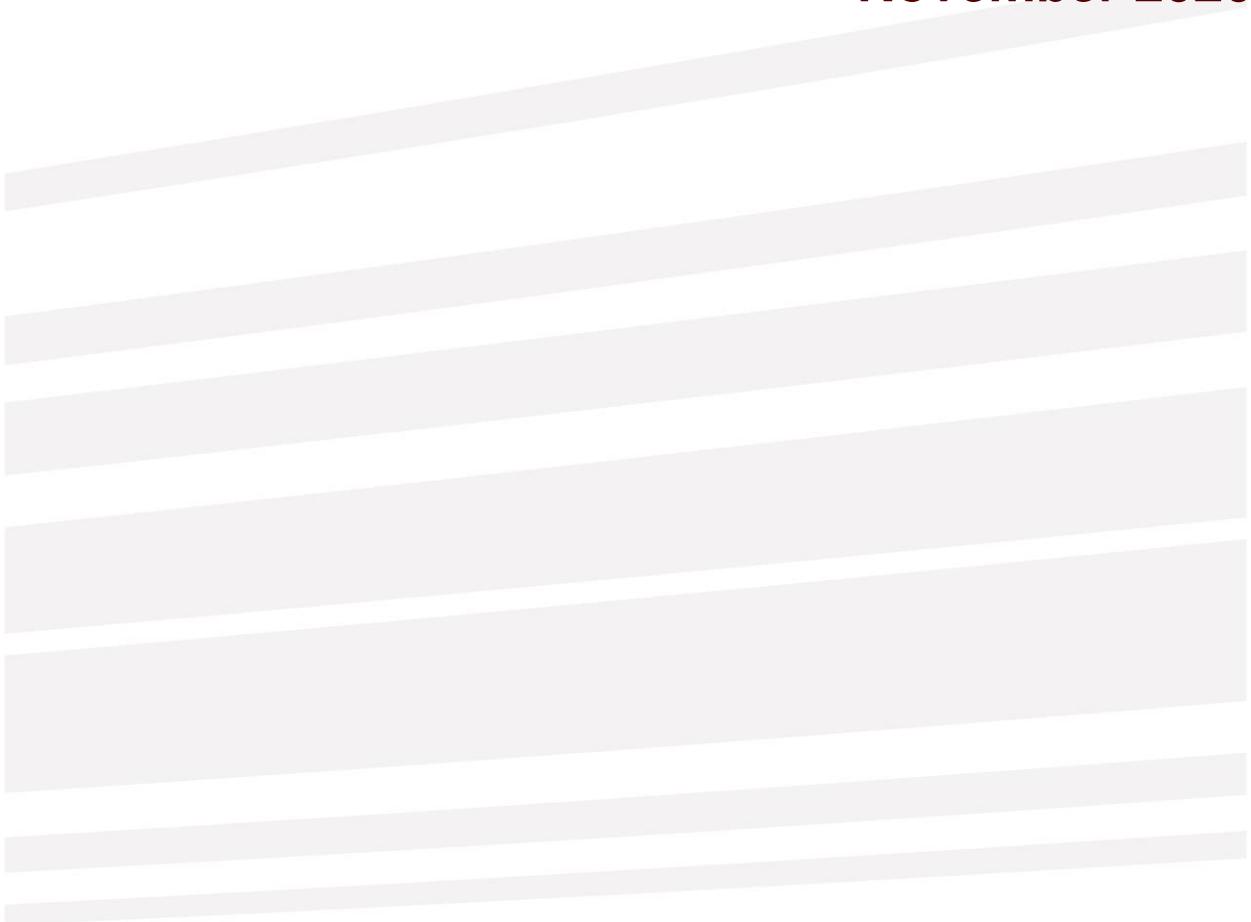




Briefing to the Incoming Minister

November 2020



Contents

1	The Authority and our role in the electricity industry	1
	What is our regulatory role?	2
	Who and what do we regulate?	2
	The Authority's five strategic ambitions	3
2	Challenges and opportunities in the electricity system	5
	Appendix A Progress towards EPR recommendations	1
	Appendix B Governance and leadership	3
	Our Board	3
	Chief Executive: James Stevenson-Wallace	5
	Our foundation documents	5
	Appendix C Rulings Panel, SRC and advisory groups	6
	Rulings Panel	6
	Security and Reliability Council (SRC)	6
	Advisory groups	6
	Appendix D: Key contacts	7

Figures

	<i>Figure One – the Authority's strategic framework</i>	3
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Graphs

	<i>Graph One: Trend in ICP Count by retailers 2003-2019</i>	4
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1 The Authority and our role in the electricity industry

The Authority was established 1 November 2010 under the Electricity Industry Act 2010 (the Act) as an independent Crown entity, we provide regulatory oversight of the electricity sector. The Act sets out our statutory objective, roles and functions and authorises the making of regulations and the Electricity Industry Participation Code 2010 (Code). The Code sets out the rules for the electricity industry.

The electricity market in New Zealand is a complex system, where everyday consumers benefit from the efforts made by market participants and regulators to ensure the country has secure, affordable and sustainable access to electricity. Electricity is a vital economic enabler for New Zealand, and an efficient, competitive and reliable electricity market will be a key tool in our low-emissions transition.

Our role is one of stewardship and our purpose anchors our role in the broader context in which we operate:

We are the kaitiaki of electricity. Our purpose is to enhance New Zealanders' lives, prosperity and environment through electricity.

The Authority's statutory objective is to promote competition in, reliable supply by, and the efficient operation of the electricity industry for the long-term benefit of consumers. We deliver against our statutory objective through four functions to:

- promote market development
- monitor, inform and educate
- operate the electricity system and markets
- enforce compliance.

Over the past ten years, the Authority has introduced a range of reforms to improve competition, reliability and efficiency of the industry. We have used our position as an independent Crown entity to make positive changes, enable investment in the sector, to ensure a level playing field; provide a stable regulatory regime and allow the market to grow without the need for short-term reactionary interventions.

We have seen improved outcomes for consumers through increased retail competition, cost-reflective investment signals for new generation, and a secure supply of electricity despite several significant disruptions. Over the last decade, improvements in the competitive settings for the sector has seen:

- dry year risk diminish
- domestic consumer prices flatten or reduce
- new renewable generation come online, from 65% renewable to 85% without government subsidies
- new technologies, business models and retail competition flourish, in September 2010 there were 15 traders and in September 2020 there were 43 traders.

There is however more we can do, particularly to provide the right settings to encourage investment in renewable generation to be brought forward, and to better empower consumers to reap the benefits of new and emerging technologies on the distribution networks.

The New Zealand electricity market is well regarded internationally. The International Energy Agency (IEA) notes New Zealand "is a success story for the development of renewable energy,

including hydropower and geothermal energy, without government subsidies. Geographically isolated, the country has developed robust policies for security of supply.”

We work collaboratively and openly across the sector with other organisations such as the Energy Efficiency and Conservation Authority (EECA), the Commerce Commission and the Gas Industry Company. We also operate on a ‘no-surprises’ basis with the Ministry of Business, Innovation and Employment (MBIE) -ensuring the interface between policy, regulation and implementation runs smoothly.

What is our regulatory role?

We are responsible for providing independent regulation and governance of the electricity industry and oversee the operation of the electricity system and markets. The Authority makes changes to the Code, monitors and enforces compliance with the Act, regulations, and the Code. We keep the Minister informed on a ‘no surprises’ basis. There are several regulations relating to our functions, which are administered by MBIE.¹

Acting as kaitiaki, our regulatory stewardship aims to both protect the progress and strengths of New Zealand’s electricity system for generations to come and ensure industry participation continually builds new strengths and delivers the outcome for consumers that Parliament expects of us.

Our independence is valuable for promoting high-performing electricity markets – reducing the risk of intervention and increasing predictability in how the regulatory regimes operate. This is important for sectors like electricity that are technically complex and rely on long-lived capital-intensive investments.

Who and what do we regulate?

High-performing markets have a direct link to innovation, investment and increased levels of competition – driving improved outcomes for consumers and supporting economic growth.

For over 10 years, the wholesale spot market has operated effectively in providing signals for efficient generation investment, including managing dry-year risk when the lakes used for hydro-electric generation have less water. This has been supported in more recent years by well-functioning hedge markets that provide parties with the means to enter into forward contracts for purchasing electricity, and the ancillary services markets which are used to ensure New Zealand’s electricity system is stable and reliable. Well-functioning hedge markets also provide a lower risk path for innovative retailers to ensure the market without a generation portfolio.

This approach is also delivering for consumers. Consumers can now choose from many different retail brands, plans and packages on offer. Switching between providers for motivated consumers is relatively easy and quick - New Zealand has one of the highest switching rates in the world. Data from MBIE shows that shows a sustained downwards trend in retail tariffs over the past five years, including a decline in the energy component of tariffs, meaning that consumers are benefiting from competition.

¹For example, the Electricity Industry (Enforcement) Regulations 2010 and the Electricity Industry (Levy of Industry Participants) Regulations 2010.

Nearly every aspect of the electricity industry and participant type is covered in the Code:

- generation of electricity
- wholesale electricity market
- transmission via the national grid
- system operation
- security of supply
- market arrangements
- metering
- distribution via local networks
- retail electricity market

The Authority's five strategic ambitions

The Authority has five strategic ambitions that represent its aspirations for the sector in the future. These include:

- a focus on consumer centricity to guide regulation and industry
- supporting low-emissions energy to electrify the economy
- building trust and confidence in the industry for all stakeholders
- fostering thriving competition across the electricity system
- supporting flourishing innovation.

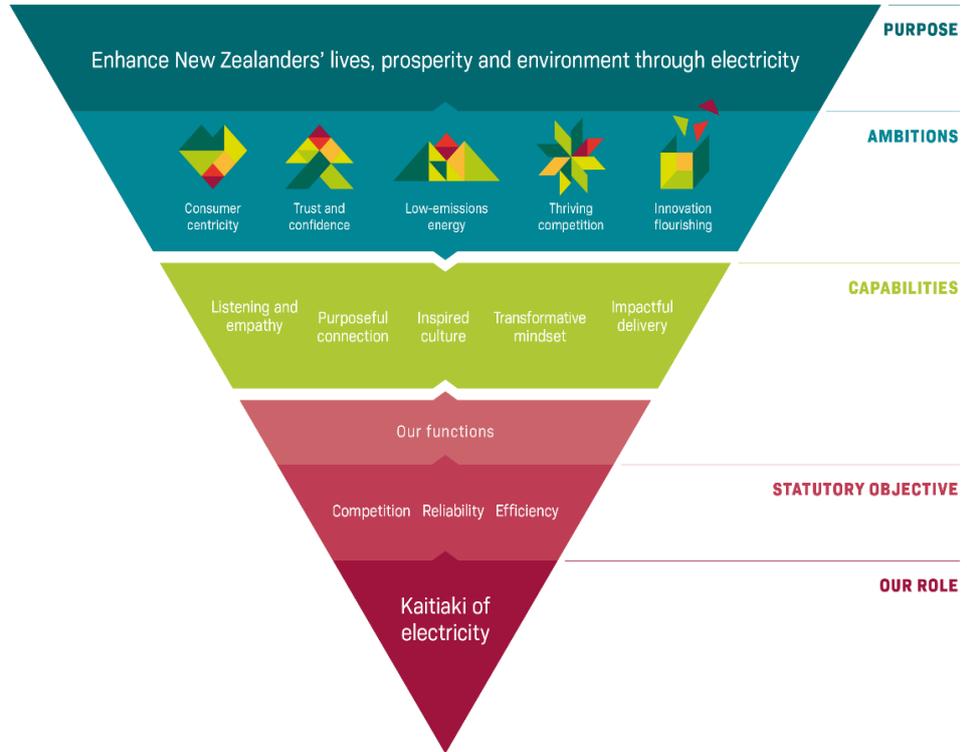
The three limbs in our statutory objective – **competition, reliability and efficiency** – are an implicit part of all five outcomes.

As competition acts as such a critical enabler, it is also identified explicitly as an outcome. In a similar way, **innovation underpins** the other four outcome themes, and ensuring it can flourish is a key focus for the Authority.

Our strategic ambitions are intentionally ambitious and reflect a collective call to action for the sector. They also acknowledge that our role in New Zealand's future is **broader than just electricity** – we are part of the wider **energy discussion**.

Our functions – promote market development; monitor, inform and education; operate the system and markets; enforce compliance - enable us to pursue our statutory objective and ambitions.

Figure One: The Authority's strategic framework



2 Challenges and opportunities in the electricity system

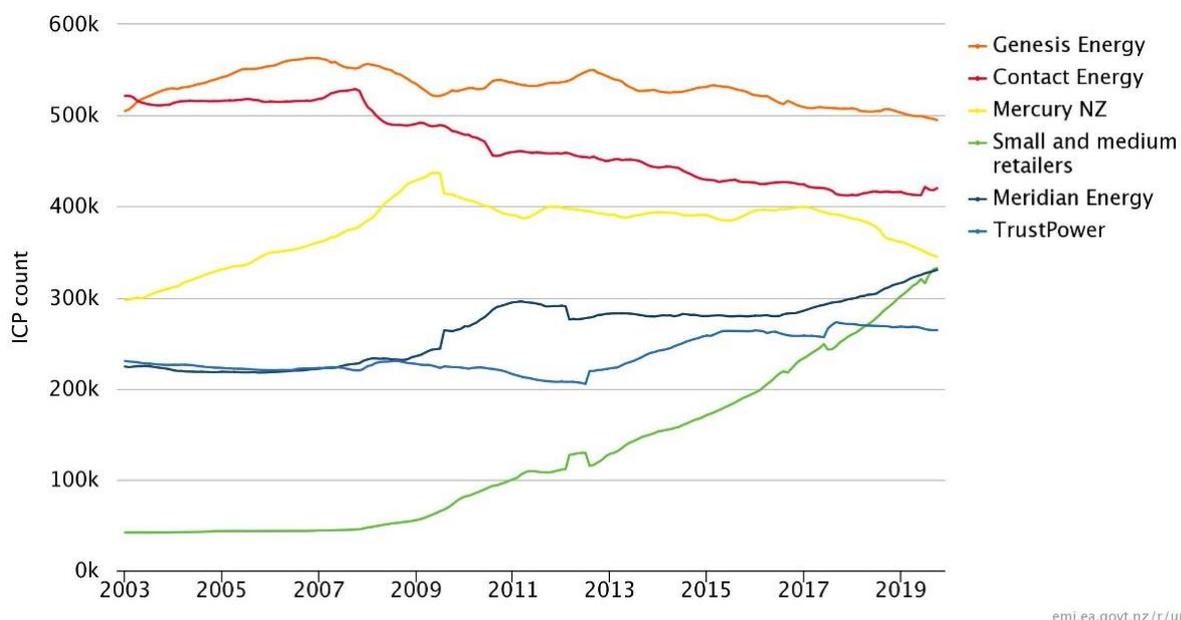
New Zealand has a competitive electricity market

Market-orientated solutions in the electricity market have helped to reduce barriers to retail participant entry and expansion. An increasing number of new entrants into the retail market, accompanied by regular exits from the market, suggest competition is generally healthy.

Increased retail competition has resulted in increased benefits for consumers in terms of different services and offering. Consumers can now choose from over 40 different brands with some now opting to pay the wholesale spot price rather than a fixed plan.

Even through the five largest retailers (Meridian, Genesis, Mercury, Trustpower and Contact) make up the bulk of the retail market, the long-term trend shows increased competition. This trend can be seen in the graph below:

Graph One: Trend in ICP Count by retailers 2003-2019



emi.ea.govt.nz/r/uplu3

The long-term benefit of consumers, including households, SMEs, and industrial users is a focus for the Authority. As consumer expectations of both regulators and industry shift in terms of the services they receive, the Authority responds to these expectations.

Market competition is a key enabler of increased affordability, efficiency and consumer satisfaction in the electricity market. The Authority works to ensure the benefits of competition flow through to all electricity consumers.

Increased disruption to traditional electricity business models fosters innovation and competition, improving choice, control and affordability for consumers. The Authority adapts the regulatory framework to take account of changing industry and sector dynamics to ensure that competitive pressure is applied to drive efficiency, reliability and the integration of new technologies.

To support this, the Authority will continue to reduce barriers to competition and strengthen compliance. The Authority is making a suite of improvements to further enhance retail competition, including projects to improve awareness of switching and dispute resolution services. The Code has been amended to prohibit saves and win-backs to promote retail

competition. These changes support consumer choice and increased competitive pressure is expected to result in lower prices for consumers.

We have also led a customer-centred approach to revising the guidelines for medically dependent and vulnerable consumers. The Authority is committing to greater discipline in how it engages with consumers, communicates its initiatives and how these will impact consumers, while also recognising that consumers are far from a single homogenous group.

Reframing and focusing our activities around direct consumer impact are key shifts that the Authority is continuity to progress. This includes explicit consumer impact statements in all work and ensuring we incorporate the consumer voice into our decision-making processes.

The Electricity Price Review has provided a focus for improvements to the electricity market

Ensuring the electricity market benefits all consumers is a priority for the Authority, and one that is consistent with the findings of the Electricity Price Review (EPR). The Authority has made substantial progress to date on EPR-related recommendations, identifying innovative ways of delivering on these to maximise their benefit.

In line with the 2019-20 Ministerial letter of expectation, the Authority has deliberately prioritised the most impactful key recommendations related to wholesale, distribution and retail markets. In many cases these have been completed ahead of EPR timeframes. We also continue to support MBIE as it progresses with its areas of responsibility.

An overview of the Authority's progress towards implementing the recommendations of the EPR is attached as Appendix A.

Building trust and confidence in the wholesale market is a priority of the Authority

High levels of trust and confidence in the electricity market drives participation.

Historically the Authority has emphasised the development of rules that promote consumer choice, provide clear investment signals and treat participants equally. In this way the Authority has favoured and deliberate and varied regulatory approach to support the operation of the market, which balances facilitating the activities of market participants with active enforcement of the conduct of these activities. This approach has led to the healthy level of competition and investment, and a secure electricity supply.

While current settings have ensured a stable electricity market in the face of marginal fuel uncertainty (in particular gas), and the disruption and stresses caused by COVID-19, high spot prices, and a perception that the five largest generator-retailers are exercising market power to the detriment of consumers, has led to concern from some participants that the market is fundamentally flawed.

We do not share that view. Over the past year in responding to the EPR recommendations, the Authority undertook extensive analysis of the wholesale market at very granular levels. We do not consider that there is any evidence to suggest a systemic issue or systemic lack of competition in the wholesale market – although transitory issues do remain.

It appears that concerns raised by participants stems from commercial exposure and entrepreneurial decision making and appetite for risk (and the consequences for risk) as opposed to regulatory failure. Risk management is an essential part of participating in the electricity market, and the Authority supports participants to do this through the availability of a suite of risk management tools and significant data transparency.

It is also worth noting that high spot prices reflect the prevailing value of electricity at a point in time. Analysis of historical spot prices undertaken by the Authority earlier this year identified that spot prices are determined by the balance of supply and demand, which is indicative of effective competition.²

This indication of value can help to attract generation investment, such as Mercury's 2019 announcement of the 119MW Turitea wind farm.

Despite our support for a stable, market-led approach, we acknowledge the market will continue to evolve over time, and we have also demonstrated the willingness to intervene.

To date the Authority has enhanced competition in the electricity market by making it easier for consumers to switch electricity providers through the Powerswitch website, standardised terms and conditions for access to distribution networks to promote competition in retail and new emerging markets by introducing default distributor agreements, and prohibited the industry practice of 'saves and win-backs'.

Further changes through our wholesale market enhancement programme of work will build trust and confidence and combines initiatives to support increased transparency; enhance risk management through hedge market improvements and ensure a high standard of trading conduct.

For example, the EPR recommended additional disclosure of segmented profitability reporting to foster confidence in the wholesale electricity market, noting that internal transfer prices are a crucial element in determining the allocation of profits between retailing and generation segments.

The Authority has analysed the internal transfer prices of the five largest generator retailers and reviewed the segmented reporting undertaken by these companies. The Authority intends to release a consultation paper in March 2021 on a proposed Code amendment that would result in greater disclosure of transfer prices and methodologies. The consultation paper will also seek feedback on the value of disclosing some measure of retail electricity profitability.

These wholesale market improvements respond to concerns raised in the Electricity Price Review and build on 10 years of progressive improvements made to create a stable regulatory environment for electricity.

Effective monitoring and enforcement of market rules underpins good competition

The Authority has demonstrated its willingness to enforce market rules when necessary. As part of our market enforcement role, industry participants are required to report an alleged breach of the Electricity Industry Participation Code when they consider the Code's provisions have not been followed.

The Code deals with more major issues under the undesirable trading situation (UTS) provisions – a UTS means any situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market; that, in the reasonable opinion of the Authority, cannot satisfactorily be resolved by any other mechanism available under the Code. The UTS provisions set a very high bar and are for extraordinary events.

On 12 December 2019, the Authority received a claim of an undesirable trading situation. The claim was made against the activities of Contact Energy and Meridian – the main allegation was

² Market Performance Quarterly Review Q2 2020 (<https://www.ea.govt.nz/assets/dms-assets/27/27142Quarterly-Review-July-2020.pdf>)

that water that could have been used for generation was being spilled unnecessarily and the wholesale prices did not reflect the supply situation.

The process for investigating the alleged UTS remains underway. The Authority has released a preliminary decision paper and a subsequent supplementary consultation paper in response to submissions. The preliminary decision is that the outcomes in the spot market did not match the reasonable expectations of how a power system at a time with abundant cheap fuel would normally operate. The preliminary decision did not identify any systematic problems with the operation of the electricity market. The Authority intends to release a final decision in December 2020.

The UTS is only one part of the work the Authority is doing to consider activity in the wholesale market. Other workstreams include the:

- Review into 2019/20 wholesale market prices - the Authority actively monitors the market and may initiate an enquiry, review or investigation in various circumstances. At the time of the UTS claim, there was an ongoing review into wholesale market prices in 2019/20. This review is distinct from and focusses upon several issues that are not covered by, the UTS investigation.
- Review of the high standard of trading conduct (HSOTC) provisions - Part 13 of the Code includes the HSOTC provisions. These are intended to encourage wholesale electricity market participants to carry out appropriate trading behaviour. These are currently under review.
- Compliance investigations related to the UTS investigation period of alleged breaches of the HSOTC by Meridian and Contact. The 2019 UTS claim is being considered independently of the compliance investigations into these alleged breaches for the same period. The test for a UTS is distinct from, and addresses different concerns to, the compliance process.

New Zealand has a reliable electricity supply, but there are potential challenges in the future

There are few risks to a reliable supply of electricity in the short term

New Zealand has one of the highest levels of renewable electricity generation globally with the potential to maximise our renewable advantage over the medium term.

Although New Zealand's electricity generation is comprised primarily of hydroelectric generation, other forms of renewable generation such as wind and solar have increased over the last twenty years. Hydro generation has limited storage and that is why it is critical that we have the right generation mix to provide dry winter security.

Since 2010, the Authority has introduced regulatory and market mechanisms to improve security of supply and successfully navigate dry year risk. These include an objective trigger to commence an Official Conservation Campaign (OCC), which is when consumers are asked to voluntarily reduce consumption, and payments to retail customers in the event an OCC is triggered in the form of a customer compensation scheme. These measures also include stress testing of the ability of participants to withstand financial stress in a dry year, as well as scarcity pricing.

These measures have ensured a well-managed electricity supply in response to record dry periods during the past decade. The Authority undertook a review of security of supply settings after the winter of 2017 to assess whether current regulatory settings were delivering as expected. The result identified the broader security of supply arrangements put in place by the

Authority have worked well, and that these specific measures outlined above have had the desired effect on hydro storage management.

The Authority considers the immediate risk of dry years is unlikely. However, climate change, technological developments, the increasing electrification of emissions-intensive activities such as transport and process heat, cyber security, retirement of existing generation plants and the exit of large industrial customers will challenge our sector and electricity supply. Investment to support dry year security is likely to become even more critical as our dependence on electricity grows, and more intermittent and distributed generation is deployed.

Thermal generation continues to play an important supporting role in terms of providing electricity during periods when renewable energy alone is not sufficient to meet demand. When hydro storage is low and hydro generation becomes increasingly expensive, thermal generation tends to increase to ensure supply and keep the prices down.

A less certain outlook for electricity generation and consumption in the medium term

The future outlook for electricity generation and consumption in the medium term is less certain, underscoring the importance of new investment in generation. A predictable and stable investment landscape and regulatory framework is critical to encouraging investment.

In terms of generation, the long-term output of gas from New Zealand's largest gas field, Pohokura, has been volatile over the last two years. An unplanned outage in late 2018 coincided with low hydro storage and caused high spot prices, and there have been several further outages that reinforce the issues identified in 2018. Beginning in early May 2020, output from Pohokura has deteriorated steadily. We understand this is due to scaling which will require significant investment to address.

Similarly, there is also the potential retirement of some major thermal generation, notably the 360MW Taranaki combined cycle plant (TCC), and some or all the 250MW Huntly Rankine units as a direct result of the smelter's exit. Pressure on thermal retirement will also come from the move to 100 percent renewable electricity in normal hydrological years.

In terms of consumption, the potential exit or substantial reduction in electricity consumption of major electricity consumers, such as the New Zealand Aluminium Smelter (NZAS) at Tiwai Point, New Zealand Steel, and New Zealand Refining, is likely to have a major impact on the electricity market.

In July 2020, NZAS announced its intentions for a planned exit from New Zealand to take effect in August 2021, although there is a reasonable prospect of a three to five-year exit. The NZAS announcement has already had effects on the electricity market. Since the announcement, Meridian has announced it will defer the 160MW Harapaki wind farm, and Contact has announced it will defer the 250MW geothermal Tauhara development.

The electricity system in New Zealand is already characterised by generation being concentrated in the South Island and demand in the North Island connected by long transmission lines. The potential exit of the NZAS, and the corresponding exit of North Island thermal generation, would strengthen this characteristic. This has implications for the security of the power system by making it more reliant on the interconnecting link between the islands.

The Authority is keen to facilitate an orderly and predictable retirement of thermal generation and exit from the electricity market of major energy users. It is important that the right investment signals are provided to the wholesale market in the 3 to 4 years before such changes in order to allow market participants to plan accordingly.

Continued consumer investment in solar photovoltaics, batteries and electric vehicles, and the increased electrification of the industrial load of emissions-intensive activities such as transport and process heat, is also anticipated alongside these changes in future electricity generation and demand.

The extent to which new industrial load will be able to support the power system through dispatchable demand or providing reserves depends largely on the processes involved. With one exception, existing large industrials have not taken up the opportunity for dispatchable demand because of the complexities of their production processes.

Electrification of South Island dairy processing which currently relies on coal fuelled boilers for dairy powder production—for example—would place more demand on the electrical system at times outside winter peak demand. The dairy season runs from late July, peaking in terms of milk production in October and November, before falling away until anywhere between March and May. Dairy processing energy demand follows milk production closely.

This demand will be counter to the overall pattern of energy demand which peaks in the winter. While this countercyclical demand will likely require little investment in terms of the transmission network—beyond connection assets—and the ability of the power system to peak, it generally does not require new generation to be built to supply the necessary energy.

The investment necessary for electrification and to achieve a more renewable generation fleet requires a stable investment environment. Lowering costs for renewable generation will force more expensive thermal plant out of the market, continuing a pattern we have observed over the last decade.

Investment in new generation requires a clear market signal about future levels of electricity demand and regulatory certainty. Over the last decade, uncertainty about the future of NZAS has undermined the investment environment. This is due to the scale of NZAS and the binary nature of it either exiting or not. NZAS exit is equivalent to a 600 MW generator appearing in Southland, and this possibility makes investment in generation difficult as a proposed investment would need to be robust regardless of NZAS's decision.

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The Authority is leading a major review of the security and resilience of the electricity supply to identify whether market settings might need to change in the future. The review will focus on the risks posed by technological advances and other influences towards security of supply and other adverse outcomes and make recommendations to Government to allow for greater preparedness. We recognise there is likely a cost to extra security and resilience and so the focus must be on an efficient level where the added cost to consumers for improving security and resilience equals its added benefits.

The results of this review will help the sector navigate a range of challenges including significant changes in demand and generation mix. An issues paper is planned for public release in May 2021.

An efficient electricity market can prepare New Zealand for a renewable future at the least cost to consumers

An efficient electricity market can underpin New Zealand's low emission transition

The New Zealand electricity system is already world leading in many respects. The competitive wholesale market particularly operates to balance:

- keeping prices down
- promoting appropriate new generation investment
- signalling grid congestion through nodal prices.

The result of this market design has been that New Zealand has been able to, compared to other countries, affordably increase the penetration of renewable electricity generation without any subsidies.

New Zealand's successes in renewable electricity investment can help support the Government's climate change objectives. There is significant potential to support these objectives by using New Zealand's renewable energy to electrify transport (21 percent of New Zealand's emissions) and industrial processing and manufacturing (8.1 per cent of New Zealand's total emissions).

As part of the low emissions transition, the Government has also set an ambitious target of reaching 100 percent renewable electricity generation by 2030. While the Authority is currently working through the implications of achieving 100 percent renewable electricity by 2030 (or earlier), accelerating renewable electricity investment in this way pushes the electricity system to decarbonise at a trajectory that is beyond what would be delivered by the market naturally. This accelerated pace will bring forward investment to manage risk – which will flow through to consumer prices.

The Authority maintains a fuel-agnostic stance and has favoured market-driven solutions to addressing problems in the electricity market, including dry year risk. This is because market-driven solutions promote diverse approaches to solving problems, increasing the prospect for success, while providing downward pressure on cost. The Authority is therefore cautious about initiatives that override market signals, as experience has highlighted there is a material risk of unintended consequences from such interventions.

An example is the reserve energy scheme, involving government investment and operation of generation at Whirinaki. This scheme was intended to address dry year risk, however it proved to be an uncompetitive generator, and was sold by the Crown with a significant write-off.

While it still has a role to play today in supporting security of supply, as seen during the Pohokura outages, its development as part of the reserve energy scheme undermined incentives at the time for private investment in other peaking generation necessary to manage dry year risk.

By contrast, since cancellation of the reserve energy scheme, market solutions to management of dry year risk have developed, including the ‘swaption’ contract between Meridian and Genesis³, and investment in North Island peaking thermal generation.

The Authority has a suite of pricing reform projects underway to sharpen price signals for consumers and participants, and for the future investment in generation and new technology. The projects include the implementation of real-time spot pricing, and transmission and distribution pricing reform.

Ultimately New Zealand needs to have the right amount of renewable electricity generation in the right place at the right time to support a successful transition to a low emissions economy. To support increased electrification of heat and transport, and further development of renewable generation, the Authority needs to promote a stable investment environment with robust rules and clear price signals. Predictable, consistent and evidence-based regulatory reform is critical to achieve this.

Transmission pricing will incentivise the right renewable investment at the right time

The Authority has decided on new guidelines for transmission pricing. We expect the new approach to paying for transmission assets will deliver significant benefits to consumers.

The 2020 guidelines will give electricity consumers and generators much-improved signals of the cost and value of using the transmission grid. They will stop overly high transmission charges for using electricity at times when consumers most want it and will stop rewarding parties that shift costs on to other consumers for no overall benefit.

The guidelines will also promote the right investment at the right time in renewable generation, transmission and electrification of industrial processes and transport, as we transition to meet New Zealand’s low-emissions challenge at least cost to consumers.

The imperative to reduce carbon emissions will materially change the use of the transmission grid. The potentially high demand for renewable generation and electrification would mean a significant economic transition that relies on grid-supplied renewable electricity alongside other options for low-emissions energy.

More generally, innovation and technological advances are significantly changing the way our electricity system operates and the way people interact with the system. This includes advances in computational power and new technologies including small-scale distributed generation, batteries and intelligent energy management systems that are expected to be very beneficial for consumers and the environment. A transmission pricing methodology (TPM) needs to accommodate these technologies without distorting incentives.

The Authority has conservatively estimated that the new approach to transmission pricing will deliver consumers a net quantified benefit of \$1.3 billion over the next 30 years (including by reducing the cost of delivered electricity at peak times).

The Authority is currently engaged in providing feedback to Transpower on its emerging plans for a transmission pricing methodology (TPM) based on the new guidelines. Transpower is due to submit a proposed TPM to the Authority by 30 June 2021. The Authority would then consider the proposed TPM and consult on incorporating the new TPM into the Code. At this stage the new TPM is expected to come into operation on 1 April 2023.

³ This scheme allows Meridian to ‘call’ on Genesis’ North Island thermal generation when Meridian’s South Island hydro supply is tight. In turn, this provides an incentive for Genesis to maintain its thermal generation, helping to ensure security of supply is maintained during dry years.

Trustpower has sought judicial review of the TPM guidelines decision. Trustpower's claim will be heard in the High Court in October 2021. Five other parties are involved in the proceeding (one supporting the Authority; three supporting parts of Trustpower's claim; one neutral).

Trustpower's claim reflects long-standing opposition to TPM reform by a group, including distributors and major users, in the upper North Island transmission region, where TPM reform was likely to lead to higher transmission prices based on the recent grid upgrades that benefitted that region. The level of opposition from most of that group has diminished over time as the likely price increase has also diminished (due to asset depreciation).

We have listened carefully to Trustpower's arguments throughout the TPM process. However, we also observe that Trustpower remains strongly financially motivated to delay TPM reform. One of the outcomes the Authority has sought during TPM reform is to eliminate avoided cost of transmission (ACOT) payments being made where no transmission costs are in fact being avoided. ACOT payments are made by distributors on behalf of consumers, and have been up to \$60 million per annum, with Trustpower receiving roughly half of them. They have been progressively reducing since 2017 but implementing the new TPM guidelines would have a material impact on Trustpower's bottom line.

Reform to distribution will help to unlock innovation in the electricity sector and support a low emissions transition

Distributors play an important role in the sector as their lines provide the platform on which all competitive electricity services are traded. Providing this platform comes at a cost. Distribution fees make up a material and currently uncontested portion of the power bill: about 27% of the average household's bill. Distributors collected about \$1.9 billion in non-transmission lines charges⁴ in 2019 with the household contribution about \$1 billion annually.

But the picture of the 29 distributors is not uniform, and therefore neither is the playing field. The four largest account for half of the revenue and the most spread out network has 10 times the length of lines per customer as the densest one. Four lines companies have less than 10,000 customers while the largest has over 560,000.

The Authority is aware the level of capability differs significantly across distributors, and that companies are taking different courses with respect to asset ownership preference, operation of distributed energy resources (DER), and how they engage with other industry participants.

More opportunities exist for innovation in the contestable parts of the industry

The future evolution of the electricity system will be achieved through innovation, which will in turn lead to disruption in traditional business models and changes in the electricity system. For example, increased uptake of electric vehicles could see their manufacturers offering a package of a vehicle, solar panels and home battery system to provide an 'all of life' energy option. Likewise, the continued intertwining of our physical and digital lives could see companies like Amazon and Google move into electricity markets, as electricity is a critical enabler of their business model.

This innovation will also be crucial in supporting New Zealand's climate change objectives, including the electrification of industrial heat and transport. New technologies will also allow for more sophisticated use of the storage and transmission of energy. Demand response mechanisms that influence how and when people generate, share and consumer energy can also make a significant contribution to decarbonisation.

⁴ Excluding transmission costs

The Authority's role is to help unlock the full benefits of innovation for consumers by making sure regulatory settings are conducive to innovation and industry success. Ultimately, we are seeking to both empower consumers to control their energy and participate in the electricity system in new ways, and to keep the overall cost of delivered electricity down.

We are achieving this outcome through two major themes:

We are reforming distribution pricing

As we electrify our economy, Transpower estimates electricity demand will increase by 68 per cent by 2050. Investment will be needed to accommodate this growth. Efficient investment is critical and appropriate incentives are needed to signal where this investment is required.

The scope for poor outcomes from inefficient distribution price signals is growing, as technologies such as electric vehicles, solar panels and battery storage are becoming more available and affordable. The scale of consumer benefits from more efficient distribution pricing is likely to be significant (previously estimated to be in the billions of dollars for solar panels and electric vehicles alone).

As with transmission, the Authority is pursuing similar objectives in distribution pricing, where reform is required to send the right signals for investment in DER, like solar and batteries.

The Authority has recently made some changes to its oversight of distribution pricing. In 2019, the Authority revised the voluntary distribution pricing principles and completed a summary assessment of distributors' distribution pricing methodologies. We have just completed the same assessment for 2020. There is room for substantial improvement, and a need for greater urgency in reforming these prices.

Related to this is the removal of regulations for low fixed charges by distributors and retailers, which have been identified as a key barrier to reform of distribution pricing, and which the MBIE is reviewing with a view to phase out over coming years.

We are reforming access to networks and data

A key element of deploying innovative and net technologies is their ability to connect to and use the distribution network. We have concerns about whether distributors as a whole, are able to effectively support the uptake of these new technologies in a way that benefits consumers. Some areas of the distribution service which are currently natural monopolies, may not be natural monopolies in the future. They may also act as a roadblock to other participants investing in these innovative new technologies and services.

The Authority has begun addressing this issue by introducing the Default Distributor Agreement (DDA). The DDA provides retailers with access to distributors' networks on more standardised terms and conditions. This change reduces the cost for retailers to expand into new networks and ensures they can compete on fairer terms with retailers already on the network. Increased retail competition in these networks means consumers have access to more choice of electricity products and services. The DDA sets the foundation for more default contracts for other network users in the future, should such an approach be necessary.

The Authority also considers that there is work to be done to unlock new business models and enhance competition for emerging services provided to consumers. This could include new services for distributed energy resource control, consumers having access to multiple retailers providing different services at different times, and ways for consumers to sell electricity services (solar or EVs batteries for example) back to the grid. At the same time, making better use of excess capacity in lines and transmission will also reduce investment pressures on new transmission infrastructure.

New Zealand is already beginning to see trends that are emerging in similar overseas jurisdictions, where consumers are moving towards taking greater control of their consumption and even generation of electricity.

A core of this work will be unlocking the power of consumer level data. The Authority is identifying more ways to increase access to data:

- As part of the DDA project, we also increased distributor access to smart meters. This change means distributors can more effectively plan and manage their network, find and fix faults more quickly, and respond to deployment of new technologies like EVs. This will lead to a better distribution service for consumers.
- -We are also developing a separate project to identify ways to streamline consumers' access to their own data, enabling them to share this data with service providers they trust.
- The Authority is investigating ways to promote equal access to networks, including how to signal where network support services such as back-up generation or load shedding are needed. Given the importance of efficient deployment and integration of DER in alleviating network congestion, and to the overall efficiency of the electricity industry more generally, the key question is whether it is appropriate to continue to rely on a voluntary approach based on information disclosure to promote deployment of network support services or whether a stronger regulated approach is required.

There is work to be done on privacy issues, and the Authority will continue to engage with MBIE as it progresses legislative reforms related to privacy issues with data.

We consider there are further opportunities to explore in the distribution sector, including measures to support competition on distribution networks, and whether institutional reform would lead to better outcomes for consumers.

Appendix A Progress towards EPR recommendations

Theme	Recommendation	Status	Comment	Impact (✓ to ✓✓✓)
Electricity Authority led EPR responses				
Increase retail competition	C1: Merge EA and ConsumerNZ price comparison website	COMPLETE (Substantive policy decisions made)	The two websites were merged in December 2019. The Authority and Consumer NZ have a contract in place for Consumer NZ to deliver Powerswitch.org.nz services until 30 June 2023. Through the contract the Authority gains more oversight on the website's development, and the two organisations are currently working on an enhancement roadmap.	✓✓
	C2: Improve consumer awareness of Powerswitch and Utilities Dispute	On track for completion Dec 2020	Stakeholder consultation on revised guidelines requiring the display of Powerswitch and Utilities Dispute services by retailers is scheduled to close on 11 November 2020.	✓✓
	C3: ACCESS quick wins	COMPLETE (Substantive policy decisions made)	On 1 March 2020, the Authority amended the Code to implement a series of initiatives making it easier for consumers to share their electricity consumption data with businesses and organisations they trust.	✓
	C3A: Streamlining access to electricity consumption data	On track for completion Jun 2021	Desktop research and background analysis underway in preparation for the release of an issues paper in early 2021.	✓✓
	C4: Make distributors offer retailers standard terms for network services	COMPLETE (Substantive policy decisions made)	The Authority amended the Code on 20 July 2020 to require all distributors develop and publish a Default Distributor Agreements (DDA), with the first agreements being in place December 2020. The amendment provides a more level-playing field for traders entering and trading on a distributor's network, which provides consumers with more choice of electricity services. The Authority will monitor update of DDAs going forward.	✓✓✓
	C5: Prohibit saves and win-backs	COMPLETE (Substantive policy decisions made)	The Authority amended the Code to prohibit saves and win-backs for 180 days after a consumer switch. The amendment supports consumer choice and promotes retail competition, which is intended to place downward pressure on retail electricity prices. The Authority is monitoring the implementation of this policy including as part of its compliance framework.	✓✓✓
	C6: Establish a pilot scheme to help non-switching consumers find better deals	Scheduled to start Mar 2021	Planning for this project is continuing with an anticipated start for the project in early 2021.	✓
Reinforcing wholesale market competition	D1: Improve availability of wholesale market information	On track for completion Dec 2020	The Authority's Board is intending to make a decision on its review of thermal fuel disclosure in December 2020. This decision will substantively address EPR recommendation D1. A paper recommending potential workstreams for phase 2 of the project will be also be presented to the Board in December.	✓✓
	D2: Enduring market making arrangements	COMPLETE (Substantive policy decisions made)	The Authority's Board decided an enduring approach to market making arrangements in August 2020. Implementation may take several years. However the first step is to amend the Code to include a permanent mandatory backstop in the Code. This will be implemented in early 2021.	✓✓✓
	D3: Make generator-retailers release information about the profitability of their retailing activities	On track for completion in 2020/21	The Authority's Board decided in November 2020 to consult in early 2021 on reporting obligations.	✓✓
	D4: Monitoring contract prices and new generation costs more closely	On track for completion Mar 2021	An analysis of contract prices compared to new generation costs is currently underway. The result of this analysis is planned for release in early 2021.	✓

Theme	Recommendation	Status	Comment	Impact (✓ to ✓✓✓)
Improving Transmission and Distribution	E6: Ensure access to smart meter data on reasonable terms	COMPLETE (Substantive policy decisions made)	Delivered with EPR C4, the Authority amended the Code to introduce the Data Template. The Data Template provides distributors with access to smart meter consumption data on reasonable term to develop more efficient distribution prices and plan and manage their network. The Data Template provides protections to ensure data is not misused.	✓✓
Low carbon future	G2: Examine the security and resilience of electricity supply	On track for completion Mar 2022	The project scope has expanded to include new generation technologies, as well as the transitioning to a secure renewable energy future, in order to capture their role and impacts on the security and resilience of New Zealand's electricity supply. A stakeholder and communications plan is currently being developed for the wider G2 project.	✓✓✓
Electricity Authority supported EPR responses				
Strengthen Consumer Voice	A2: Update the Consultation Charter	Scheduled to start Mar 2021	Planning is underway with an anticipated start for the project in early 2021.	✓
Reducing Energy Hardship	B6. Set mandatory minimum standards to protect vulnerable and medically dependant consumers	On track for completion Feb 2021	Consultation on new proposed consumer care guidelines runs from on 29 October 2020 – 27 November 2020. Dependent on the volume and type of feedback received, the Authority is targeting February 2021 for final approval of the new guidelines.	✓✓
Improving the regulatory system	Electricity Industry Act 2010 Amendments	On track for completion early 2021	The Authority is working with MBIE to understand the implications of proposed amendments to the Electricity Industry Act 2010 to the operation of the Authority. Some of the proposed changes could have some significant impacts, particularly changes to the Authority's statutory objective functions.	✓✓
Improving the regulatory system	Improving the Authority's compliance framework	On track for completion early 2021	The Authority is continuing to discuss with MBIE potential amendments to the organisation's compliance regime, including the ability to increase pecuniary penalties.	✓✓

Appendix B Governance and leadership

Our Board

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

- Dr Nicki Crauford, appointed for a term of one year that expires on 1 November 2021
- Susan Paterson, reappointed for 2020
- Allan Dawson and Sandra Gamble, each appointed for terms of five years that expire on 18 April 2022
- Mark Sandelin and Lana Stockman, each appointed for terms of five years that expire on 6 June 2022.

Dr Nicola (Nicki) Crauford



Dr Nicola Crauford (Nicki) has extensive industry knowledge and governance experience. Nicki is currently Chair of GNS Science and Director at Kāinga Ora, Watercare Services and CentrePort. Previously Nicki has held executive roles in the sector with Transpower and governance roles with Genesis Energy, Orion New Zealand and Pioneer Energy.

Nicki's industry and governance experience also includes roles at Environmental Protection Authority, Wellington Water, Fire and Emergency New Zealand, and the Institute of Directors. Nicki has a doctorate in the investigation and modelling of fire spread in buildings from the University of Southampton and a Bachelor of Science (Hons) in Chemical Engineering from the University of Newcastle-upon-Tyne.



Susan Paterson ONZM

Susan has been a professional director since 1996. She has a Bachelor of Pharmacy and completed an MBA at London Business School and was a strategy consultant for the Boston based Index Group across Europe and the USA, focussing on the strategic use of I/T. She was project director for the Wholesale Electricity Market Development Group in the early 1990's.

She chairs Steel and Tube and Theta Ltd, with other directorships including the Reserve Bank, Goodman Property, Arvida Group Ltd, EROAD, and Les Mills Holdings Limited. She has been an external monetary policy advisor to Adrian Orr, Governor of the Reserve Bank. Past directorships include Transpower NZ Limited (8.5years), St Cuthbert's College, the NZ Eco Labelling Trust, EECA, Housing New Zealand, SkyTV and Ports of Auckland. Susan was made an Officer of the New Zealand Order of Merit in 2015 for services to corporate governance.

Allan Dawson



Allan was formerly the Chief Executive for the Independent Market Operator in Western Australia, and the Energy Market Company in Singapore, and worked on the development of New Zealand electricity industry rules and arrangements in the 1990s as General Manager of Market Operations.

He has chaired the Association of Power Exchanges, and two bodies in Western Australia: The Market Advisory Committee for the Wholesale Electricity Market and the Gas Advisory Board. In addition to previous energy sector roles, Allan holds a number of directorships and board positions and is a Chartered Accountant. He brings strong governance, leadership, communication and relationship management skills, and experience in roles that directly interface with energy regulators.

Sandra Gamble



Sandra a non-executive director, chair & committee member with over two decades of board level experience as both a director and board advisor. She has worked across the public, private and not for profit sectors with particular experience in the utilities, infrastructure and the energy industries.

Along with being an Authority Board Member, Sandra is a Tribunal Member with the Independent Pricing and Regulatory Tribunal of New South Wales. She is the Chair of its Electricity Networks Regulation Committee and its Energy Savings Scheme Committee.

Sandra's former senior executive roles include General Manager Business Strategy and Resilience at Sydney Water Corporation, and General Manager Regulation and Strategy at Jemena Limited. Sandra holds a Master of Business Administration (Technology Management) and a Bachelor of Electrical Engineering with Honours, and she is a Fellow of the Australian Institute of Company Directors.

Mark Sandelin



Mark is a barrister, practicing from Mills Lane chambers in Auckland. He has practiced law for the past 35 years and was previously a litigation Partner at Minter Ellison Rudd Watts. He has other governance roles including Chair of Sleepyhead Group Ltd, Deputy Chair of Fairway Resolution Ltd and Chair of Auckland Grammar school.

Lana Stockman



Lana was Vice President Regulation at Aurizon Network, a top-50 ASX listed company offering rail and road-based freight and infrastructure solutions. She was also a General Manager at Energy Australia, a board member of the Electricity Retailers Association of Australia, and a member of the Ministerial Advisory Council on smart meters in Victoria.

Lana also has experience in the New Zealand electricity industry, including as an advisor to the Electricity Authority and its predecessor.

She is degree qualified in both engineering and finance and coupled with a broad energy market experience, brings fresh thinking, and strong leadership, communication and relationship management skills.

The Board also has three committees:

- Audit and Finance Committee,
- Compliance Committee, and
- System Operations Committee.

Chief Executive: James Stevenson-Wallace



James Stevenson-Wallace was appointed as the Authority's Chief Executive in September 2018.

Before joining the Authority, James was General Manager Energy and Resources at the Ministry of Business, Innovation and Employment, where he had been since early 2014.

Over the past 10 years James has held various senior public sector management and advisory roles focused on industry and resource development across the primary and extractive sectors. James is experienced in organisational development, policy formation, operational service delivery, and compliance and enforcement. He holds a Masters in Public Policy, and degrees in Economics (Victoria), and Management (Massey).

Our foundation documents

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

Our published foundation documents are:⁵

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

⁵ Available at www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents/

Appendix C Rulings Panel, SRC and advisory groups

Rulings Panel

The Act continues the Rulings Panel (the industry dispute resolution and disciplinary body established under the Electricity Governance Regulations 2003) and sets out its membership, functions and funding arrangements. The Governor-General appoints panel members. The Rulings Panel comprises Mel Orange (Chair), Geraldine Baumann (Deputy Chair), Denis O'Rourke, Nicola Wills and Lee Wilson.

Security and Reliability Council (SRC)

The Act sets requirements to establish the Security and Reliability Council and other advisory groups. The Act requires the Authority to publish a Charter on advisory groups. The charter was published on 14 February 2011. The Security and Reliability Council provides independent advice to the Authority on the performance of the electricity system and the system operator and reliability of supply issues. Members are Hon Heather Roy (Chair), Barbara Elliston, Vince Hawksworth, Tracey Hickman, Greg Skelton, Nathan Strong, Gretta Stephens, Nanette Moreau and Guy Waipara.

Advisory groups

The Innovation and Participation Advisory Group (IPAG) and the Market Development Advisory Group (MDAG) are tasked with providing advice and recommendations to the Authority on the development of the Code and market facilitation measures.

The IPAG focuses on issues specifically related to new technologies and business models and consumer participation. Members of the IPAG are John Hancock (Chair), Luke Blincoe, Glenn Coates, Allan Miller, Terry Paddy, Tim Rudkin, Roxanne Salton, Corrie Stobie and Scott Willis.

The MDAG focusses on further evolving the 'machinery' of the electricity market. Members of the MDAG are Tony Baldwin (Chair), Paul Baker, Matthew Cleland, Stu Innes, Andrew Kerr, Tony Oosten, Rebecca Osborne, Ann Whitfield, Fiona Wiseman and Al Yates.

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

Appendix D: Key contacts

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