Energy News and ABB

Annual New Zealand Electricity Survey

SURVEY RESULTS 2016

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Introduction

Energy News and ABB are delighted to announce the results of the Annual New Zealand Electricity Survey 2016. This document contains some fascinating insights gained from 500 industry participants sharing their opinions on the New Zealand electricity sector.

The survey, celebrating its fifth birthday this year, focused on identifying opportunities for the sector and highlighting areas for collaboration and new ways of thinking.

Twenty-one thought-provoking questions tested respondents' views on electricity industry matters such as disruptive technologies (including solar PV, electric vehicles and battery storage), changes to the industry structure, retail competition and climate change responses.

In a new feature this year we asked the industry when they saw some possible milestones being achieved. By 2025:

– 90 per cent of participants think 100 MW of solar will be installed

– 85 per cent think we will have commissioned a new generation asset over 50 MW

– 75 per cent think we will have a single solar generation asset over 5 MW

– 60 per cent think every lines company will have a utility scale battery solution

– 60 per cent think there will be 40 retail brands to choose from

Other key findings include respondents being split on whether the Government's electric vehicle target is realistic; identifying electric vehicles as the best opportunity for meeting climate change targets; 50/50 on whether Huntly's coal units would remain available beyond 2024; and voting that a 100 per cent renewables future is possible if we are willing to pay for it.

A breakdown of respondents by organisation type is available on page 25. The survey questions and range of responses were again guided by an advisory panel chaired by John Hancock. The panel members are listed on page 3 and we would like to thank them for their input.

Please email any feedback to margaret.mccrone@freemanmedia.co.nz. We welcome any and all suggestions for questions and responses for 2017.

Margie McCrone - Research Analyst
Freeman Media (publisher of Energy News)

About ABB

ABB (www.abb.com) is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 135,000 people.

About Energy News

Energy News is New Zealand's online news and information service for the energy sector. The website (www.energynews.co.nz) was launched in 2008 and now boasts over 5,000 readers every month from 300 subscribing organisations. Its readership consists of New Zealand energy sector organisations and service companies spanning the electricity, oil and gas, petroleum and alternative energy value chain.

The subscription-based site provides executive interviews, news, opinions and commentary on a daily basis. It also hosts a suite of information resources including two large databases of the sector participants and energy resources. Other information tools include 30-minute electricity supply and demand monitoring, petroleum permit deadline summaries and an oil price monitor.

Survey highlights

The people have spoken...

- The industry needs to work together on a game plan for responding to new technologies
- Education, access to information, flexibility and choice are important for consumers
- Encouraging electric vehicles is the best opportunity to meet emissions targets

The jury is out...

- If it is better to lead from the front with disruptive technologies, or take a wait and see approach
- On whether the Government's electric vehicle target is realistic
- As to what motivates consumers to install solar PV
- If Huntly's coal units will be available post-2024

Do not pass go...

- The industry can't 'do nothing' – there is a need to act or at least be ready to act
- No free rides – tariffs need to be introduced to make sure consumers pay for their fair share of costs
- Consumers would not accept lower levels of service, even if electricity were cheaper

The advisory panel

John Hancock (Chair)

John Hancock is an independent consultant to utility companies and their suppliers. He is the independent chair of the Electricity Authority's Wholesale Advisory Group, secretariat to the NZ Smart Grid Forum and has chaired the advisory panel for this survey since its inception in 2012.

Neal Barclay – Meridian Energy

Neal Barclay was appointed to General Manager, Retail, in April 2016. Prior to this he was GM Markets and Production from October 2009, having joined Meridian in July 2008 as Chief Financial Officer.

Neal's time at Meridian was preceded by a 13-year career at Telecom New Zealand where he held a number of senior management positions. He is also a Chartered Accountant.

Stephen Jay – Transpower

Stephen Jay is General Manager, Grid Development at Transpower, a role he has held since October 2014.

Immediately prior to this Stephen was General Manager at Mitton ElectroNet, and he has had a long career to-date in the electricity industry including roles at C.E.G.B, National Power, Nuclear Electric, Midlands Electricity Plc, Parsons Brinckerhoff Power and Meridian Energy. Stephen also worked as an investment banker at Dresdner Kleinwort Benson for a number of years.

Jamie Kerr – Ministry of Business, Innovation and Employment

Jamie has had a variety of roles in public policy in New Zealand and the UK, including consumer policy, enterprise and industry policy and financial services regulation. In 2013, Jamie joined the strategy team in the newly formed Ministry of Business, Innovation and Employment. Jamie has been running the Ministry's Energy Markets Team since April 2014. The team is responsible for monitoring and providing advice on New Zealand's electricity, gas and transport fuel markets, as well as energy efficiency.

Margie McCrone – Freeman Media

Margie is Freeman Media's research analyst and is responsible for the premium content on the Energy News and Inside Resources websites, as well as being involved in the development of new and existing Freeman Media products and services. Margie has law and arts degrees from Victoria University of Wellington. While studying she worked for Freeman Media as a part-time research assistant.

Ewan Morris – ABB

Ewan Morris is the Managing Director of ABB in New Zealand, a role he has held since March 2014. He has been with ABB since 1988, and has enjoyed a long and extensive career in the company across five countries including New Zealand, Australia, Sweden, Malaysia and Switzerland. This has seen him gain 20 years' professional experience in international industrial sales, marketing, product and service management.

Greg Skelton – Wellington Electricity

Greg Skelton is the Chief Executive of Wellington Electricity, a role he has held since April 2009. Prior to this he was Chief Executive of Alpine Energy and has held various senior management roles across the electricity industry.

Mike Underhill – Energy Efficiency and Conservation Authority

Mike Underhill is the Chief Executive of the Energy Efficiency and Conservation Authority, and the independent chairman of the Security and Reliability Council of the Electricity Authority. He has extensive experience in the gas and electricity sectors in New Zealand and overseas, including past Chief Executive roles at WEL Networks, TransAlta and Energy Direct.

Neil Wembridge – Freeman Media

Neil Wembridge is the General Manager at Freeman Media, which sees him take responsibility for the commercial side of the energy sector products of Freeman Media, including all events, map products, surveys, stakeholder management and business development.

Neil came to Freeman Media from a role as a strategic consultant to the New Zealand energy sector based in Wellington. He previously worked for Total and Oracle in the UK.

Brendan Winitana – SEANZ - Sustainable Electricity Association New Zealand and SENZ – Stored Energy New Zealand

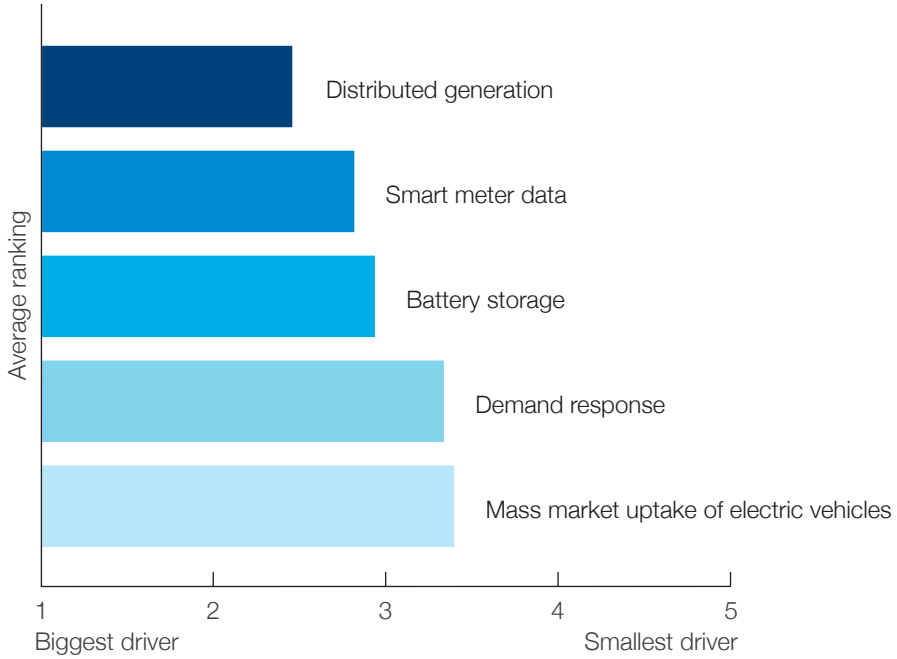
Brendan Winitana is the Executive Chairman of SEANZ and SENZ.

He has held leadership roles in both corporate and his own businesses across multiple industries including information technology, imaging, consumer electronics, specialist business model and process consulting and content management. This positions him well as the management specialist in emerging disruptive core technologies solar PV, storage and related ITC.

Survey results

Drivers of change

Question 1
2016: The year of change? Which of the following will be the biggest driver of change in the New Zealand electricity sector?

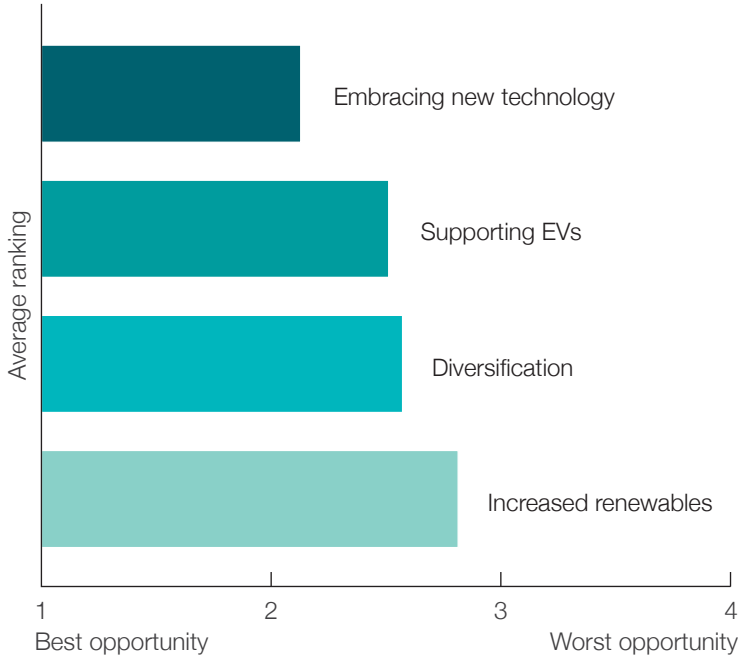


- **Distributed generation uptake, especially PV, and the rise of the prosumer = 2.5**
- Optimising smart meter data, enabling smart homes and businesses = 2.8
- Consumer and network battery storage possibilities = 2.9
- Residential and commercial demand response opportunities = 3.3
- Impending mass market uptake of electric vehicles = 3.4

Survey results

Opportunities · challenges · calls for action

Question 2
What are some of the best opportunities you see for the electricity sector?



- **Embracing new technology such as solar PV and battery storage in a way which will benefit consumers = 2.1**
- Promotion and support of EV uptake, thus powering the nation's fleet with renewable generation instead of imported hydrocarbons = 2.5
- Diversification of business models and service offerings, lending itself to added revenue streams and increased profitability = 2.6
- Increasing renewable generation (displacing thermal generation) for a greener, reduced-emissions future = 2.8

Survey results

Opportunities · challenges · calls for action

Question 3
What are some of the biggest challenges for the sector?

Getting the playing field right in terms of pricing structures and service levels = 2.1

Avoiding a negative impact on consumers' perception of the industry if we get things wrong or don't act quickly enough = 2.2

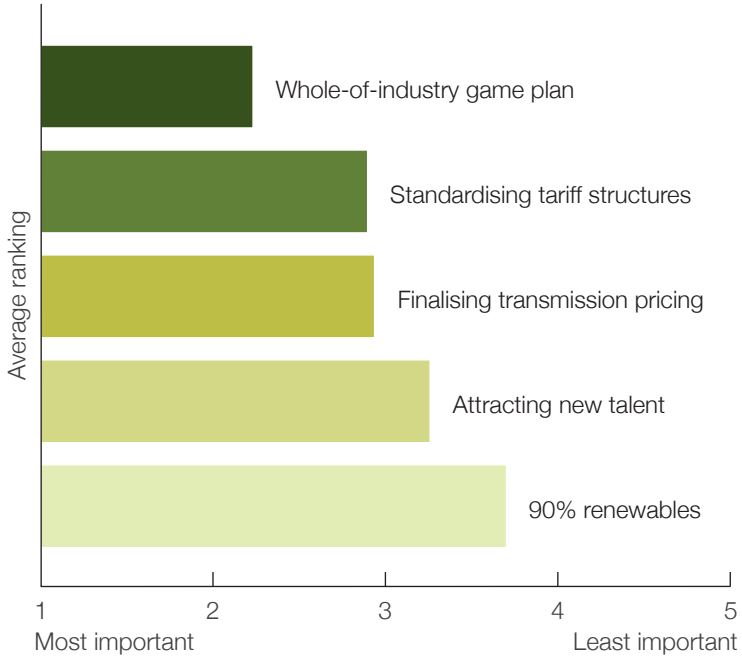
Falling down a rabbit hole of increased complexity that is difficult (and expensive) to navigate = 2.8

Having the right people to do jobs that don't even exist yet – there is a risk of a huge shortage in capability and experience, particularly in terms of understanding new technologies = 2.9

Survey results

Opportunities · challenges · calls for action

Question 4
What is the most important call for action for the sector?



Working together on a game plan for solar, EVs and storage. This will require a whole-of-industry approach, including pricing and service level discussions = 2.2

Standardising tariff structures, or at the very least agreeing on definitions such as ‘time of day’, ‘off-peak’, to facilitate retail competition = 2.88

Agreeing final transmission pricing so that it removes one barrier to investment decision-making = 2.92

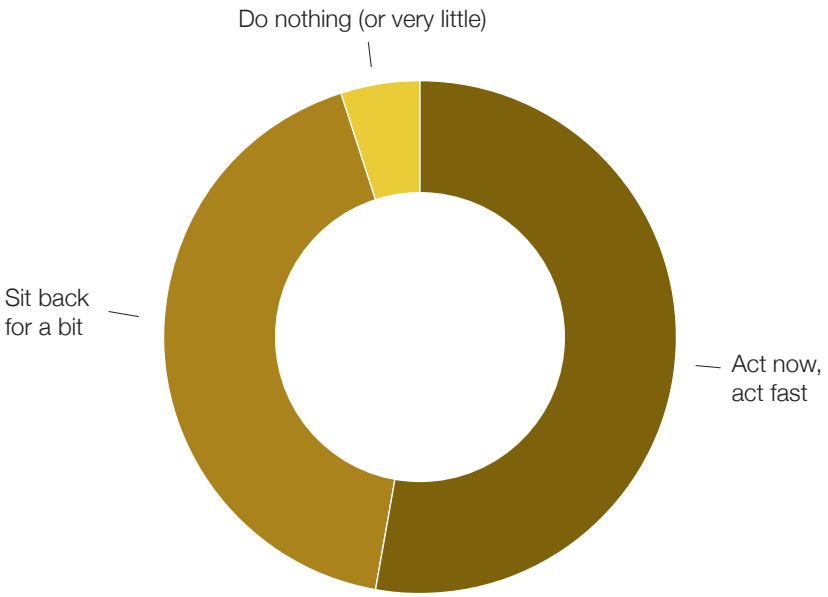
Attracting new talent to the industry, and bringing in new skills (e.g. ICT), which will lead to better connection between information technology and operations technology, working to simplify business models = 3.2

Working towards 90 per cent renewable generation = 3.7

Survey results

Time for talking is over

Question 5
At the Downstream conference in March, Vector's Simon Mackenzie told us 'the time for talking is over'. Vector has been one of the more vocal advocates for taking a proactive stance when it comes to adapting for new technologies, but it is not alone. If you could take the driver's seat in your company, what approach would you take?

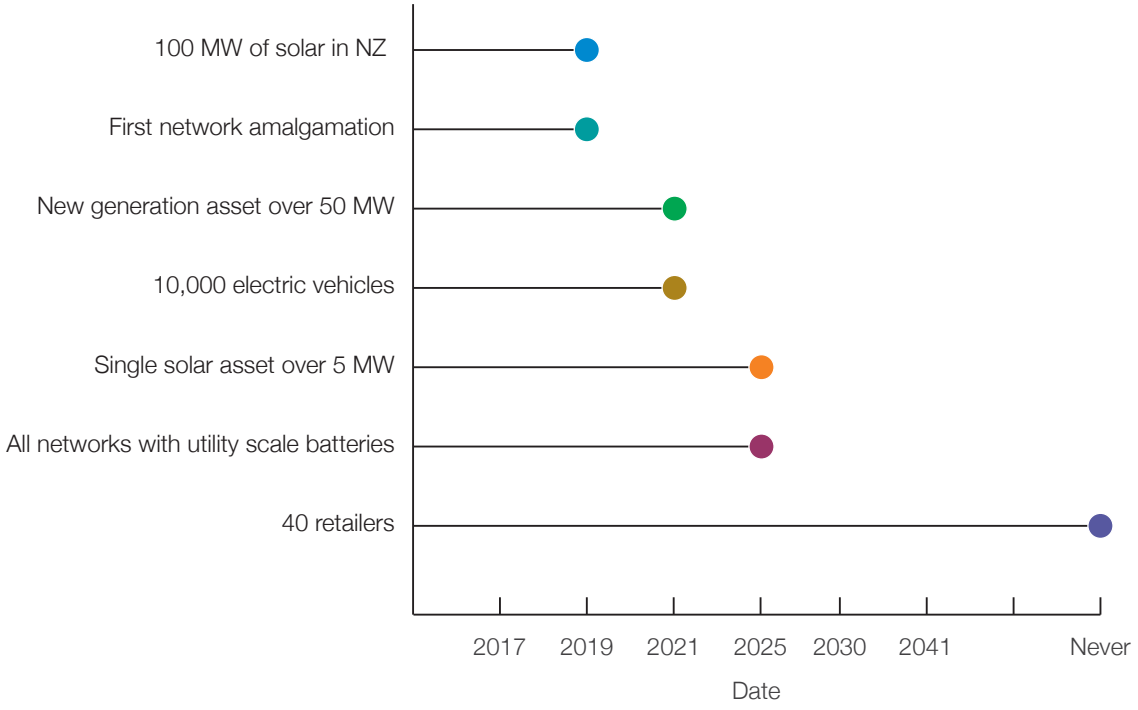


- **I'd be acting now, and acting fast. There isn't time to get it perfectly right and we can adapt as we go = 53%**
- I'd sit back for a bit, do some research and be ready to move when the timing is right = 42.2%
- I'd do nothing, or very little at least. Change of any notable scale is many years away, and there are too many risks associated with getting carried away too soon or backing the wrong horse = 4.8%

Survey results

Timeline for change

Question 6
But how fast is this change coming really? Some have yet to see the 'tipping point'. For each of the following statements, gaze into your crystal ball - what year will we likely see:

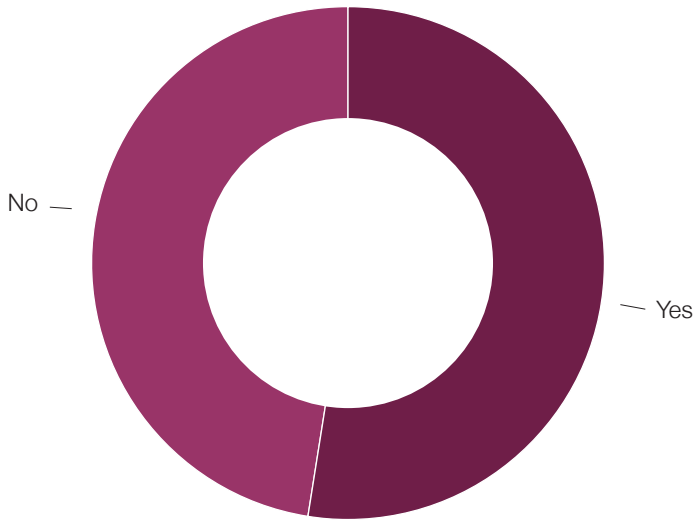


	2017	2019	2021	2025	2030	2041	Never
100 MW of solar installed? (37 MW currently)	9.6%	**36.7%**	30.5%	13.6%	6.2%	1.2%	2.2%
The first distribution network company amalgamation	9.1%	**31.9%**	30.4%	13.1%	5.9%	2%	7.7%
Any new generation asset over 50 MW?	5%	28.4%	**29.2%**	21.4%	7.3%	3%	5.8%
10,000 electric vehicles? (Currently 1,200-odd in the country)	3.7%	28.5%	**39.1%**	19.9%	6.1%	1.5%	1.2%
A single solar project over 5 MW? (Yealands will soon be the biggest at 0.5	3%	14%	26.4%	**31.5%**	12.8%	4.2%	8.1%
Every lines network with utility-scale battery solutions?	0.5%	8.2%	21.8%	**29.5%**	22.1%	7%	10.9%
40 retail brands to choose from? (currently there are 27)	5.2%	20%	25.7%	11.1%	6.2%	2.5%	**29.4%**

Survey results

Electric vehicles

Question 7
One of the biggest drivers of change could be electric vehicle uptake. Just last week the Government announced a target to have 64,000 electric vehicles on New Zealand roads by 2021. Do you think this target is realistic?



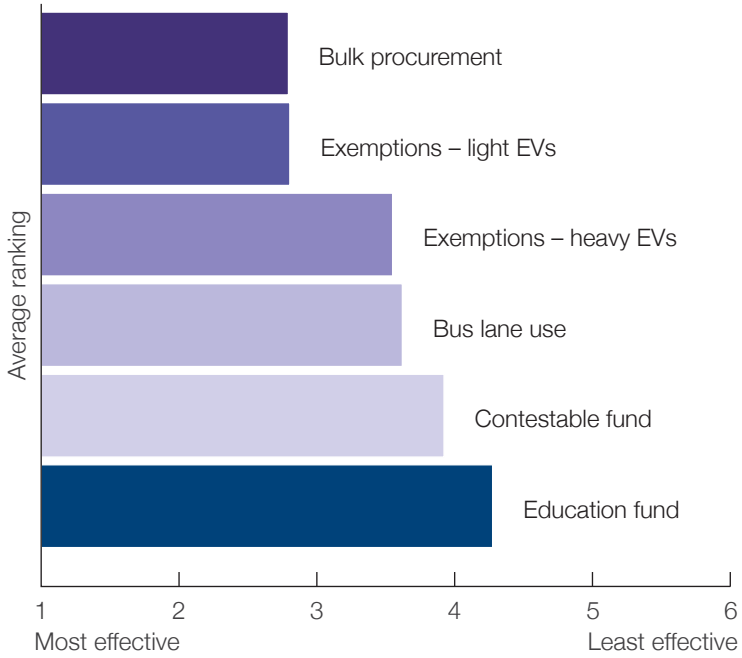
Yes = 52.6%

No = 47.4%

Survey results

Electric vehicles

Question 8
At the same time, Hon Simon Bridges announced a package of incentives to help achieve that target. Which of the following proposals will be the most effective to 'encourage the switch sooner rather than later'?

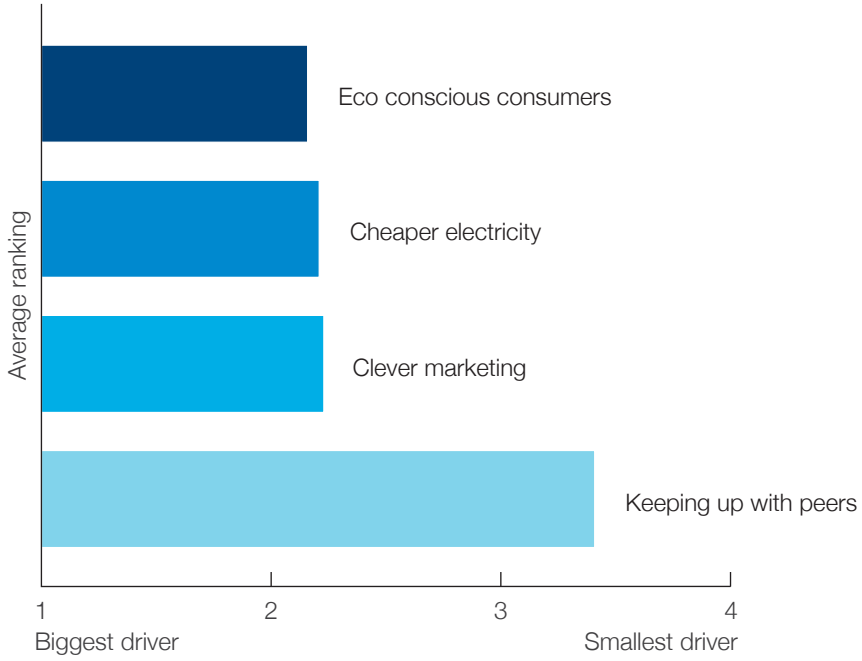


- **Investigations into Government and private sector bulk purchase of electric vehicles = 2.78**
- Exemptions from road user charges for light EV owners being extended out to 2021 or until they make up two per cent of the light vehicle fleet = 2.79
- A new exemption from road user charges for heavy EV owners until 2025 or until they make up two per cent of the heavy vehicle fleet = 3.5
- Permission for electric vehicles to use bus and priority vehicle lanes = 3.6
- A $6 million annual contestable fund to encourage and support innovative low-emission vehicle projects = 3.9
- $1 million annually for a nation-wide electric vehicle information and promotion campaign over five years = 4.3

Survey results

Solar PV

Question 9
Solar PV installations have been hugely popular to-date, with the capacity of solar installed growing by over 60 per cent in the last year alone. What is the biggest driver behind this surge in demand?

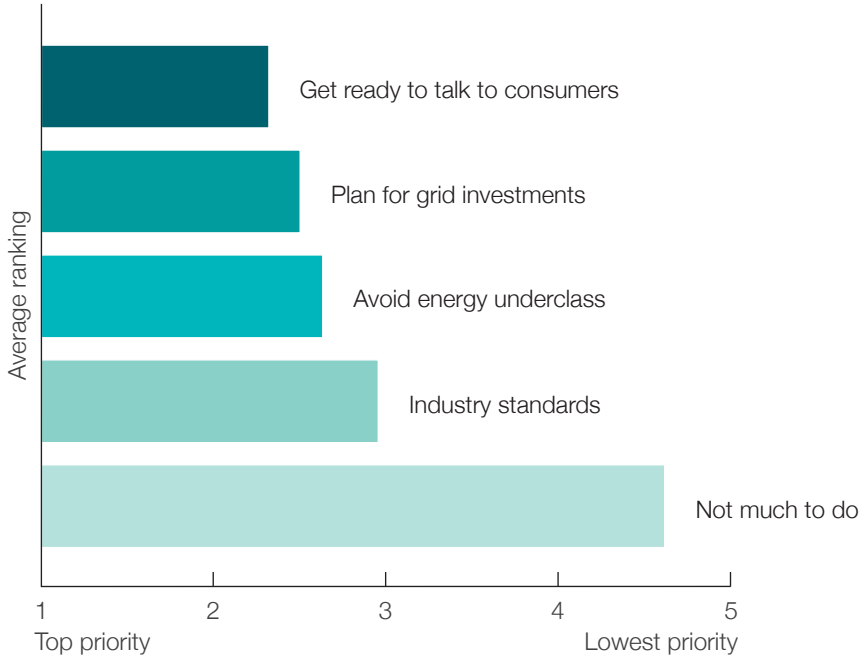


- **Eco conscious consumers wanting to save the environment with renewable energy = 2.15**
- The ability to cut monthly bills and selling excess electricity back to the grid = 2.20
- Clever marketing of solar options by a number of players = 2.22
- Keeping up with the Joneses – consumers want to keep up with what their neighbours are doing = 3.4

Survey results

Solar PV

Question 10
The solar wave looks like it will keep on coming, and overseas experience has shown you can be surprised by how sharp the uptake can be. What does the industry need to be doing to get ready?

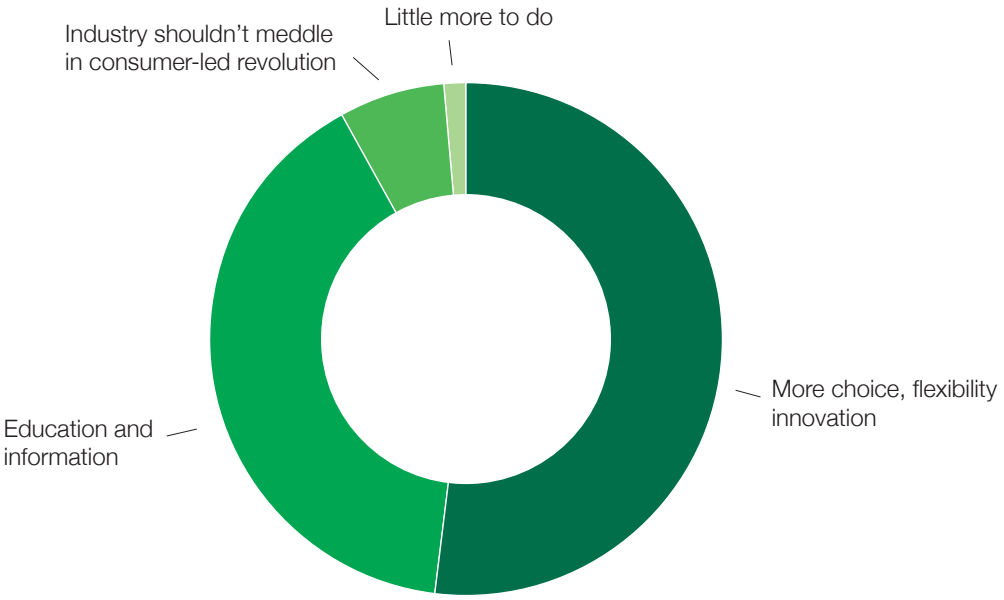


- **Getting ready to have conversations with solar-ready customers about tariff options, buy-back rates, how to connect to the network = 2.3**
- Planning for how to invest in the local distribution networks and national grid going forward – where is capital best spent in the grid of the future? = 2.5
- Thinking about how to prevent the creation of an 'energy underclass', where those consumers who can't afford to install solar are left paying for an increased share of network costs = 2.6
- Coming up with industry standards to deal with voltage, harmonics, and bi-directional flow issues = 2.9
- There's not much to do – uptake of solar will never be significant enough to have too much of an impact, and any impacts will be absorbed = 4.6

Survey results

Who's really in the driver's seat?

Question 11
In PwC's report Utility of the Future, it reports 'consumer preferences are changing to control energy supply, usage, service standards and costs'. If the customer wants control, what role does the industry play in guiding consumer preferences?

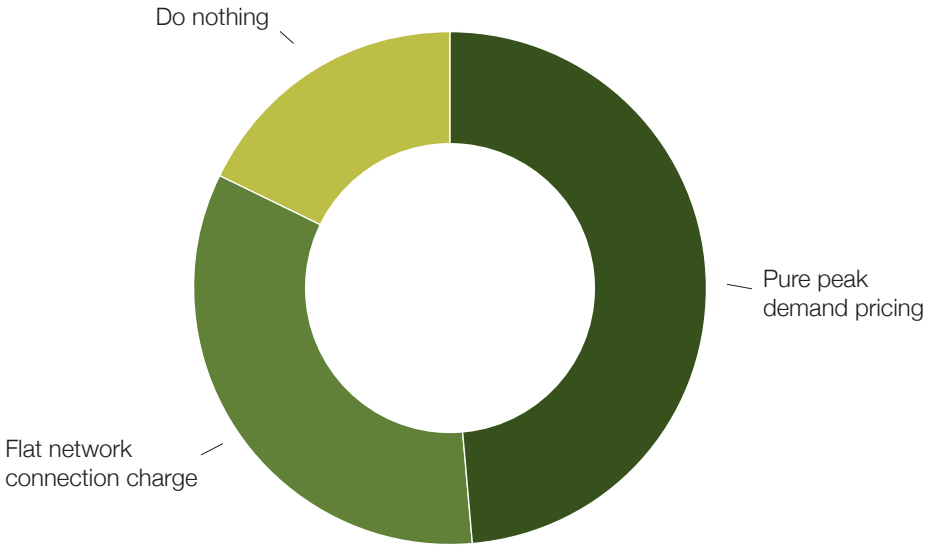


- **The industry should be providing more choice and flexibility, including innovative products and pricing, which fit customers' changing needs = 52%**
- The industry should be doing more to educate and inform customers on the implications of their energy decisions – especially around costs of installing solar, changing pricing plans or charging an electric vehicle = 40.1%
- This revolution is being led by the customer – the industry shouldn't be meddling in consumer choices = 6.6%
- The industry already provides sufficient advice to its customers to make energy decisions, so there's little more to do = 1.3%

Survey results

Who's really in the driver's seat?

Question 12
What's the best way to deal with the issue of consumers installing solar and batteries avoiding paying their fair share of network costs?



Introduce pure peak demand based charging = 48.8%

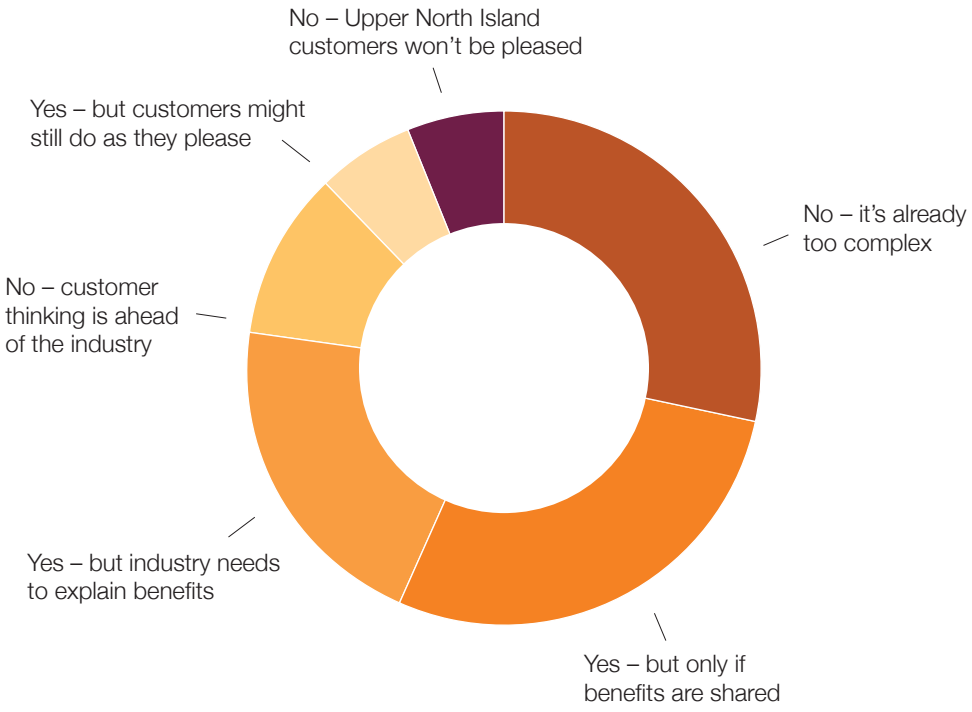
Introduce a flat network connection charge = 33.5%

Do nothing, good on them, they shouldn't be penalised for being innovative = 17.7%

Survey results

Who's really in the driver's seat?

Question 13
The Electricity Authority's proposed transmission pricing model aims to ensure those who benefit from transmission assets pay for them. Distribution pricing may be heading in the same direction, but is that an argument household consumers will accept?



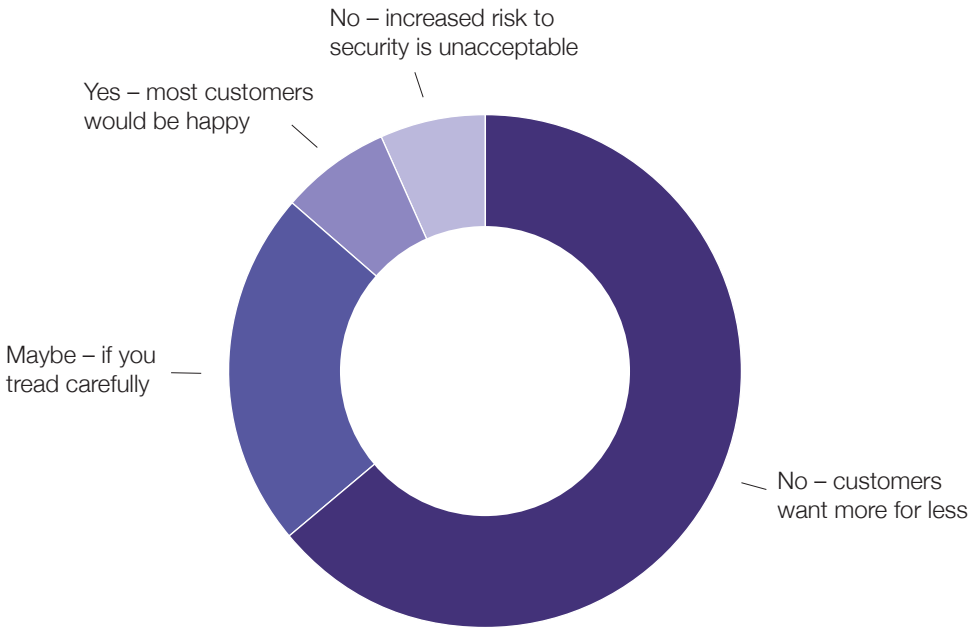
- **No. Customers don't understand power pricing now and making it more complex isn't going to do networks and retailers any favours = 28.6%**
- Yes. But any network pricing reform will have to ensure that consumers share in the benefits that new load management, PV and EV charging technology provide = 28.1%
- Yes. But the industry is going to have to work a lot harder explaining the benefits that on-going network connection provides as solar becomes cheaper = 20.8%
- No. Customer thinking has jumped ahead of where the technology currently is. They think that they should be able to be energy self-sufficient if they have the means to do so = 10.4%
- Yes. But many with the means will still choose to invest in solar and storage and disconnect completely because they can = 6.2%
- No. Upper North Island consumers facing a bigger share of transmission costs will baulk at anything that looks like an attempt to keep paying for assets they may be using less of in future = 5.9%

Survey results

Who's really in the driver's seat?

Question 14

New Zealand has one of the most secure electricity supplies in the developed world, and last year you told us this was one of the things we should be most proud of. But it gets exceedingly difficult to plan for asset management spending with uncertainty and change. There comes a time where we need to ask what the tradeoff is between price and service level - will residential consumers be willing to accept a lower level of service reliability if they can get electricity at a cheaper price?

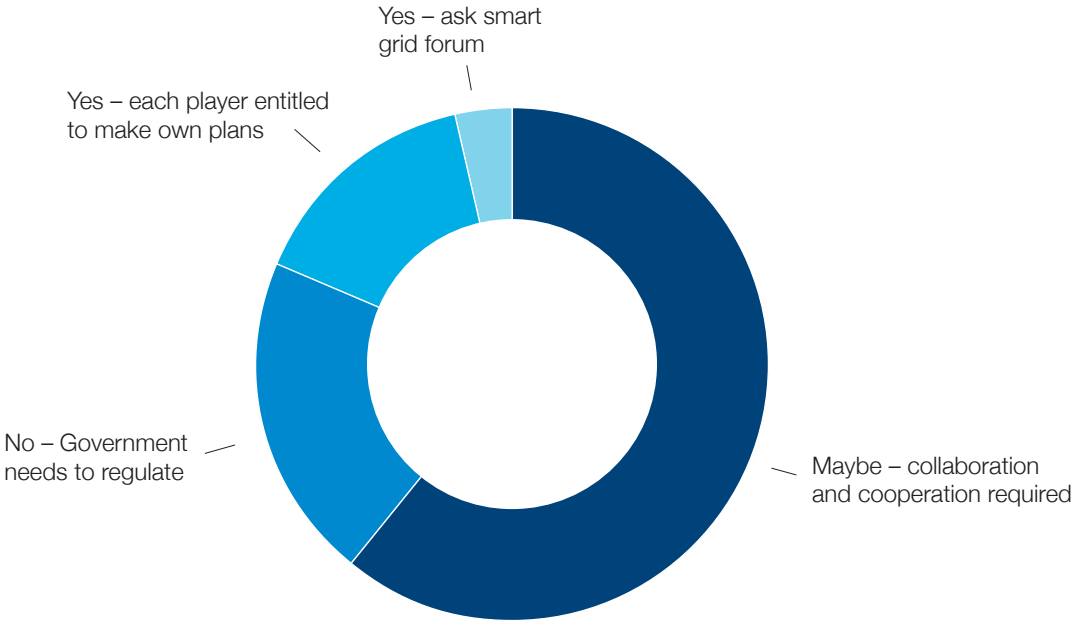


- **No. Customers have come to expect a certain level of service as a 'given' and the industry would face huge public backlash if that service was interrupted, even at lower prices. Customers want more for less, not less for less = 63.9%**
- Maybe. Most customers would be happy to accept a lower level of service provided it didn't impact too sharply on their lifestyle e.g. outages for two hours in the night middle of the night vs. two hours at dinner time. This is a very fine line to tread and the industry should be very careful = 22.6%
- Yes. Most customers would be happy to face an increased risk of an outage on an annualised basis if it delivered bottom-line savings on their bill = 6.9%
- No. Customers will not be willing to accept any heightened risk to their supply = 6.6%

Survey results

Will she really be right?

Question 15
The New Zealand 'she'll be right' mentality is strong in the minds of many New Zealanders of number eight wire stock. It seems we are pretty sure the industry can work out any issues arising from solar, storage and electric vehicle uptake. But can we trust the industry on this?

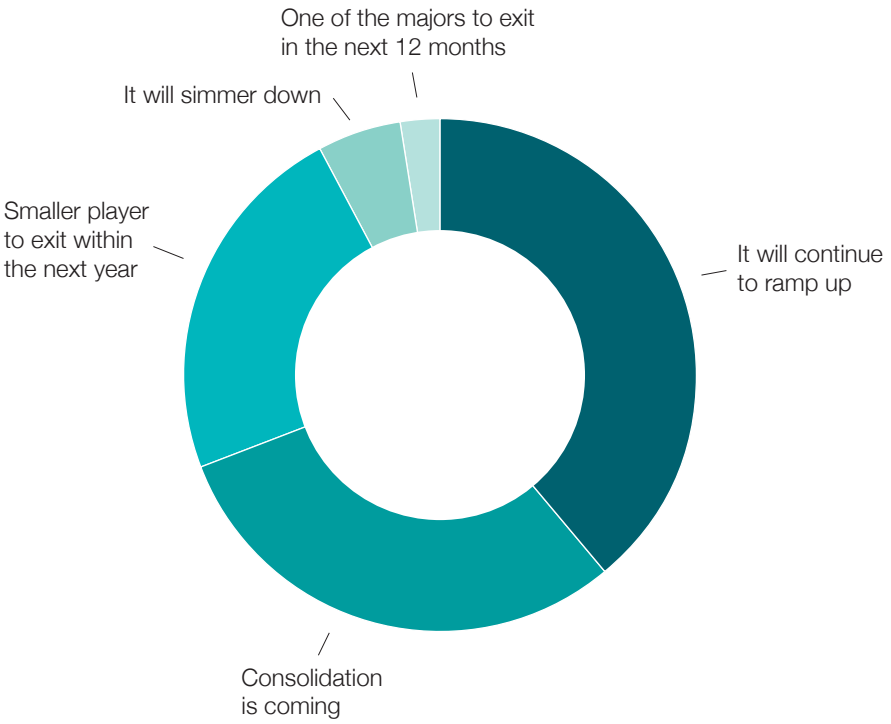


- **Maybe, but there needs to be collaboration and cooperation between the industry to make sure we get this right, or risk facing the wrath of the public. No one will thank the industry if we end up with a hodge podge of solutions, or end up making things over-complicated and unworkable = 61%**
- No. The Government needs to take a role in the regulation of some of these issues. There needs to be a clear mandate = 20.6%
- Yes. Each industry player should be entitled to make their own plans for their own business and customers = 15%
- Yes. The industry knows best, and the smart grid forum is the perfect setting for this = 3.5%

Survey results

The old retail chestnut

Question 16
Retail competition has been a recurrent theme in this survey. In 2015, 13 new brands were registered with the Electricity Authority (bringing the total to 27) and customer churn has climbed to new record levels. So what's next for retail competition?

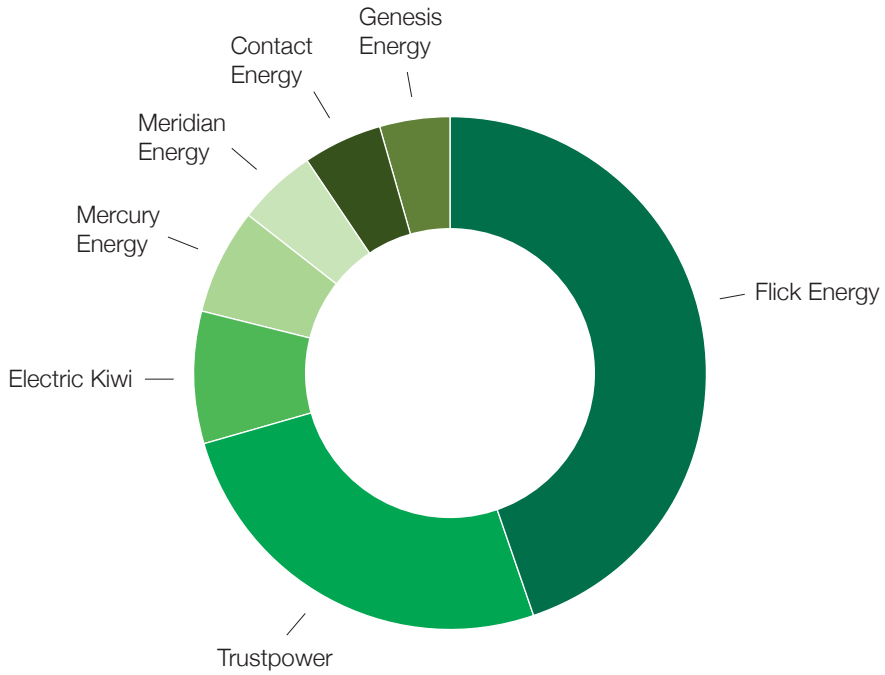


- **It will continue to ramp up with new, niche challenger brands still to come – several more will be registered in time for 2017's survey = 39%**
- There will come a time for consolidation in the market, and some of the big fish will take on the small fish. An acquisition (or two) will take place by the end of 2016 = 30.2%
- At least one of the smaller players (with less than 5,000 ICPs) will exit the market, unable to survive, within the next year = 23%
- It will simmer down, finally, in the second half of 2016 and churn will settle at an average level = 5.4%
- Low margins will eventually drive one of the majors out of retailing – expect to see this in the next 12 months = 2.4%

Survey results

The old retail chestnut

Question 17
In the face of such intense competition, retailers have been engaging with consumers to come up with innovative offers and products. Stepping out of your industry shoes, what would you vote as the best consumer retail product of the past year?

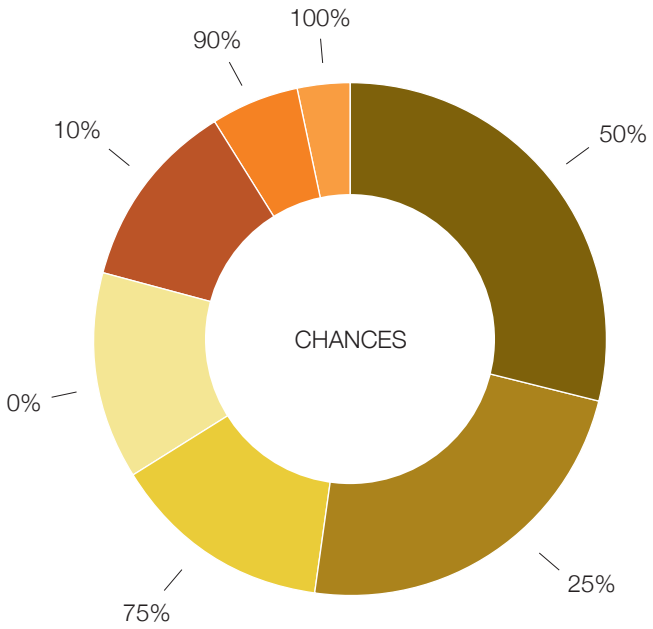


- **Flick Electric's spot market based pricing, positioned on passing on wholesale costs = 45%**
- Trustpower's triple-play – electricity, gas and telecommunications packages = 25.6%
- Electric Kiwi's 'Hour of Power' offer (a free hour of electricity each day between 2-3 pm or between 10-11 pm) = 8.4%
- Mercury Energy's 'Good Energy Day' offering a free day of electricity to existing customers = 6.5%
- Meridian Energy's $100 free power + $100 Prezzy Card to say 'thanks' to new customers = 5.2%
- Contact Energy's 'Power Fairy' offer ($200 credit for new customers to use when they choose) = 4.9%
- Genesis Energy's summer specials for a) new customers (a prize draw for a new car and 12 months free electricity for those who signed up to a 12- month standard pricing plan) and b) existing customers (a prize draw giving 12 customers two months of free energy and one customer a year's free energy) = 4.3%

Survey results

Huntly – will it stay or will it go?

Question 18
Genesis Energy had planned to shut its remaining 500 MW of coal-fired capacity by the end of 2018. That has now been extended until 2022. Assuming the Tiwai smelter remains, what are the chances those units will still be available in 2024?

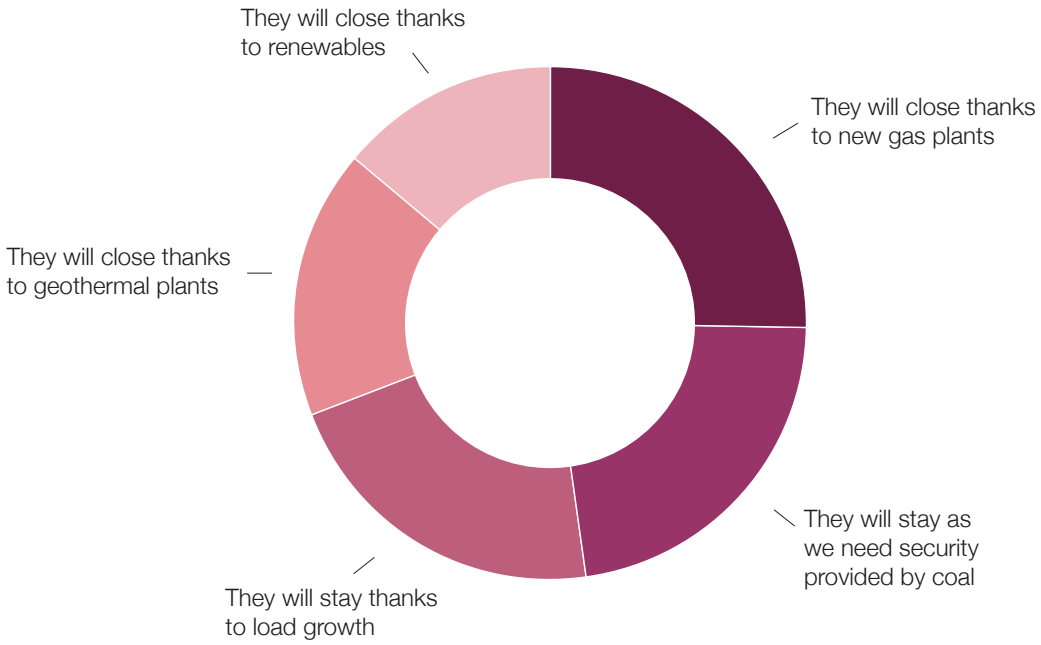


- **50% = 28.9%**
- 25% = 23.3%
- 75% = 14.1%
- Zero = 13%
- 10% = 11.9%
- 90% = 5.6%
- 100% = 3.2%

Survey results

Huntly – will it stay or will it go?

Question 19
Thinking about your answer above, what would be the main factor in shutting the units or keeping them open?

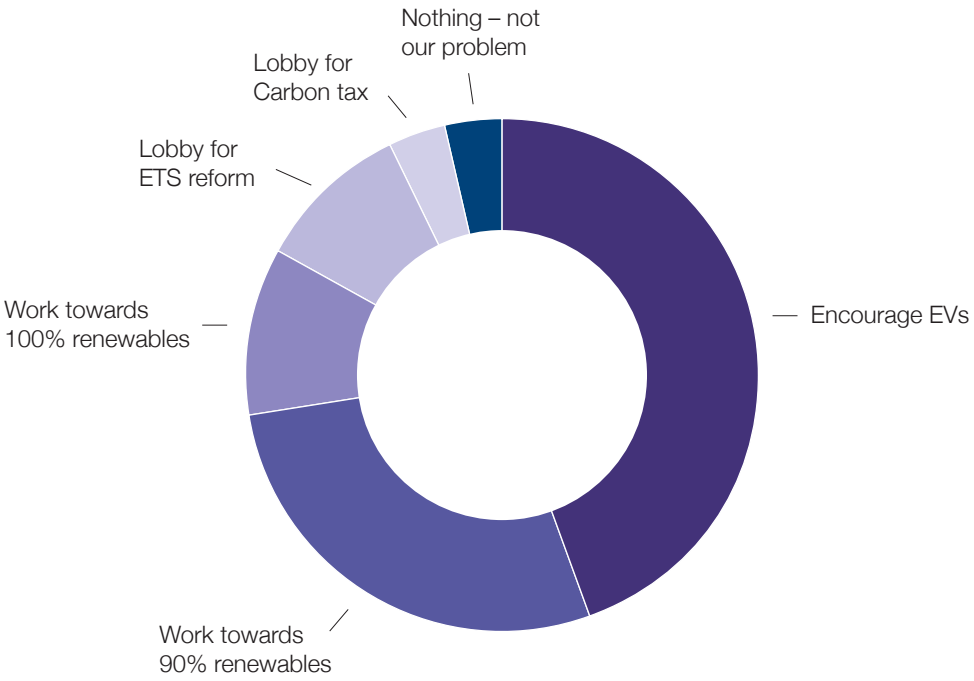


- **They will close because new gas-fired plants now planned will be a more flexible and cost-effective alternative = 25.4%**
- They will remain as coal remains the best fuel for providing occasional hydro-firming or sustained dry-year generation = 22.4%
- They will remain as load growth in the upper North Island will keep security margins there tight = 21.4%
- They will close because additional geothermal capacity will push them out of the market = 17%
- They will close because changes to long run marginal pricing will enable another tranche of low-cost wind generation to enter the market = 13.8%

Survey results

Climate change and renewables

Question 20
In July 2015, the Government announced that New Zealand's post-2020 climate change target is to reduce greenhouse gas emissions to 30 per cent below 2005 levels by 2030. What role does the electricity sector play in reducing greenhouse gas emissions?

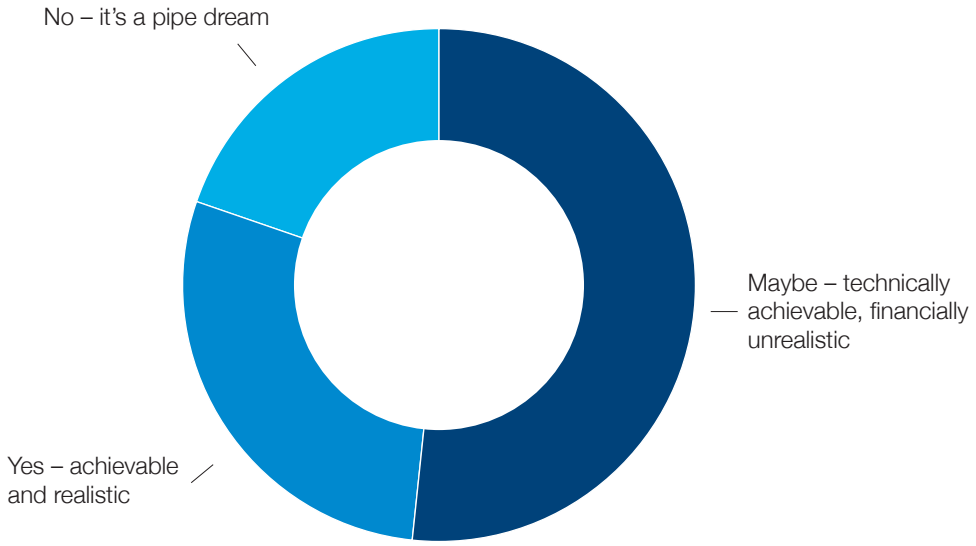


- **Encouraging the uptake of electric vehicles as the best opportunities for reducing emissions coming from the transport sector = 44.7%**
- Working towards a 90 per cent renewable generation target = 28.1%
- Working towards a 100 per cent renewable generation target = 10.4%
- Lobbying for the revision of the emissions trading scheme, including the removal of the 1 for 2 surrenders, and the inclusion of the agriculture sector = 9.6%
- Lobbying for the introduction of a carbon tax = 3.7%
- Nothing – this is an 'other sector' concern = 3.5%

Survey results

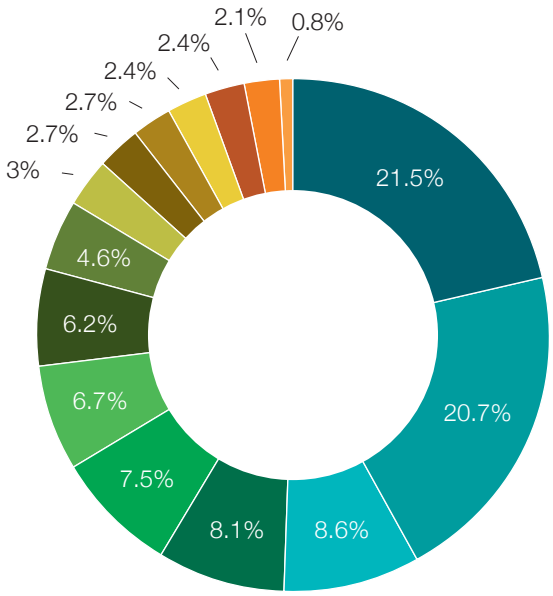
Climate change and renewables

Question 21
The Green Party has proposed aiming for 100 per cent renewable generation in a year of average hydrology. Will this ever be a reality in New Zealand?



- **Maybe. It is technically achievable, but it's financially unrealistic – it would come at a great cost as every percentage point over 90 will be exponentially more expensive, and the sector will not pay for new renewable generation without the right price signals = 51.7%**
- Yes. It is achievable and realistic, especially if we focus on adding more baseload geothermal generation, and demand response options = 28.7%
- No. It can only ever be a pipe dream, as it's both financially unrealistic and technically out of reach, as it would lead to excessive spilling in the hydro lakes = 19.6%

Participants by organisation type



- Gentailer – 21.5%
- Distribution – 20.7%
- Other – 8.6%
- Consultant – 8.1%
- Professional services company – 7.5%
- Transmission – 6.7%
- Government department/agency – 6.2%
- Equipment supplier – 4.6%
- Small retailer – 3.0%
- Consumer - large – 2.7%
- Other infrastructure – 2.7%
- Lobby/association – 2.4%
- Regulator – 2.4%
- Consumer – 2.1%
- Upstream oil and gas – 0.8%

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