	17	16
John O'Sullivan	17	20
Susan Roberts	15	17
Nicola Wills	10	6
	103	**87**

16. Advisory group and working group fees

Advisory groups and working groups comprise members paid by the Authority and members working in the industry who are paid by their own organisation. The members listed below are those paid by the Authority and do not represent the complete membership of each group.

		Actual 2016/17 $000	Actual 2015/16 $000
Security and Reliability Council	Mike Underhill (Chair)	1	–
	Barbara Elliston	1	3
	Anne Herrington	1	–
Standing Data Formats Group	Nick Bennetts (Chair)	2	2
Retail Advisory Group	Peter Allport (Chair)	1	3
	Sue Chetwin	–	1
	Ewan Gebbie	–	2
	Allen Davies	5	–
Wholesale Advisory Group	John Hancock (Chair)	11	11
		22	**22**

17. Related party transactions

The Authority is a wholly owned entity of the Crown and receives funding by way of appropriations from the Crown.

Related party disclosures have not been made for transactions with related parties that are within a normal supplier or client/recipient relationship on terms and conditions no more or less favourable than those that it is reasonable to expect the Authority would have adopted in dealing with the party at arm's length in the same circumstances. Further, transactions with other government agencies (for example, government departments and Crown entities) are not disclosed as related party transactions when they are consistent with the normal operating arrangements between government agencies and undertaken on the normal terms and conditions for such transactions.

Related party transactions required to be disclosed

Government-related entities

The Authority purchased system operator and technical advisory services from Transpower New Zealand Limited, as well as the provision of FTR manager services and market support services from their division EMS, for a total of $46.119 million (2016: $42.904 million).

Key management personnel

The following transactions were entered into during the year with key management personnel:

- The Authority's Chief Executive, Carl Hansen, was appointed in his personal capacity to the National Infrastructure Advisory Board (NIAB) in April 2014. This was for an initial term commencing 1 May 2014 and ending 30 April 2017; following which a reappointment was made for a second term commencing 1 May 2017 and ending 30 April 2020. The NIAB meets approximately five times per year and is administered by The Treasury. If required, the Chief Executive attends NIAB meetings during the Authority's paid work time, and in return remits all fees received for his attendance at the NIAB back to the Authority. The Chief Executive remitted NIAB fees of $2,859 to the Authority in relation to the year ended 30 June 2017 (2016: $2,340).

Key management personnel compensation

Key management personnel include the Board and senior leadership team (Chief Executive and general managers). Their remuneration and full-time equivalents were as follows:

	Actual 2016/17 $000	Actual 2015/16 $000
Board Members		
Remuneration ($000)	560	550
Full-time equivalent members	*1.51*	*1.52*
Senior Leadership Team		
Remuneration ($000)	1,685	1,670
Full-time equivalent members	*5.35*	*6.00*
Total key management personnel remuneration ($000)	**2,245**	**2,220**
Total full-time equivalent personnel	**6.86**	**7.52**

The full-time equivalent for Board members has been determined based on actual hours spent attending Board meetings, events or meetings representing the Authority and time spent preparing for meetings.

18. Financial instrument risks

The Authority is party to financial instrument arrangements as part of its everyday operations. These financial instruments include bank accounts, accounts receivable and accounts payable.

Interest rate risk

Interest rate risk is the risk that the return on funds invested and the cost of borrowed funds fluctuate due to changes in market interest rates.

The Authority's exposure to interest rate risk on funds invested is limited to on-call bank deposits, which are subject to variable interest rates.

Under the Crown Entities Act 2004, the Authority requires ministerial approval to enter into a borrowing arrangement. The Authority has no borrowings and, accordingly, there is no interest rate exposure on borrowed funds.

Credit risk

Credit risk is the risk that a third party defaults on its obligations to the Authority, causing the Authority to incur a loss. The Authority only invests in financial institutions that have high credit ratings.

Liquidity risk

Liquidity risk is the risk that the Authority encounters difficulties raising liquid funds to meet commitments as they fall due. The Authority has a low exposure to liquidity risk as it does not enter into credit arrangements, except those available from suppliers as part of normal operating agreements, and aims to maintain sufficient funds available on call to meet its liquidity requirements.

Currency risk

Currency risk is the risk that debtors and creditors due in foreign currency fluctuate because of changes in foreign exchange rates. The Authority has no significant exposure to currency risk on its financial instruments.

19. Capital management

The Authority's capital is its equity, comprised of accumulated funds and represented by net assets.

The Authority is subject to the financial management and accountability provisions of the Crown Entities Act 2004, which impose restrictions in relation to borrowings, acquisition of securities, issuing guarantees and indemnities and the use of derivatives.

The Authority manages its equity by prudently managing revenues, expenses, assets, liabilities and general financial dealings to ensure the Authority effectively achieves its objectives and purpose, while remaining a going concern.

20. Contingencies

There are no known contingent liabilities (2016: Nil) or contingent assets (2016: Nil) and no guarantees under the Crown Entities Act 2004 (2016: Nil).

21. Post-balance date events

No significant events that would materially affect the financial statements have occurred between 30 June 2017 and the date of signing the financial statements.

22. Explanation of major variances against budget

Expenditure against appropriations

Appropriations and output classes	Actual 2016/17 $000	Budget 2016/17 $000	Variance $000
Operational appropriation:			
Electricity industry governance and market operations	73,152	76,037	2,885
Contingent appropriations:			
Security management	–	1,200	1,200
Electricity litigation fund	256	444	188
Total	**73,408**	**77,681**	**4,273**

Electricity industry governance and market operations

This appropriation provides funding for the general operations of the Authority and the operation of the electricity system and market. Expenditure in 2016/17 was $2.885 million less than budget. This was primarily driven by system operator expenses that were $1.672 million below budget due to the system operator's recovery on investments in assets being lower than the maximum allowed for when the appropriation was set, and a lower consumer price index increase than was budgeted for. In addition, amortisation costs for the electricity market operation systems were $0.552 million below budget, and Authority operating expenses were $0.577 million below budget.

Security management

This appropriation is contingent in nature, and provides funding to allow the management of emergency events by the system operator, if required, including increased monitoring and management responsibilities in the event of an emerging security situation and planning and running an emergency conservation campaign. No such events occurred in 2016/17 and therefore no expenditure was required under this appropriation.

Electricity litigation fund

This appropriation provides funding to ensure that the regulatory body for the electricity industry is able to participate in litigation effectively and without delay. The appropriation is contingent in nature, and expenditure is only incurred if litigation arises. The cost of litigation in 2016/17 was $0.188 million less than the amount provided for in the appropriation.

Statement of comprehensive revenue and expense

Crown appropriations

Revenue from Crown appropriations was $3.073 million lower than the budget in 2016/17. The Authority recognises Crown appropriation revenue up to the level of actual expenditure incurred. Appropriation revenue will therefore be under budget to the extent that expenditure is under budget.

Depreciation and amortisation

Depreciation and amortisation expenses were $0.726 million lower than budget. This was due to later than expected commissioning of new systems and upgrades to existing systems. In addition, less depreciation was incurred in relation to the IT infrastructure supporting market operation systems, due to the Authority moving to infrastructure-as-a-service type arrangements.

Service provider contracts

Costs associated with the system operator and market service providers were $1.748 million lower than budget. This was primarily driven by system operator expenses that were $1.672 million below budget, due to the system operator's recovery on investments in assets being lower than the maximum allowed for when the appropriation was set, and a smaller consumer price index increase than was budgeted for.

Other expenses

Other expenses were $0.630 million lower than the budget. This is due to lower expenditure on external work programme support, Authority operational costs and litigation.

Statement of financial position

Cash and cash equivalents

Cash and cash equivalents were $2.021 million higher than budget—explanations for this variance are outlined in the statement of cash flows section later in this note.

Intangible assets

Intangible assets were $0.338 million higher than budget, due to lower accumulated amortisation expenses as a result of later than expected commissioning of new systems and upgrades to existing systems.

Refund of appropriation to the Crown

The Authority incurred expenditure that was $2.629 million less than the amount of appropriation funding received from the Crown. This unspent funding will be returned to the Crown.

Statement of cash flows

Receipts from the Crown

Cash received from the Crown was $0.444 million lower than Budget. This is due to no cash being drawn down for the Litigation fund expenditure, as the Authority had sufficient unspent cash from the Electricity industry governance and market operations appropriation to meet litigation costs.

Payments to suppliers

Payments to suppliers were $1.754 million lower than budget, primarily due to lower system operator expenditure.

Cash and cash equivalents at 30 June 2017

The closing cash balance at 30 June 2017 was $2.021 million higher than budget. This was primarily due to an actual opening cash balance that was $1.353 million higher than budgeted. The remainder of the variance was due to lower cash payments to suppliers, principally the system operator, and lower expenditure on intangible assets.

Statement of electricity levy of industry participants

Levies collected from industry participants during the financial year are deposited into a Crown bank account administered by MBIE. A reconciliation is carried out after the end of the financial year between levies collected and expenditure to be recovered by the levy. The Crown will either provide a refund to, or request additional payment from, individual industry levy payers based on this reconciliation.

From 1 July 2016 to 30 June 2017 the levies collected were 2.9 per cent greater than the expenditure to be recovered. The difference is expected to be $2.467 million and will be refunded to levy payers.

The final figure may vary from this amount, and some levy payers may still be required to pay additional levies while others receive a refund, depending on whether they are generators, retailers or distributors, and based on variations from estimated volumes of dispatches, sales and customer connections.

	Actual 2016/17 $000	Actual 2015/16 $000
Total levies collected by the Crown	**88,875**	**89,759**
Electricity Authority expenditure	73,408	72,527
Energy Efficiency and Conservation Authority (electricity efficiency)	13,000	13,000
Total expenditure to be recovered by levies	**86,408**	**85,527**
Total owed to levy payers by the Crown	**2,467**	**4,232**

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INDEPENDENT AUDITOR'S REPORT

To the readers of the Electricity Authority's financial statements and performance information for the year ended 30 June 2017.

The Auditor-General is the auditor of the Electricity Authority (the Authority). The Auditor-General has appointed me, Andrew Clark, using the staff and resources of Audit New Zealand, to carry out the audit of the financial statements and the performance information, including the performance information for appropriations, of the Authority on his behalf.

Opinion

We have audited:

- the financial statements of the Authority on pages 68 to 87, that comprise the statement of financial position and statement of commitments as at 30 June 2017, the statement of comprehensive revenue and expense, statement of changes in equity and statement of cash flows for the year ended on that date and the notes to the financial statements including a summary of significant accounting policies; and
- the performance information of the Authority on pages 22 to 60.

In our opinion:

- the financial statements of the Authority on pages 68 to 87:
  - » present fairly, in all material respects:
    - its financial position as at 30 June 2017; and
    - its financial performance and cash flows for the year then ended; and
  - » comply with generally accepted accounting practice in New Zealand in accordance with Public Benefit Entity Standards; and
- the performance information on pages 22 to 60:
  - » presents fairly, in all material respects, the Authority's performance for the year ended 30 June 2017, including:
    - for each class of reportable outputs:
      - its standards of delivery performance achieved as compared with forecasts included in the statement of performance expectations for the financial year; and
      - its actual revenue and output expenses as compared with the forecasts included in the statement of performance expectations for the financial year; and
    - what has been achieved with the appropriations; and
    - the actual expenses or capital expenditure incurred compared with the appropriated or forecast expenses or capital expenditure; and
  - » complies with generally accepted accounting practice in New Zealand.

Our audit was completed on 30 August 2017. This is the date at which our opinion is expressed.

The basis for our opinion is explained below. In addition, we outline the responsibilities of the Board and our responsibilities relating to the financial statements and the performance information, we comment on other information, and we explain our independence.

Basis for our opinion

We carried out our audit in accordance with the Auditor-General's Auditing Standards, which incorporate the Professional and Ethical Standards and the International Standards on Auditing (New Zealand) issued by the New Zealand Auditing and Assurance Standards Board. Our responsibilities under those standards are further described in the Responsibilities of the auditor section of our report.

We have fulfilled our responsibilities in accordance with the Auditor-General's Auditing Standards.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of the Board for the financial statements and the performance information

The Board is responsible on behalf of the Authority for preparing financial statements and performance information that are fairly presented and comply with generally accepted accounting practice in New Zealand. The Board is responsible for such internal control as they determine is necessary to enable them to prepare financial statements and performance information that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements and the performance information, the Board is responsible on behalf of the Authority for assessing the Authority's ability to continue as a going concern. The Board is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless there is an intention to merge or to terminate the activities of the Authority, or there is no realistic alternative but to do so.

The Board's responsibilities arise from the Crown Entities Act 2004 and the Public Finance Act 1989.

Responsibilities of the auditor for the audit of the financial statements and the performance information

Our objectives are to obtain reasonable assurance about whether the financial statements and the performance information, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit carried out in accordance with the Auditor-General's Auditing Standards will always detect a material misstatement when it exists. Misstatements are differences or omissions of amounts or disclosures, and can arise from fraud or error. Misstatements are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of readers, taken on the basis of these financial statements and the performance information.

For the budget information reported in the financial statements and the performance information, our procedures were limited to checking that the information agreed to the Authority's statement of performance expectations.

We did not evaluate the security and controls over the electronic publication of the financial statements and the performance information.

As part of an audit in accordance with the Auditor-General's Auditing Standards, we exercise professional judgement and maintain professional scepticism throughout the audit. Also:

- We identify and assess the risks of material misstatement of the financial statements and the performance information, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- We obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control.
- We evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Board.
- We evaluate the appropriateness of the reported performance information within the Authority's framework for reporting its performance.
- We conclude on the appropriateness of the use of the going concern basis of accounting by the Board and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Authority's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements and the performance information or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Authority to cease to continue as a going concern.
- We evaluate the overall presentation, structure and content of the financial statements and the performance information, including the disclosures, and whether the financial statements and the performance information represent the underlying transactions and events in a manner that achieves fair presentation.
- We communicate with the Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Our responsibilities arise from the Public Audit Act 2001.

Other information

The Board is responsible for the other information. The other information comprises the information included on pages 3 to 4, 6 to 11, 13 to 19, 62 to 66, 88, and 91 to 110, but does not include the financial statements and the performance information, and our auditor's report thereon.

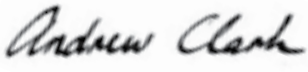
Our opinion on the financial statements and the performance information does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.

In connection with our audit of the financial statements and the performance information, our responsibility is to read the other information. In doing so, we consider whether the other information is materially inconsistent with the financial statements and the performance information or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on our work, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Independence

We are independent of the Board in accordance with the independence requirements of the Auditor-General's Auditing Standards, which incorporate the independence requirements of Professional and Ethical Standard 1 (Revised): Code of Ethics for Assurance Practitioners issued by the New Zealand Auditing and Assurance Standards Board.

In addition to the audit, we have been engaged to provide probity assurance services which are compatible with the independence requirements. Other than in our capacity as auditor and these assurance services, we have no relationship with, or interests, in the Authority.



Andrew Clark
Audit New Zealand
On behalf of the Auditor-General
Wellington, New Zealand

AUDIT NEW ZEALAND
Mana Arotake Aotearoa

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APPENDIX A: MEASURES OF COMPETITION, RELIABILITY AND EFFICIENCY

This appendix provides detailed information to support the summary of progress to date against the suite of statistics used to assess the competition, reliability and efficiency limbs of our statutory objective (see Part 1).

COMPETITION

The suite of statistics used to assess electricity market competition, and summary results to date, are:[13]

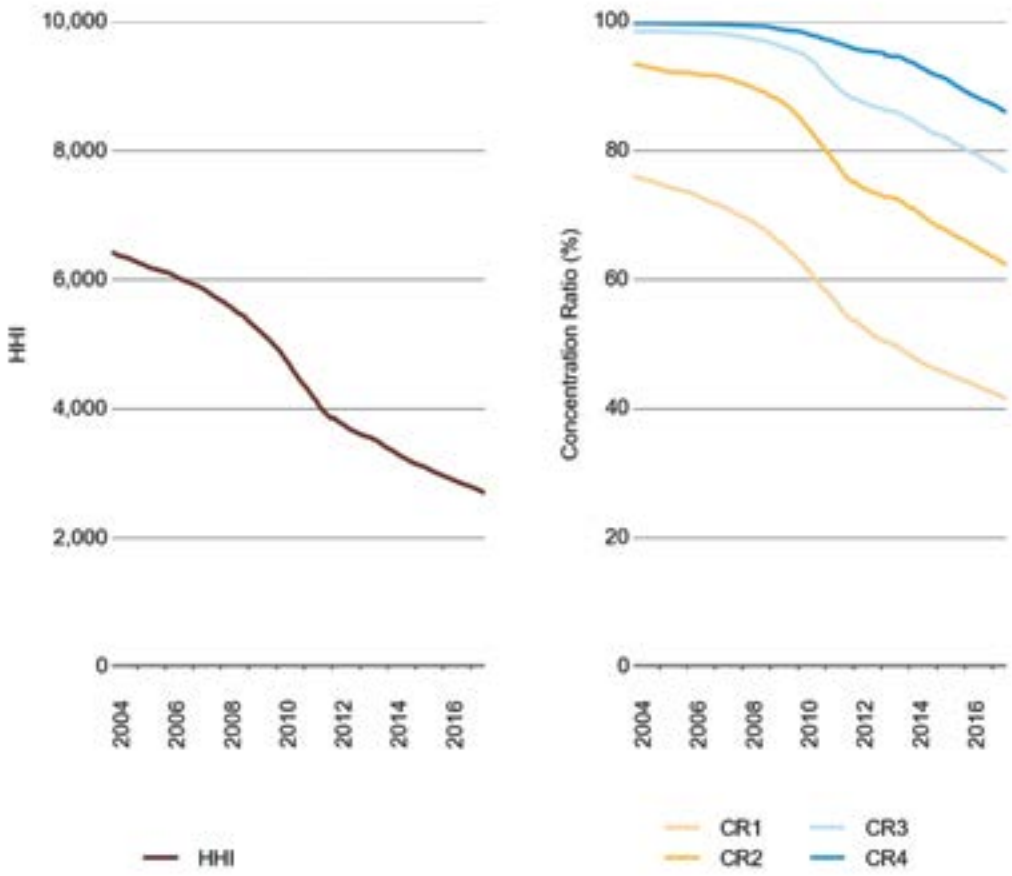
1. Retail market concentration (HHI statistic)—**improving trend.**
2. Retail market share (CR4 statistic)—**improving trend.**
3. We are now using a net pivotal analysis in the place of the residual supply (RS) analysis—**the most net pivotal generator is still only net pivotal less than two per cent of the time.**
4. Hedge market concentration (HHI statistic)—**HHIs increased towards the middle of 2017 because of the dry winter. But HHIs were low overall for both monthly and quarterly contracts.**
5. Concentration in the ancillary services market (HHI of reserves statistic)—**the HHIs increased in both islands over the summer of 2016/17, possibly due to low storage, but have fallen since then.**
6. Increased number of retailers' approaches to consumers with offers to induce switching (measured by survey)—**approaches increased up until 2014 then fell in 2016. It is too early to determine if this is a trend.**

13 See the glossary for explanations of these statistics.

Retail market concentration/share (statistics 1 & 2)

We take a structure-conduct-performance approach to assessing competition. We use the Herfindahl–Hirschman Index (HHI) (statistic 1) and concentration ratio statistics (statistic 2) as measures of concentration. These measures help to assess the structure of the market. **Figure 7** shows that these measures are falling in the residential retail market. This indicates that the structure of the market is improving.

Figure 7: HHI and concentration ratio statistics (residential only)



Key HHI: Herfindahl–Hirschman Index, CR: concentration ratio (see glossary for definitions)

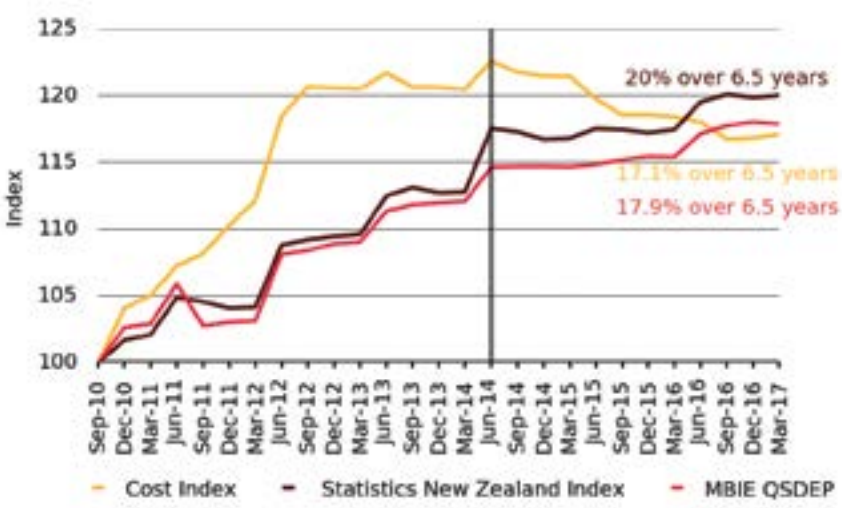
Source: Registry data (available from EMI)

Costs versus prices

In a competitive market we would expect prices to be set at or near costs. We ask the New Zealand Institute of Economic Research (NZIER) to calculate a cost index that uses observable market data to estimate costs facing electricity retailers. Comparing price changes (using data from Statistics New Zealand and MBIE) with cost changes provides an indication of how well the market is performing.

Figure 8 shows a recent trend of prices increasing while our estimate of costs has fallen. What we would expect in a competitive market is for cost savings to be passed onto consumers through lower prices or improved service. We survey consumers and ask about their level of satisfaction with their electricity retailer. Our latest survey shows a fall in satisfaction—however this is based on just two annual surveys in 2015 and 2016. We will continue to monitor price and costs and the level of satisfaction amongst consumers.

Figure 8: Cost indices versus price indices



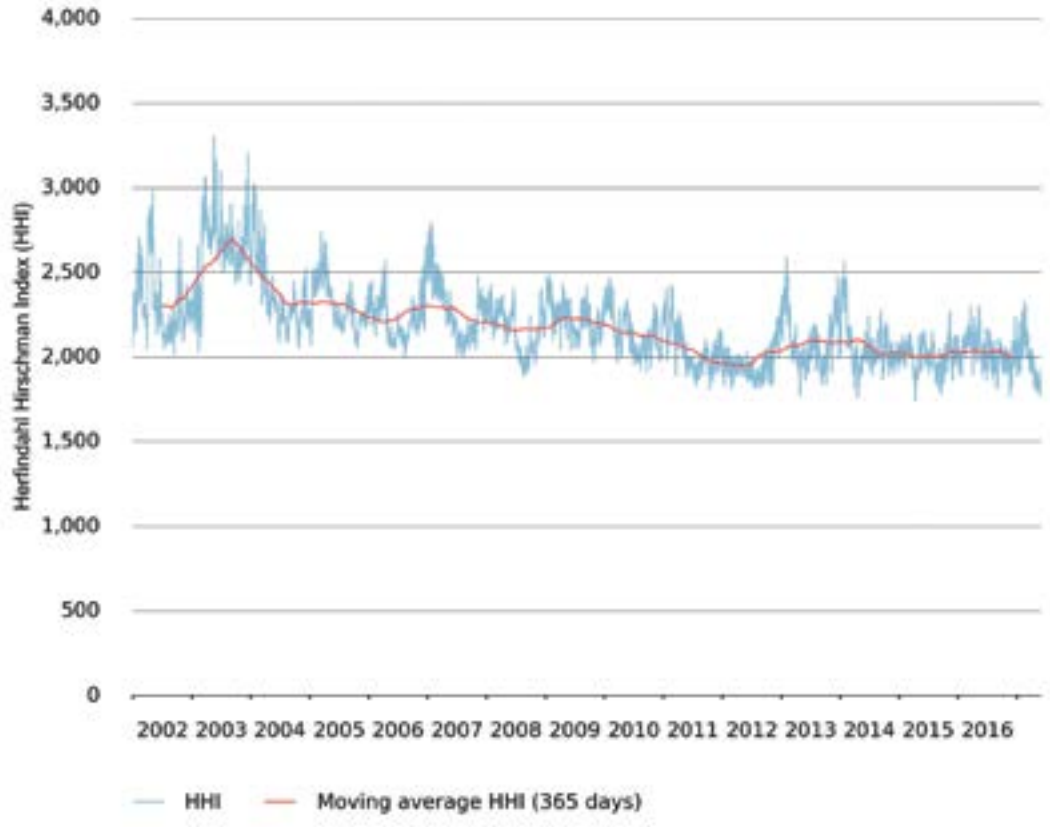
Source: NZIER for the Electricity Authority

Generation market concentration

We also look at HHI in the area of electricity generation. **Figure 9** shows that the HHI is trending downwards over the long term, although there is some seasonality with the HHI climbing during periods where water is scarce. Low inflows during the last four summers have meant the HHI has fallen as large hydro generators produce less. This evens out market share, creating the reduction in the HHI.

The chart shows a long-term trend of decreasing concentration, although in recent years market concentration as measured by the HHI has remained relatively constant.

Figure 9: HHI for generation



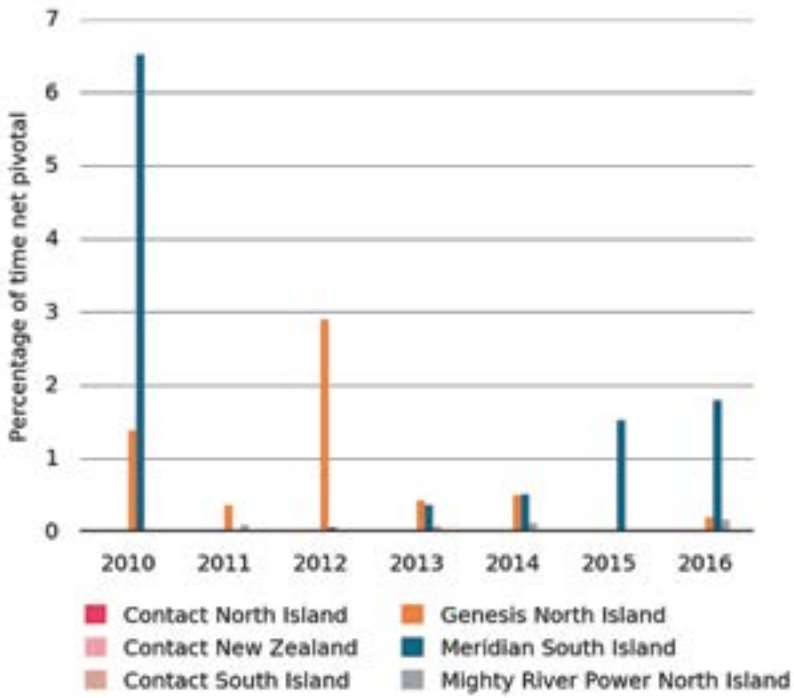
Source: Electricity Authority

Net pivotal analysis (statistic 3)

To assess conduct we look at the percentage of time that large generators are net pivotal (we use this statistic in the place of residual supply analysis—statistic 3). A net pivotal generator can profitably and unilaterally raise prices. This measure is calculated using a simulation where we raise a trader's generation and reserve offers to an unusually high level and calculate the amount of energy that the trader would have to produce. The trader's net obligations are subtracted for this amount. Most often this gives a negative number, which means that the trader would not be able to profitably increase its offers. We measure the percentage of time that a trader's residual amount of energy is positive. We define the trader as being net pivotal in these cases.

Figure 10 shows the number of times that large traders are net pivotal. Overall, the trend is downwards with the exception of Meridian in the South Island, but even it is only net pivotal less than two per cent of the time. We saw a large fall between 2010 and 2011, which was mostly due to the Government's transfer of Tekapo A and B from Meridian to Genesis and virtual asset swap agreements, which meant capacity was more evenly shared between generators.[14]

Figure 10: Net pivotal periods



Source: Electricity Authority

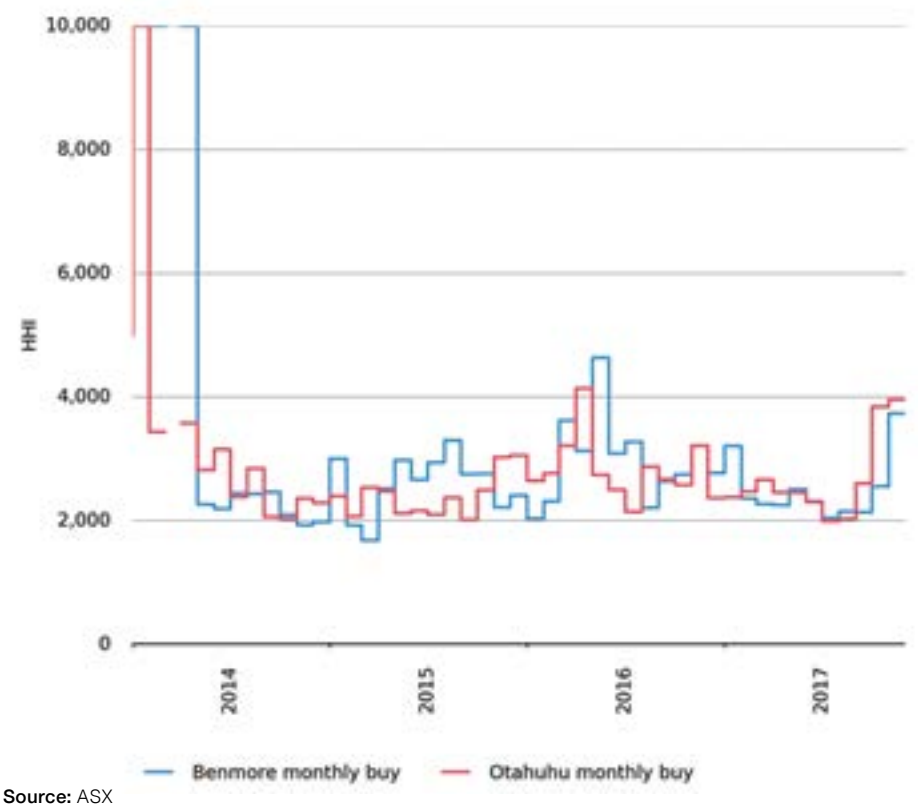
Hedge market concentration (statistic 4)

We monitor the hedge market's HHI (statistic 4). **Figures 11 and 12** (pages 96 and 97) show the HHI for hedge sellers and buyers for both monthly and quarterly ASX contracts. We monitor both buy and sell HHIs because it is possible to take a position in either direction in a hedge market. The HHI in this context is more a measure of conduct than structure. The HHI in future periods helps us monitor how positions are changing in the market.

All contracts have HHIs between 2000 and 3000 as at 30 June 2017. Monthly contracts exhibit more volatile HHIs. The rise in quarterly HHIs for buyers and sellers in mid-2017 is a result of the dry winter which saw market makers on the ASX increase spreads.

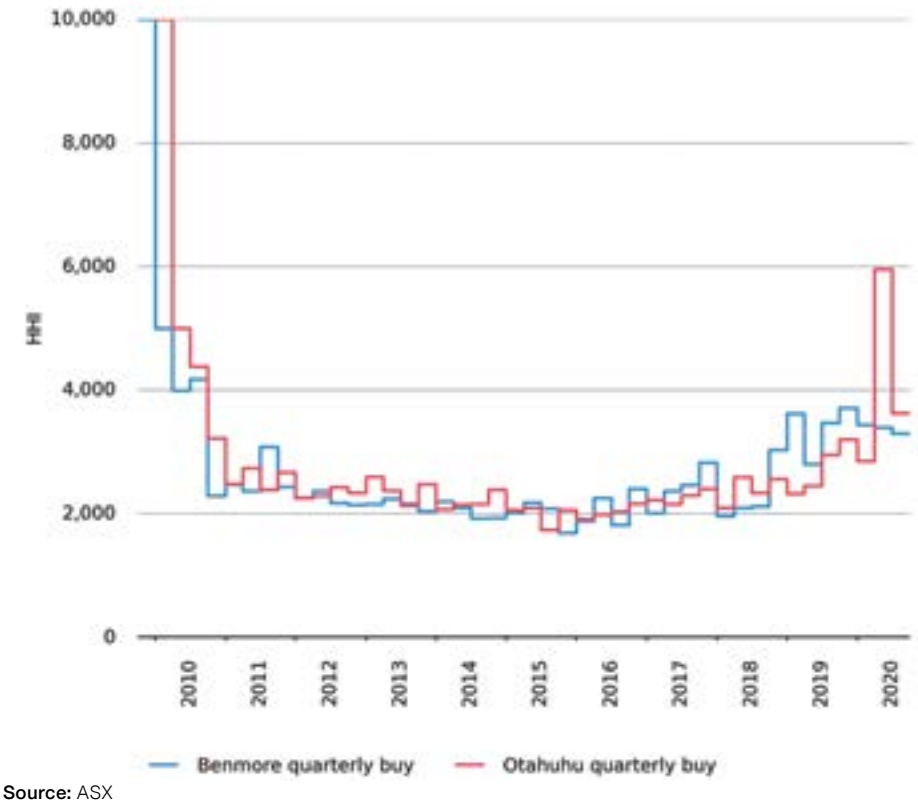
14 The virtual asset swap contracts involves Meridian Energy selling electricity by way of financial hedges, up to 450 GWh/year to Genesis Energy and 700 GWh/year to Mighty River Power in the South Island, and buying the same volumes of electricity from Genesis Energy and Mighty River Power in the North Island.

Figure 11: HHI for monthly hedge buyers



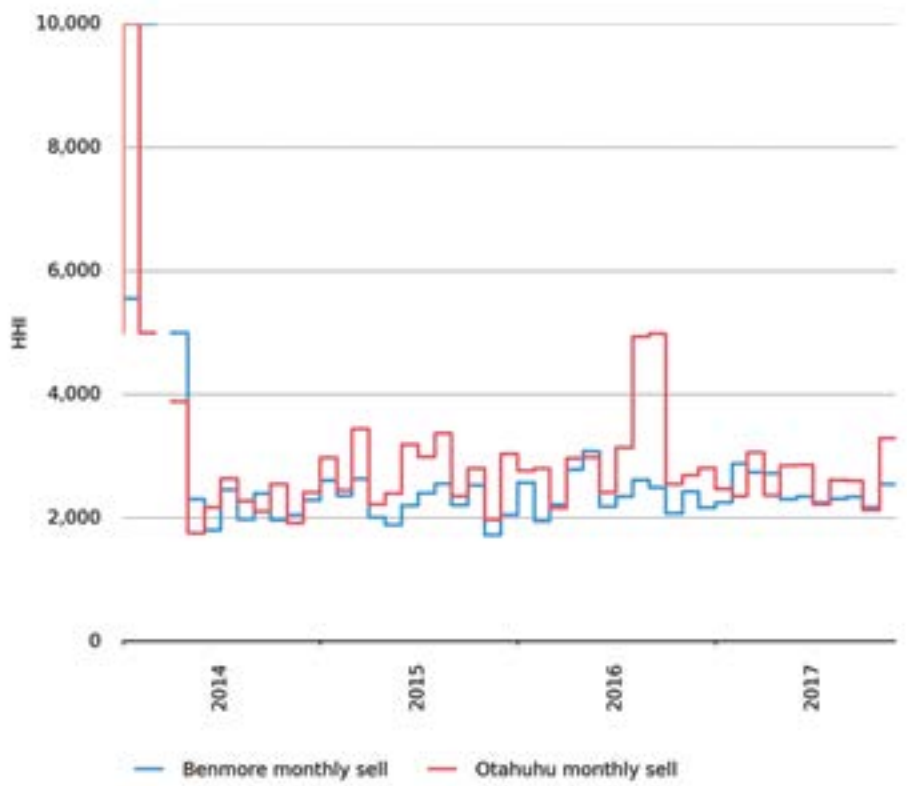
Source: ASX

Figure 11.5: HHI for quarterly hedge buyers



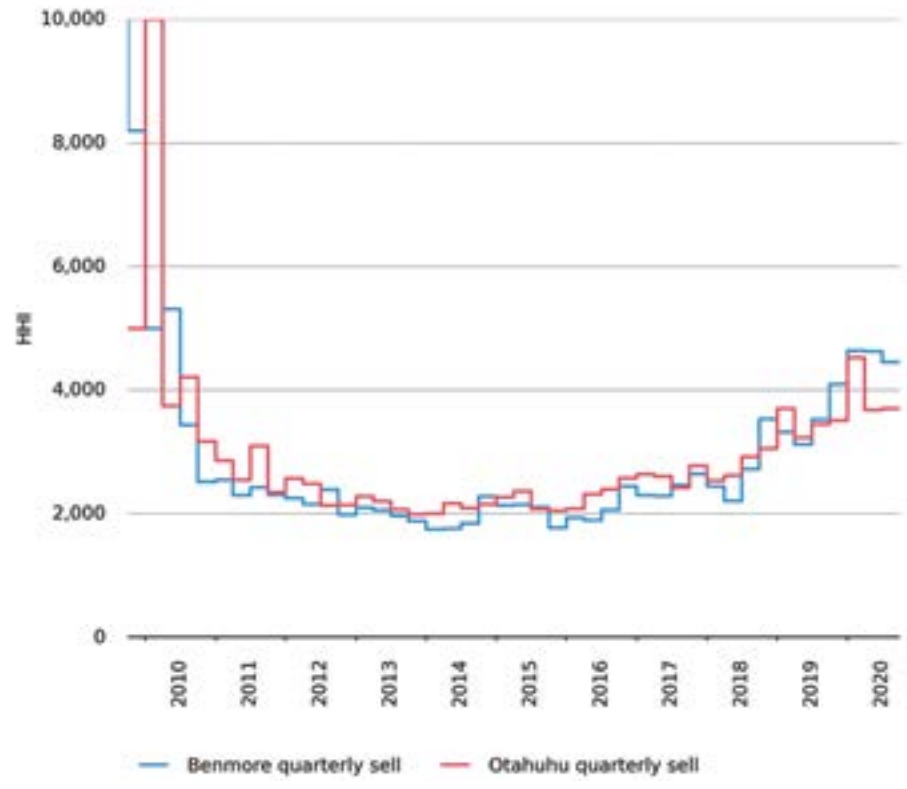
Source: ASX

Figure 12: HHI for monthly hedge sellers



Source: ASX

Figure 12.5: HHI for quarterly hedge sellers

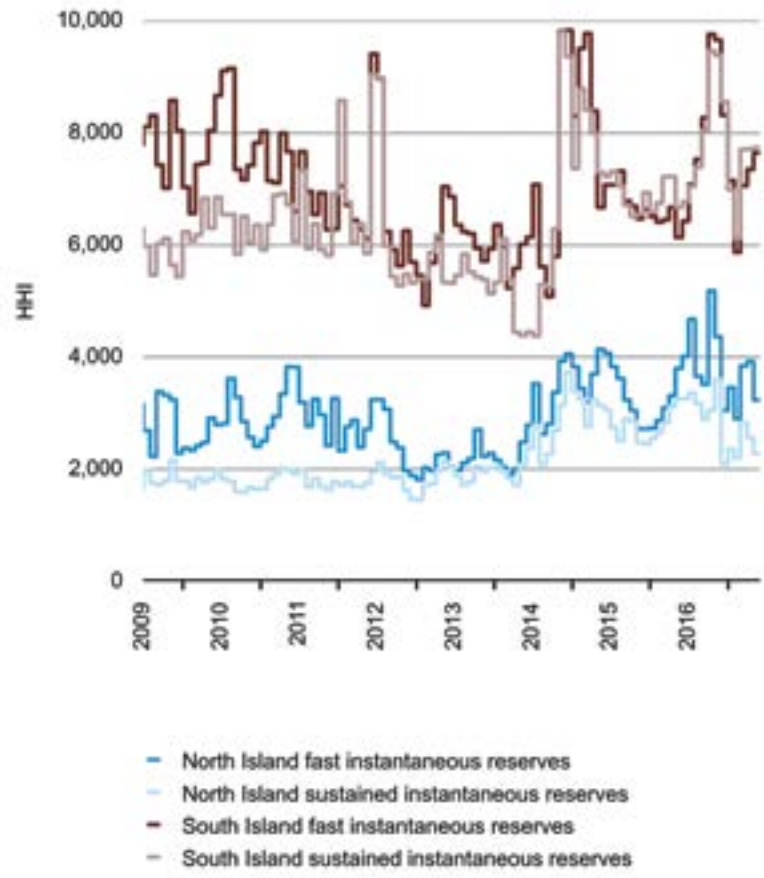


Source: ASX

Reserves market concentration (statistic 5)

The structure of the reserves market is shown in **Figure 13**, which tracks the monthly HHI for the reserve markets in both islands (statistic 5). The South Island reserves market is more concentrated than the North Island simply because there are fewer generators that are able to provide the service. HHIs increased in both islands over the summer of 2016/17, possibly due to low storage, but have fallen since then. There has been an improving trend over the last six months. However, this should be treated cautiously as the statistic is volatile. Note that **Figure 18** shows that overall costs of ancillary services are declining.

Figure 13: HHI for the reserves markets

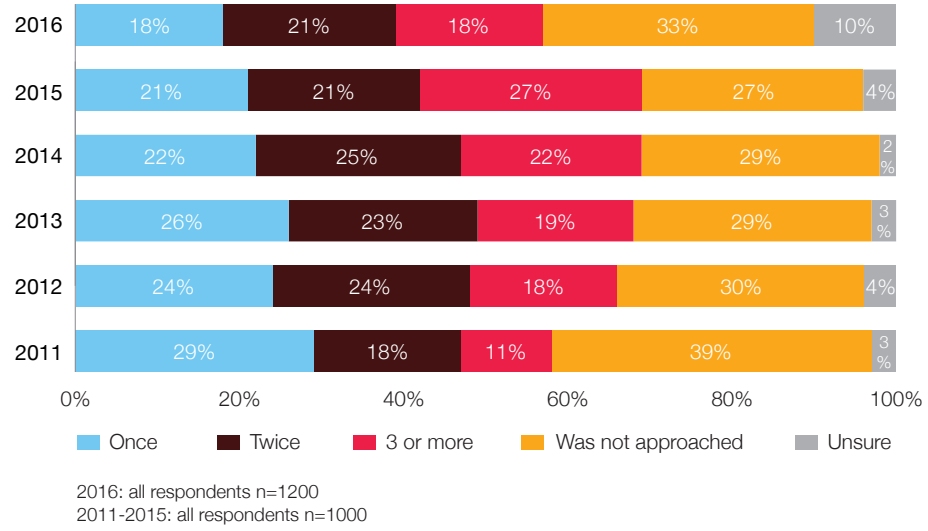


Source: System operator (Transpower New Zealand Limited)

Approaches to consumers to switch (statistic 6)

Figure 14 shows the number of consumers who have been approached by retailers from 2011 to 2016 (statistic 6). The chart shows that approaches have increased up until 2014 then fell in 2016. 57 per cent of consumers were approached in 2016 compared with 69 per cent in 2014. This is a measure of conduct in the retail market. The next survey will be carried out in the 2018/19 financial year.

Figure 14: Approaches to residential consumers to switch retailers



2016: all respondents n=1200
2011-2015: all respondents n=1000

Source: *Electricity Consumers' Survey 2016* (available at www.ea.govt.nz/about-us/what-we-do/whats-my-number/annual-review-of-the-whats-my-number-campaign)

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RELIABILITY

The suite of statistics used to assess reliable electricity supply, and summary of results to date are:[15]

7. Pricing in scarcity events reflects opportunity cost, as measured by case-by-case analysis—**one event in June 2016 investigated and enforcement action taken.**
8. Effective management of dry years or emergency events, as measured by case-by-case analysis—**we will consider a review of winter 2017.**
9. Capacity and energy margins are within efficient bounds, as measured by the annual security assessment—**standards set by the Authority are being exceeded.**
10. Investigation of reliability events does not identify systemic issues, as measured by case-by-case analysis—**one review underway—the South Island AUFLS event on 2 March 2017.**

Pricing in scarcity events (statistic 7)

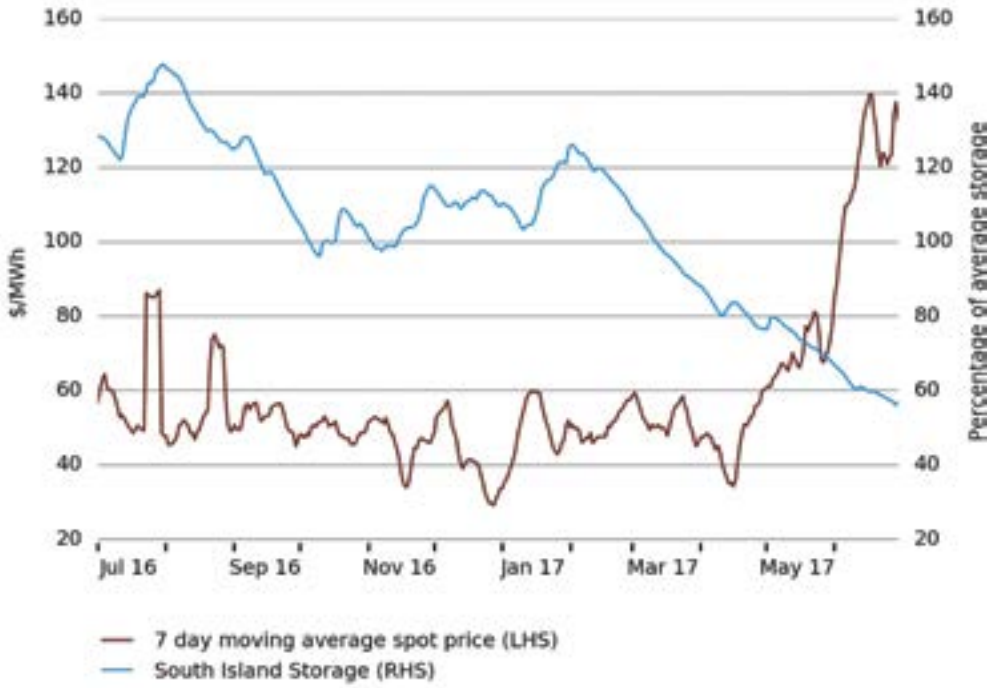
There have been no scarcity events in the 2016/17 financial year. However, pricing on 2 June 2016 was investigated and enforcement action was taken.

Effective management of dry years (statistic 8)

Figure 15 shows the spot price and South Island storage as a percentage of mean storage. Early 2017 saw storage fall to well below the 10th percentile. The spot market responded as expected with higher than normal prices (statistic 12—see page 104). This outcome is expected in a competitive market—scarce hydro resources cause prices to rise.

15 See the glossary for explanations of these statistics.

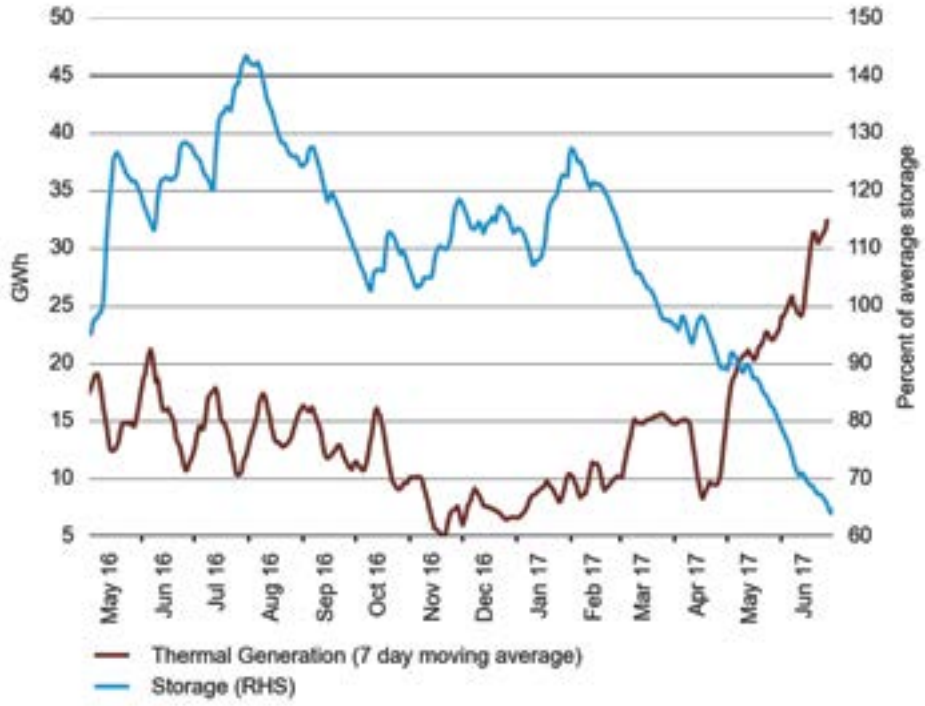
Figure 15: South Island hydro storage and spot prices



Source: Electricity Authority

Figure 16 shows thermal generation and total New Zealand storage. The high prices that accompanied falling storage in early 2017 led to higher output from thermal generation. This is exactly what we expect from the spot market; scarcity was signalled through the prices, and encouraged more expensive thermal generators to increase generation.

Figure 16: Thermal generation and storage



Source: Electricity Authority and NIWA

Capacity and energy margins (statistic 9)

Statistic 9 relates to capacity and energy margins. These are assessed and reported annually by the system operator[16]. The latest (2017) assessment indicates that the standards set by the Authority are being exceeded.

Investigation of reliability event (statistic 10)

Statistic 10 relates to investigations of reliability events. On 2 March 2017 testing at Clyde caused the South Island to be separated into two electrically separate systems, AUFLS to trip in the upper South Island, and interruptible load to trip in the North Island. This event and the subsequent reconnection will be the subject of a market performance review.

16 The system operator's annual security of supply assessments are available at: www.systemoperator.co.nz/security-supply/security-supply-annual-assessment

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EFFICIENCY

The suite of statistics used to assess electricity system and market efficiency, and summary results to date are:[17]

11. Robust futures prices—**market performing as expected**.

12. Dry-year prices reflect storage, as assessed by case-by-case analysis—**market performance in winter 2017 not yet assessed.**

13. Exceptional prices are justified by underlying fundamentals, as assessed by case-by-case analysis—**market performing as expected.** High prices on 2 June 2016 were investigated and enforcement action taken.

14. Reducing constrained-on compensation—**constrained-on costs have been falling since 2011.**

15. Increased occurrence of demand bids setting spot prices—**not yet measured.**

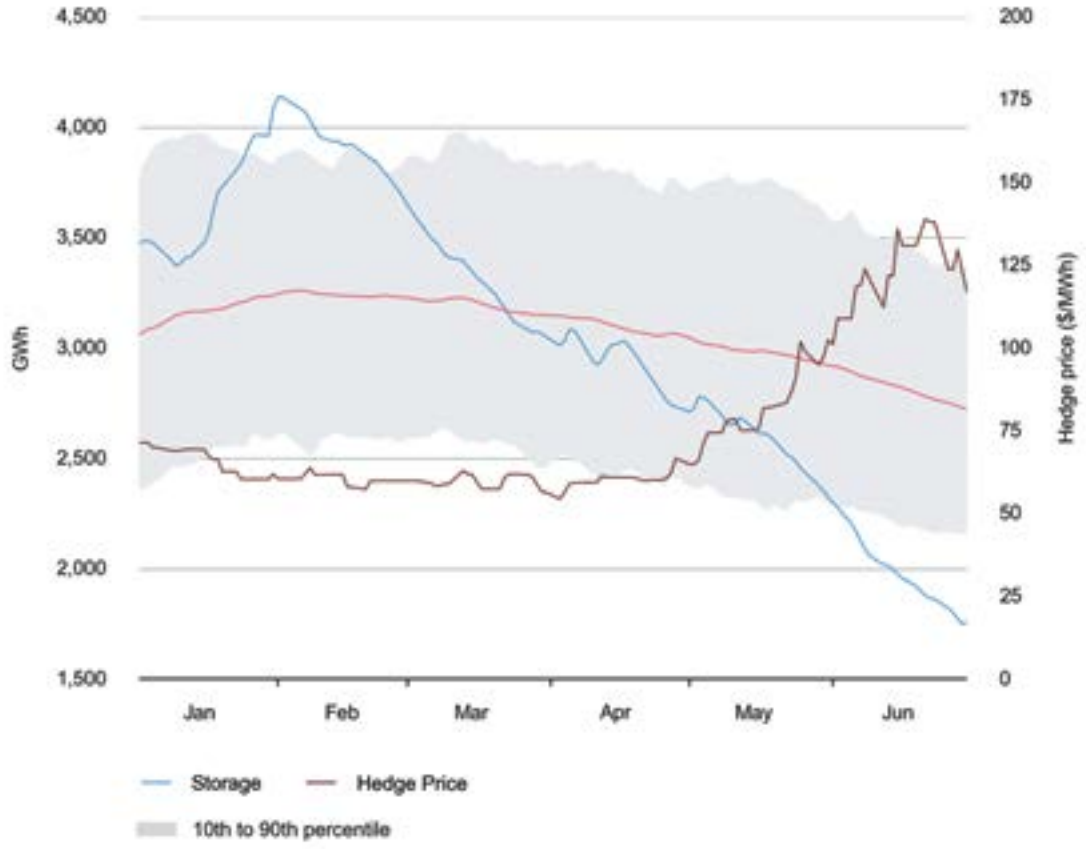
Futures prices (statistic 11)

Figure 17 (page 104) shows the hedge price (statistic 11) for the ASX September 2017 quarterly baseload hedge at Benmore and total national hydro storage. The chart demonstrates how the hedge price reflects market fundamentals.

The chart shows the hedge price rise sharply soon after storage declined below mean storage in April 2017. We expect this dynamic from the hedge market because it summarises the market's view of future prices, which in turn are an important input into investment decisions.

17 See the glossary for explanations of these statistics.

Figure 17: Hedge prices and hydro storage



Source: Hydro data: NZX-hydro; hedge price data: ASX

Dry-year prices reflect storage (statistic 12)

There were record low inflows in the South Island in 2017. More detail on the relationship between dry-year prices and storage levels can be found under statistic 8 (effective management of dry years) on page 100. Further work will be done to consider how well the dry year was managed including assessing the level of prices compared to the level of storage against past events.

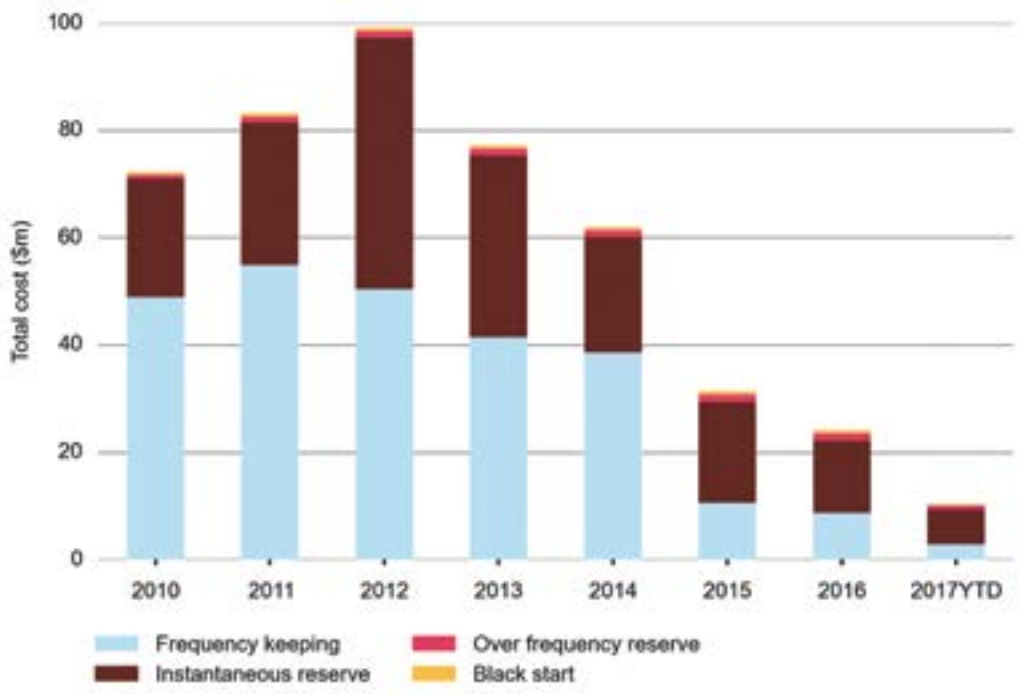
Exceptional prices (statistic 13)

On 2 June 2016, there were high prices for two trading periods that are being investigated and resulted in enforcement action.

Ancillary services and constrained costs (statistic 14)

Figure 18 shows the total ancillary services costs (statistic 14) for the 2010 to 2016 calendar years, and for 2017 to May. It shows that overall costs have fallen since 2012. The two main components of ancillary services are frequency keeping and instantaneous reserves. These costs are affected by energy costs. Frequency keeping attracts the majority of constrained-on and off costs.

Figure 18: Ancillary service costs



Source: System operator (Transpower New Zealand Limited)

Demand bids setting spot prices (statistic 15)

Statistic 15 is not yet measurable. Dispatchable demand can enable the demand side to influence and set the wholesale market price. The first participant in this new scheme started operating in November 2014 but to date this is the only participant.

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APPENDIX B: AUTHORITY MEMBERS, RULINGS PANEL, SECURITY AND RELIABILITY COUNCIL AND ADVISORY GROUPS

Authority members

The Authority 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.

Authority members are Dr Brent Layton (Chair) and Susan Paterson (reappointed for terms of five years, expiring 1 November 2020), Allan Dawson and Sandra Gamble (appointed for terms of five years, expiring 18 April 2022) and Mark Sandelin and Lana Stockman (appointed for terms of five years, expiring 6 June 2022). Elena Trout resigned on 19 August 2016. David Bull and the Hon. Roger Sowry's terms ended on 5 June 2017.

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 Mark Sandelin (Chair), Susan Paterson, Allan Dawson and Lana Stockman.

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 Susan Paterson (Chair), Sandra Gamble and Allan Dawson.

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 Sandra Gamble (Chair), Dr Brent Layton, Allan Dawson, Mark Sandelin and Lana Stockman.

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.

Members are Peter Dengate Thrush (Chair), Geraldine Baumann (Deputy Chair), Susan Roberts, Nicola Wills and John O'Sullivan.

Security and Reliability Council

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, Marc England, Vince Hawksworth, Anne Herrington, Bruce Turner, Guy Waipara and Erik Westergaard. Albert Brantley resigned on 14 November 2016.

Advisory groups

During the 2016/17 financial year, the Authority had two standing advisory groups: the Wholesale Advisory Group and Retail Advisory Group.

Members of the Retail Advisory Group (RAG) were Peter Allport (Chair), Sue Chetwin, Allen Davies, Murray Dyer, Ewan Gebbie, Nathan Strong and James Tipping.

Members of the Wholesale Advisory Group (WAG) were John Hancock (Chair), Phillip Anderson, Neal Barclay, John Carnegie, James Collinson-Smith, Stephen Drew, Alan Eyes, Chris Jewell and Stephen Peterson.

In December 2016, the Authority Board decided to replace the RAG and WAG with two new advisory groups: the Innovation and Participation Advisory Group (IPAG) and the Market Development Advisory Group (MDAG).

The IPAG was established to focus on issues specifically related to new technologies and business models, and consumer participation. The Authority appointed Lindsay Cowley as chairperson for a three-year term starting 1 June 2017.

The MDAG was established to focus on further evolving the 'machinery' of the electricity market. The Authority appointed James Moulder as chairperson for a three-year term starting 1 June 2017.

The Authority expects to appoint IPAG and MDAG members in the second quarter of the 2017/18 financial year.

The Authority disestablished the RAG and WAG following the completion of their respective work plans.

Additional advisory and technical groups

The Authority has established a number of other advisory and technical groups.

More information about the Security and Reliability Council, advisory groups and technical groups is available on the Authority's website at www.ea.govt.nz/development/advisory-technical-groups.

The Authority thanks past and current members of the SRC and advisory groups for their valuable input over the years.

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GLOSSARY AND ABBREVIATIONS

A detailed glossary is available at www.ea.govt.nz/glossary

Act	Electricity Industry Act 2010.
Ancillary services	The system operator contracts individual participants to provide five services essential to maintaining the common quality of electricity supply. These ancillary services are black start, over-frequency reserve, frequency-keeping reserve, instantaneous reserve and voltage support. Improving the ability and willingness of participants to compete in these markets will improve reliability and efficiency.
ASX	Australian Securities Exchange.
Authority	Electricity Authority.
Cap product	A hedge product that allows participants to contract ahead for electricity, which includes a guaranteed maximum (cap) price. If the wholesale price goes above the cap price on any trading period within the contract duration, the holder of the cap contract is paid the difference between the cap price and wholesale price. Each trading period (half hour) is assessed separately. The buyer pays the seller a 'premium', analogous to an insurance premium, and any settlement payments are made by the seller only.
Code	Electricity Industry Participation Code 2010.
Constrained-on price	Constrained-on compensation is an amount paid to generators, if they are required by the system operator to generate during a trading period when the final price is less than the generator's offer price. The payment is calculated by the clearing manager and is payable by purchasers and the system operator.
Consumer	Any person who is supplied with electricity other than for resupply.
CR X	Concentration Ratio (CR) of the top X number of generation/retailer companies (gentailers). The CR measures the sum of the market shares for the largest retailers—a higher number indicates a more concentrated market. For example, CR4 is the sum of the market shares for the top four parent retail companies.
Direct-connect	A direct-connect or direct consumer is a consumer who purchases electricity from the spot market for its own consumption or a consumer with a grid connection (for example, a large industrial user).
Emergency event	An emergency event is one where there is a persistent shortage situation (weeks or months) and would include rolling outages or supply shortage declarations (both in Part 9 of the Code).
Extended reserve	Extended reserve is a means by which to manage situations where the frequency of New Zealand's electrical system falls too far below 50 Hertz without the fall being arrested by normal existing reserve products. Extended reserve responds if the frequency continues to fall after the normal reserve products have responded to prevent such a drop in frequency that could lead to catastrophic power system failure. Currently the only mechanism available is automatic under-frequency load shedding (AUFLS), which automatically disconnect blocks of load at specified frequency and time settings.

Frequency keeping / management	The frequency of the New Zealand grid is normally maintained at 50 Hertz, which is the number of cycles per second. Frequency keeping refers to the process used to keep the frequency of the grid within its normal band. Frequency-keeping power stations are used to increase or decrease generation within a set band to ensure that supply equals demand on a second-by-second basis. The system operator purchases frequency management services to maintain frequency within the prescribed tolerances.
FTR	Financial transmission right.
Hedge market	A market through which hedge contracts are bought and sold. A hedge contract is a financial risk management product or contract for sale and purchase of electricity that shifts the price risks associated with the spot price of electricity. For example, a common hedge contract is a contract for differences (CFDs). CFDs set a price at which a buyer will purchase a specific quantity of electricity at a specified node for a set period. The buyer of the CFD pays this price regardless of whether the spot market price is higher or lower than the set price.
HHI	Herfindahl-Hirschman Index (HHI). HHI is a measure of market concentration and the relationship with competition occurs because less concentrated markets are likely to be more competitive. It is calculated as the sum of the squares of the market share of all participants.
Instantaneous reserves	Generation capacity and interruptible load that is made available to be used in the event of a sudden failure of a generation or transmission facility to maintain system frequency at 50 Hertz. Fast instantaneous reserve is available within six seconds and must be able to operate for one minute. Sustained instantaneous reserve is available within 60 seconds and must be available for 15 minutes.
MFM	Market facilitation measures. These are actions the Authority can take short of amending the Code or recommending changes to regulations. This can include discussion with participants, education programmes, publication of guidelines and publication of model agreements.
NZIER	New Zealand Institute of Economic Research.
Outcome, impact and output	Accountability terms used in the State sector that link the work we do with the results we are contributing to. ■ Outcome: a state or condition of society, the economy or the environment and includes a change in that state or condition. For us this is expressed through the competition, reliability and efficiency limbs of our statutory objective. Outcomes are assessed over the long term. ■ Impact: the contribution made to an outcome by a specified set of outputs, or actions, or both. We use our strategic priorities, and specific changes we seek through our projects and business-as-usual functions to assess the impact we are making. These changes can usually only be assessed over the medium- to long-term. ■ Output: the goods or services that we supply. We have called these 'our functions' in this Annual Report. These are measured and reported on annually.
Participant	A person, or a person belonging to a class of persons, identified in section 7 of the Act as being a participant in the electricity industry. These include generators, Transpower, distributors, retailers, other lines owners, consumers directly connected to the national grid, buyers of electricity from the clearing manager and service providers.

Reliability event	A reliability event is one where something has gone bang. Some power system asset has broken (with some risk to system security) and there may be lessons to be learned from the experience.
RS analysis	Residual supply analysis. This type of analysis is used to assess how much ability generators have to reduce supply and raise price to increase their profits.
Service providers	We contract third parties to manage the electricity system (system operator) and market services, as described in Part 3 of the Code. Descriptions are provided on page 54.
SOI	*Statement of Intent*. Prepared in accordance with the Crown Entitles Act 2004.
SPE	*Statement of Performance Expectations*. Prepared in accordance with the Crown Entitles Act 2004.
SRC	Security and Reliability Council.
Structure, conduct and performance framework (SCP)	Structure, conduct and performance is an organising framework for thinking about influence on market performance. It starts from the idea that the structure of the market determines the conduct of participants. This conduct drives outcomes. In the context of competition, it follows that the more competitive the structure, the more competitive the conduct of participants and the more efficient their performance. This is a useful framework for considering reliability and efficiency because it underscores the need to take account of the context in which industry participants conduct themselves as well as the outcomes that their conduct produces. The SCP framework has the benefit of emphasising that outcomes are a function of a range of related influences and actions and thus no single measure provides definitive information on market performance.
TPM	Transmission pricing methodology.
UTS	Undesirable trading situation. A UTS arises when there is a threat to orderly trading on the wholesale market or settlement that cannot otherwise be resolved satisfactorily under the Code.

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