Summary of submissions - Implications of evolving technologies for pricing of distribution services

Information paper

12 July 2016

Market Design

Contents

1 Purpose of this paper

1.1 This paper provides a summary of the submissions received by the Electricity Authority (Authority) on its consultation paper on the *Implications of evolving technologies for pricing of distribution services*.

1.2 The paper does not contain an exhaustive list of points made in submissions on the proposal, but rather the key themes observed in submissions.

2 The Authority's consultation process

2.1 On 3 November 2016, the Authority issued a consultation paper which sought feedback on:

(a) problems with existing distribution pricing arrangements, particularly the pricing structures typically used by distributors

(b) an assessment of the effects evolving technologies are likely to have on the pricing of distribution services

(c) analysis of the effects of distribution charges on household investment in solar panels

(d) the Authority's view that distributors have strong incentives to change their pricing structures to reflect the costs of providing distribution services.

2.2 The consultation paper and associated materials are available from the Authority's website: http://www.ea.govt.nz/development/work-programme/transmission-distribution/distribution-pricing-review/consultations/#c15642

2.3 The consultation period ran from 3 November 2015 until 2 February 2016.

3 54 submissions received

3.1 The Authority received 54 submissions on the consultation paper, from the parties listed in Table 1. These submissions are available from the Authority's website at: http://www.ea.govt.nz/development/work-programme/transmission-distribution/distribution-pricing-review/consultations/#c15642

Table 1: List of submitters

Suppliers	Networks	Consumers	Other
Blueskin Energy	Alpine Energy	Bryan Leyland	Embrium
Contact Energy	Auckland Airport[1]	Consumer NZ	Greenco Solutions
Electricity Retailers' Association of New Zealand (ERANZ)	Auckland Energy Consumer Trust (AECT)	Energy Management Association of New Zealand (EMANZ)	Institute of Public Works Engineering Australasia (IPWEA)
Flick Energy	Counties Power	Francis Arthur	ITP
Genesis Energy	Counties Power Consumer Trust	Geoff Bertram	John Crook Consulting
Meridian Energy	Eastland Network	George Jones	Sustainable Electricity Association of New Zealand (SEANZ)
Mighty River Power	Electra Trust	Grey Power	
Nova Energy	Electricity Networks Association (ENA)	Hugh Falkner	
NZ Energy	Energy Trusts of New Zealand (ETNZ)	John Irving	
Pioneer Energy	Network Tasman	Local Government New Zealand (LGNZ)	
Pulse Energy	Orion NZ	Major Energy Users Group (MEUG)	
Solarcity	Powerco	Malcolm McQueen	
Trustpower	PricewaterhouseCoopers NZ (PwC)	Molly Melhuish	
	Transpower New Zealand	Nigel Clarke	
	The Lines Company	Robert Gray	
	Unison Networks	Shona Edgerley	
	Vector	Wellington City Council	
	WEL Networks		

4 Key themes raised in submissions

4.1 The views presented by the 54 submitters address a broad range of issues including the efficient pricing structure for distribution services and related matters.

4.2 There was broad agreement amongst submitters that the Authority has correctly identified the overarching issues with distribution pricing. Submitters generally agreed that prevailing distribution prices do not encourage consumers to take action that would reduce current or future network costs or discourage consumers from making decisions that would increase the electricity-related costs borne by other consumers.

[1] Auckland Airport offers a range of services that could place it in more than one of the categories set out in the table above.

4.3 Other than this, few areas enjoyed broad agreement.

4.4 The key themes in submissions can be categorised under three overarching questions:

(a) What will distribution pricing look like?

(b) How will change be implemented?

(c) What incentives do distributors have to make changes?

What will distribution pricing look like?

4.5 Submitters made points relating to what distribution pricing will look like in the future. The issues relate to the development of pricing approaches, practical price design and standardisation or harmonisation of pricing terminology and approaches.

How will change be implemented?

4.6 Submitters made points relating to how change to distribution pricing will be implemented. The issues relate to the transition to new price structures, management of consumer impacts, who communicates the changes, retailer pass-through of price structures and regulatory barriers.

4.7 Submitters provided views on the next steps, for example suggesting the Authority establish a cross-industry working group to work through and agree processes and principles.

What incentives do distributors have to make changes?

4.8 Submitters made points relating to when distributors will make changes. There were conflicting views on whether distributors have the incentives to adopt more efficient price structures. The views were broadly divided between:

(a) distributors, who asserted that they have the incentives to adopt efficient price structures

(b) retailers and major users, who stated that distributors do not have sufficient incentives to make changes (without regulatory intervention).

5 Summary of submissions – Cover letters

5.1 The Authority has divided the main body of this report into two sections. This section summarises the general comments made by submitters. The following section summarises the responses provided by submitters to the questions that were asked in the consultation paper.

5.2 Submitters' comments are in alphabetical order.

5.3 Appendix A contains all of the questions in the consultation paper.

General comments

5.4 49 submitters made general comments on the consultation paper. Some of these general comments were repeated in response to specific questions in the consultation paper.

5.5 Submitters broadly agreed that existing consumption-based price structures do not reflect the cost of distribution services and that this is not durable.

Scope and focus of consultation paper

5.6 Submitters offered a wide range of issues that they considered should have been included in the scope of the consultation paper.

5.7 Bryan Leyland submitted that the consultation document fails to set the scene by discussing the range of likely costs and other factors regarding the technologies it discusses. Mr Leyland stated that if this had been done, people would have been able to establish the relative credibility of the various technologies. Mr Leyland stated that the consultation document failed to mention that, once upon a time, New Zealand had the best demand-side management system in the world and that it was the electricity reforms that have effectively destroyed it.

5.8 Francis Arthur stated that the consultation paper should have discussed the use of solar hot water collection to offset the use of electricity or gas in the home.

5.9 Genesis stated that the scope of the consultation paper is narrow and ignores more pressing distribution pricing issues. In particular, Genesis stated that the industry must have a clearer view of the role of distributors and specifically, who is a distributor's customer.

5.10 Geoff Bertram submitted that the consultation paper seeks to protect incumbent industry players against competition from new entrants. Mr Bertram stated that the words "for the long term benefit of consumers" unequivocally require the Authority to apply a consumer surplus standard in its promotion of competition. Mr Bertram stated that the Authority's mandate does not allow it to engage in disparagement of the competitive process.

5.11 Geoff Bertram stated that to restrict competition is to damage both the process of innovation and the public interest. Mr Bertram submitted that competition is often disruptive and destructive of asset value for participants and that this is intrinsic to the process.

5.12 Nova submitted that the Authority had focussed on emerging technologies in the electricity sector, but ignored the existing energy alternatives for the home and their effect on future electricity demand, such as natural gas and LPG.

5.13 NZ Energy submitted that the consultation paper was heavily weighted towards the effect that solar PV will have on distribution networks. NZ Energy stated that it is logical that all distributed generation should be considered when undertaking future consultation on this issue.

5.14 Orion broadly agreed with the Authority's discussion of the services provided by distributors, but identified additional aspects and context that are important, including:

(a) providing a platform for competition by providing reliable access to a competitive energy market

(b) maintaining supply for existing connections

(c) coordinating the individual actions of thousands of consumers across their network to manage security of supply and costs.

5.15 Solarcity submitted that the Authority should explore how the advantages of new technology could be harnessed and what pricing systems may help improve the adoption of new technology and improve efficiency in the electricity system.

Solarcity submitted that this aspect was missing from the consultation paper and was not covered by the notion of cost-reflective pricing outlined in the paper.

5.16 Solarcity stated that the consultation paper did not consider the latest thinking in distribution systems internationally. Solarcity discussed examples in a number of developed countries where regulators and utilities are creating enabling frameworks for new technologies such as solar and batteries and submitted that the analysis would benefit from considering these examples further.

5.17 Solarcity submitted that while the consultation paper attempts to start a conversation about the future of the distribution system it did not consider that technology now allows consumers to see and respond to signals in the electricity system in real time. Solarcity submitted that consequently there is an opportunity to improve the efficiency of the distribution system resulting in significant benefits to consumers. Solarcity stated that the Authority needs to start exploring this future, which is being explored in a number of other jurisdictions.

5.18 Transpower submitted that additional focus is needed on enduring concerns about the consistency and number of price methodologies that can increase cost, dampen competition and deter retail price innovation, including limiting the ability of retailers to translate distribution price signals into retail prices.

5.19 Other issues that were also raised by submitters included:

(a) the view that the problem identified in the consultation paper mainly relates to charges for residential distribution services—and the paper did not adequately acknowledge that fact

(b) the view that the issues identified in the consultation paper apply to other areas of the electricity sector and affect the distribution component of the sector

(c) the need to include climate change in the consideration of the issues and potential solutions

(d) the need to recognise that there is uncertainty around the take up of evolving technologies, which makes it important to take a holistic view of the sector and the various price components that constitute the end retail price delivered to consumers when examining the likely effect of new or evolving technologies.

Distributed generation, evolving technology and the NZIER analysis

5.20 Submitters broadly agreed that prevailing distribution prices do not encourage consumers to take action that would reduce current or future network costs or discourage consumers from making decisions that would increase the electricity-related costs borne by other consumers, as concluded in the NZIER's paper. Submitters also broadly agreed that existing price structures are not durable.

5.21 Geoff Bertram submitted that the NZIER report's $5 billion figure rests upon a highly unrealistic projection of the likely rate of uptake of solar panels. Mr Bertram stated that given a longer timeframe for uptake of renewable technologies, there is no basis for characterising early adopters as premature investors. Mr Bertram submitted that neither their expenditures, nor any consequent loss of asset values for networks or generators, are wasted. Nor, according to Mr Bertram, do the lifestyle-driven decisions of early adopters to install solar at a very low rate of return justify using their behaviour to calibrate NZIER's model for the population at large.

5.22 Hugh Falkner submitted that the NZIER paper grossly overstates the likely take up of solar PV.

5.23 Robert Gray stated that the NZIER study is probably accurate about the returns from solar installation. However, Mr Gray submitted that NZIER quotes long term average deposit rates of 6% and that currently deposit returns are much lower and the return on properly sized solar installations is much better. Mr Gray concluded that for the householder solar power investment not only cuts costs but also limits future increases in power costs.

5.24 SEANZ and Solarcity, in particular, voiced strong opposition to the Authority's and NZIER's conclusions on solar PV.

5.25 SEANZ stated that the suggestion that the timing is not right for onsite generation resources like solar PV to be adopted in scale because it will lead to over-investment in solar PV by consumers is unfounded.

5.26 Similarly, Solarcity took issue with the notion that investing in solar generation at the current time is not efficient from the whole of the electricity sector perspective.

5.27 SEANZ submitted that the Electricity Authority and the wider industry need to accept that solar PV, storage and other consumer-centric technology and the innovative business models they enable are inexorable. The wider industry will need to accept that a punitive regulatory environment will be unproductive, and they risk negative economic outcomes from prosumers leaving the grid.

5.28 SEANZ also stated that to suggest solar PV is for the affluent consumer is untrue and sends the wrong message that aims to slow uptake.

5.29 In a broader sense, ETNZ disagreed that existing distribution pricing "encourages over-investment in solar panels." ETNZ stated that it is not aware that any actual over-investment has taken place.

5.30 A number of submitters stated that the magnitude of the 'problem' with inefficient investment in solar PV has been over-emphasised and that focus on the potential cost implications was unhelpful.

5.31 Of those submitters, Powerco stated that while it agreed in principle with the qualitative conclusion reached by the NZIER analysis, it doubted the size of NZIER's up to $5 billion estimate of the present value of the cost of the mis-investment.

5.32 Similarly, Unison stated that although the direction the technologies may go in the future is uncertain (including the rate of uptake), the analysis in the consultation paper provides the industry with a good overview of the varying impacts that solar PV may have.

5.33 There was concern among a number of submitters that the Authority had focused too much on the influence of solar PV. These submitters stated that regulation should be technology-neutral. Submissions stated that technologies are likely to change over time, both in nature and affordability, and focusing on one technology is likely to result in perverse outcomes.

5.34 ETNZ disagreed that the Authority does not favour one form of generation over another. ETNZ stated that while it recognised that it is an entrenched arrangement, it is conscious that the Authority is continuing to support a transmission pricing approach that results in remote generators not paying a service fee for the great bulk of the Transpower assets required to bring their product to consumers. ETNZ stated that nor do those generators supply electricity on a 'fob-like' basis to retailers, who would then meet transport costs.

5.35 ETNZ submitted that instead the costs of transmission are met by consumers via a distribution cost loading. ETNZ stated that this means that electricity generated a long way from markets is competing with local options such as solar via a 'free ride' through the Grid, and consumers are encouraged to look at alternatives to energy supplied over networks.

5.36 SEANZ and Solarcity offered their views on how the Authority should react to the growth in distributed generation (particularly solar PV).

5.37 Solarcity submitted that the consultation paper appeared to be suggesting that consumers who reduce their electricity demand, for example, by installing solar panels, should be punished for this. Solarcity stated that it considered this unacceptable. Solarcity submitted that solar is little different to LED lighting and questioned whether consumers who install LED lighting or energy efficient appliances also be punished because they are using less energy.

5.38 SEANZ submitted that the real issue to be addressed is centred on the speed of uptake of new technologies and the effect on consumers of the current business model of electricity delivery and the current players in that supply chain:

(a) SEANZ stated that the consequences for the current business model and its players are a point of consideration but these should not be protected at the risk of marginalising new technology industries that are the future of the industry, as they already help, support and provide value for existing prosumers and a growing number of consumers who are soon to be prosumers

(b) SEANZ noted that it has been suggested that the current pricing regime affects other consumers as it indirectly subsidises solar PV prosumers. SEANZ stated that in its view, the reverse is true.

5.39 SEANZ stated that regulation needs to reflect this change and allow and facilitate the transition to the full long-term benefit of all consumers, rather than protecting existing structures. SEANZ believes it is essential that incumbent energy providers do not create pricing barriers to slow uptake of new energy options. SEANZ submitted that positive outcomes from new technology need to be encouraged and accommodated.

5.40 A number of submitters also discussed the broader influence of new technologies, their role in the electricity sector, the benefits that they offer and how these emerging technologies should be treated by regulation.

5.41 The ENA submitted that technology will increase consumer choice. The ENA stated that technology might also challenge the definition of service from distribution and transmission and that the Authority should remain agnostic about how distribution services are defined.

5.42 George Jones submitted that there is a need for software that manages the use of electricity as part of an intelligent grid. Mr Jones submits that industry is changing quickly and that these changes will be painful unless they are correctly managed using software.

5.43 Greenco Solutions submitted that new technologies will also allow the consumer to provide services to the distributor; e.g. to allow the collection of information about a consumer’s load and/or generation/storage. Greenco Solutions stated that this will allow the consumer to export generation when it is beneficial to the distributor and to allow the consumer to provide power factor correction services and peak-load-shifting services for the distributor.

5.44 Greenco Solutions stated that energy storage systems can alleviate problems that may be associated with the integration of variable renewable distributed generators through decoupling the production and delivery of energy. Greenco Solutions submitted that smart grids could also help with the automation of control of generation and demand.

5.45 John Irving submitted that the NZ power sector as a whole needs to recognise that electricity storage systems can offer many types of service that need to be integrated into the NZ power market. He stated that this includes the facilitation of a greater uptake of renewables and the avoidance of having to make unnecessary T&D reinforcement.

5.46 John Irving submitted that regulators must avoid being captured by incumbent power companies by responding appropriately to encourage the use of new technologies and thereby enable the inevitable paradigm shift in the NZ power industry.

5.47 Malcolm McQueen submitted that efficiency of energy efficient lighting is overstated. He stated that much of the energy efficiency achieved by new light bulb technologies is achieved by reducing 'waste' heat. However, according to Mr McQueen, the amount of heat wasted is much less than often assumed because for all indoor lighting, the heat generated by an incandescent light bulb contributes to the heating required of a building or dwelling, thus offsetting spending on heating.

5.48 Nigel Clarke submitted that economic modelling that accounts for full life-cycle analysis—which is where the full benefit of new technologies are realised—needs to be fully developed. Nigel Clarke stated that a narrow focus in determining the costs of these products purely to the distribution network would result in New Zealand falling behind the rest of the world again.

5.49 Pioneer submitted that it is clear from the consultation paper that the Authority expects evolving technologies to reduce peak demand and avoid or defer distribution investment. Pioneer stated that distributed generation could be an evolving technology and provide the same benefits as other evolving technologies, as well as demand-side management and energy efficiency initiatives. Pioneer submitted that all of these activities provide the same ‘service’ to distribution companies—that of avoiding or deferring network investment. Pioneer submitted that the Authority must recognise these services and establish fair compensation for these services.

5.50 Robert Gray submitted that projecting the future is always risky but currently available technology to displace the centralised generation system with distributed generation is a reality, the only obstacle is cost. Mr Gray stated that this is similar for the replacement of fossil fuel transport with electric vehicles. Mr Gray stated that the benefits to the environment and potential for cost savings of both of these trends are clearly evident and probably unstoppable at this point.

What will pricing look like in the future?

5.51 This category covers the following issues relating to the development of pricing of distribution services in the future:

(a) development of pricing approaches

(b) consumer responses to price signals

(c) technology neutrality of pricing

(d) harmonisation of pricing terminology and structures

(e) distributed generation pricing principles

(f) street lighting.

Development of pricing approaches

5.52 A number of submitters commented that there is no single price structure that will suit all distribution networks and that distribution price structures that are informed by local knowledge will best promote the long-term benefit of consumers.

5.53 EMANZ outlined a specific tariff structure that it considered would ensure the best outcomes for New Zealand. EMANZ stated that it could see merit in establishing more cost-reflective tariffs. EMANZ submitted that tariffs could be structured into three-part tariffs that included:

(a) Fixed charges that recover customer specific costs. That is, unique capital investments required by the customer such as a transformer or a line meter.

(b) Capacity charges. EMANZ submitted that at a simple level capacity charges are fixed, but that they can allow for incremental changes in peak usage by consumers, so they are demand-driven and consumers will have the ability to purchase different levels of capacity.

(c) Variable charges. EMANZ stated that these should be used as a default tariff component to recover wider distribution costs, unless a strong case can be made that the effect of making these costs variable is not in the long-term interest of consumers.

5.54 John Crook submitted that a two-part time-of-use tariff would offer the most efficient method for recovering the costs of distribution services. Mr Crook identified four key cost drivers for a distribution network: energy losses, the core distribution network, the local low voltage (230/400V) distribution networks and overheads. Mr Crook stated that these costs should be recovered in the following manner:

(a) A fixed daily charge that is set to cover the average costs of the local 230/400V low voltage distribution network.

(b) Time-of-use charges (per kWh). Mr Crook submitted that distributors should levy a consumption charge with three time-of-use categories (peak, shoulder and night). These time-of-use charges should be set to recover the costs of the core distribution network, costs of energy losses and overhead costs. Using this price methodology, Mr Crook stated that the peak rate is set to recover the full cost of the core distribution network because electricity demand during peak periods is the single factor that determines the cost of the core distribution network. The cost of energy losses and overheads should be recovered across all three categories. As such, the peak rate would be set considerably higher than the shoulder and night rates.

5.55 Network Tasman considered that the key options for future distribution pricing include capacity prices; peak demand prices (of which there is a range of variants); time-of-use prices; and controlled load pricing. Network Tasman submitted that it appeared that a price that signals network peaks through either peak demand and/or time-of-use kWh is an important part of future pricing.

5.56 Trustpower submitted that a new distribution pricing methodology would plausibly consist of some or all of the following types of charges:

(a) fixed daily charges

(b) volumetric charges (per kWh)

(c) peak demand charges (per kW), and/or

(d) capacity charges (per kW).

5.57 Vector stated that providing a flexible framework for distributors to respond to the unique characteristics of their network, the individual consumer preferences on their network, and the inclination and ability of retailers operating in their network to pass through pricing signals, will better place distributors to deliver longer-term investment efficiencies.

5.58 However, a number of submitters advocated for particular pricing approaches. These submitters tended to identify at least one of three pricing approaches that they considered would result in more efficient pricing: time-of-use charges, demand-based charges, and capacity-based charges.

5.59 Comments relating to time-of-use charges included:

(a) Contact submitted that a move to time-of-use pricing will still enable significant cross-subsidies to occur. Contact submitted that this would still result in inefficient investment in emerging technologies, including solar PV.

(b) Flick stated that any future pricing structure should be easy for customers to understand and enable customers to make behavioural changes to reduce their costs. Flick submitted that time-of-use consumption pricing (that is passed through to the consumer by the retailer) is the best way to facilitate this.

(c) SEANZ submitted that since electricity costs are strongly time-dependent and stated that a time-of-use consumption based approach provided a mechanism for accurate "use of service" signals that enable consumers to make behavioural changes to consumers to reduce peak capacity demand.

5.60 Comments relating to demand charges included:

(a) ITP submitted that in order to maximise fairness regarding historical responsibility for network costs, there is a case for recovering a greater proportion of residual costs using a demand-based charge and decreasing use of consumption charges to recover these costs.

(b) Trustpower stated that an anytime maximum demand charge would be preferable to a capacity charge because consumers have a relatively limited ability to respond to capacity charges. However, Trustpower stated that they do not necessarily reflect the costs a consumer imposes on the network. Trustpower stated that setting tariffs based on coincident peak demand would be much more cost-reflective.

(c) Unison submitted that distributors' costs are aligned with demand and therefore that service-based pricing can be achieved by introducing a demand-based or fixed charge (based on kW not kWh).

5.61 Comments relating to capacity-based charges included:

(a) EMANZ submitted that capacity charges encourage efficient customer behaviour. EMANZ stated that if an EDB is considering raising electricity capacity charges to pay for greater capacity (as requested by a consumer), and a gas connection is a legitimate cost-effective and viable alternative energy source, it may be that switching capacity service to a gas network or bottled gas is an efficient outcome for the consumer and the economy overall.

(b) Mighty River Power outlined its initial view that capacity-based pricing may be preferable as it would have the effect of making distribution charges more fixed and unavoidable. Mighty River Power stated that capacity-based charges would also benefit consumers by smoothing payments across the year and avoiding bill shock during winter months which is exacerbated by the current high proportion of variable rather than fixed charges under the majority of distributors' pricing methodologies.

Consumer response to price signals

5.62 Some submitters stated that it is important that tariffs are structured in a manner that ensures that consumers receive appropriate price signals and have the ability to respond appropriately to these signals.

5.63 The AECT stated that if consumers are looking for information about costs and benefits on which to base investment decisions they need to know the marginal costs of such choices. According to the AECT, this requires a charging regime that includes information about the real time behaviour of other users and for consumers to be able to respond aptly to these signals.

5.64 Greenco Solutions stated that, if as suggested the Authority is going to look at service-based pricing to help consumers benefit from advances in technology, then for consumers to receive these benefits, distribution prices need to clearly show what consumers are being charged for, at what time of the day.

5.65 Unison noted that paragraph 6.2.4 of the consultation paper stated that "…consumers should have information and tools to respond to new pricing signals. This means that pricing options that involve a demand component should not be introduced unless appropriate technology is available". Unison stated that this statement potentially rules out peak demand and presumably forms of capacity pricing that involve data-based measurement in most cases and sought clarification on how binding this constraint is.

Technology neutrality of pricing

5.66 A number of submitters expressed concern that that consultation paper unduly focused on the interaction between distribution prices and efficient investment in solar PV and stated that the Authority should adopt a technology-neutral approach to distribution pricing.

5.67 Genesis submitted that current inefficiencies in distributors' prices should be identified and removed to ensure that distributors can recover the costs of operating the network from those who use it by cost-reflective pricing, while being neutral to generation type. Genesis stated that neutrality of this nature will allow the market to adapt to an unpredictable future of energy generation.

5.68 Meridian submitted that a principles-based approach to implementing service-based charging is needed because there is general uncertainty regarding future technologies and a principles-based approach will take an impartial view of the technology.

5.69 PwC stated that, in principle, pricing should be both durable and neutral to alternative technologies. PwC submitted that distribution pricing needs to be responsive, not just to existing technology but also to potential future technologies.

5.70 Unison submitted that the Authority needs to acknowledge that in the longer term battery storage is likely to become economic and that pricing solutions need to be durable so that they are not defeated in the longer term by intra-day price arbitrage.

Harmonisation of pricing terminology and structures

5.71 Several submitters expressed the view that distribution pricing should be subject to greater harmonisation or standardisation.

5.72 EMANZ submitted that greater consistency and transparency of distributor tariffs provides potential for a smoother and more economic adoption of new technologies that may lead to efficiency gains and cost reduction. Retailers are currently required to administer distribution pricing methodologies from 29 different distributors each with a large number of tariffs adding significant, and mostly unnecessary, cost and complexity to the pricing of distribution services that will be passed through to consumers. By making distribution pricing methodologies more consistent across all distributors will also reduce barriers to national retail competition. A more consistent approach will be to have a single national distribution pricing methodology that allows for specific distributor customisation where needed—not by default.

5.73 Genesis submitted that simple, clear and certain distribution tariffs which are cost-reflective, as far as reasonably practicable, will enable retailers to create new and innovative retail products and enable distributors to recover the costs of operating their networks.

5.74 Pioneer submitted that the Authority should implement more standardisation of definitions and tariffs by distributors. If the new service is 'providing capacity to transport a particular consumer's peak demand volume' it would be useful if the Authority provided some standard definition of this service to be used by the 29 distribution companies, who otherwise might each create their own definition.

5.75 Pioneer also submitted that it is essential that electricity users understand what they are paying for and how they can influence the total cost they face. Distributors should publish their charges in a way that is useful for tariff construction by a retailer.

5.76 Trustpower submitted that given the requirement that retailers will have to be able to implement any changes, and to be able to explain any new charges to their customers, important considerations will be required in the trade-offs between economic and administrative efficiency. This is particularly important with regard to complexity, standardisation and the granularity of the cost-reflectiveness employed (for example, the size of zones within networks).

5.77 Pioneer questioned whether there is consistency in investment/efficiency signals between the Authority's proposals for distribution charges and transmission charges.

Distributed generation pricing principles

5.78 The distributed generation pricing principles were identified as a constraint on distributors moving to more efficient prices because the pricing principles require distributors to price distributed generation at no more than the incremental cost of connection. As such, distributors are required to recover any costs over and above the incremental cost from other parties.

5.79 Submissions noted that the Authority is considering the Part 6 pricing principles in a separate project and recommended that the Authority consider whether separate pricing principles for distributed generation are still required or can be revoked.

Street lighting

5.80 Submissions on street lighting were primarily received from four submitters: EMANZ, IPWEA, LGNZ and the Wellington City Council.

5.81 Submissions stated that there are a diverse range of street lighting tariffs available across the country and questioned the need for different price arrangements in 27 different parts of the country and stated that the Authority could help to standardise the types and levels of services provided by distributors.

5.82 IPWEA submitted that the broad range of tariff structures offered is an indication that distributors are not applying cost-reflective tariffs for street lighting services.

5.83 IPWEA also stated that the benefits of investing in evolving technology such as LED lighting and smart controls are not being realised because of the incentives that non-cost-reflective tariffs create.

5.84 Submitters stated that distributors may be responding to greater energy efficiency of street lighting by adopting tariff structures that increase the fixed component. The Wellington City Council stated that it has observed this behaviour from

Wellington Electricity, which has proposed changing to an entirely fixed network charging regime. Wellington City Council stated that it believes that this would unfairly favour the distributor because it would guarantee their income while giving them no incentive to keep the lights working or to invest in the network.

5.85 The submitters recommended that the Authority investigate distributors' public lighting pricing methodologies to verify that they are cost-reflective and consider whether the strategic benefits of street lighting warrant differentiation and focus by the Authority.

How will change be implemented?

5.86 This category covers issues relating to how a move to more efficient distribution prices can be implemented, including:

(a) the role that smart meters play

(b) the management of smart meter data

(c) the LFC Regulations

(d) retailers' re-bundling of prices

(e) the roles of the Authority and the Commerce Commission

(f) transition to efficient price structures.

Smart metering technology enables efficient pricing

5.87 Submitters broadly agreed that smart meters allow distributors to collect enhanced data that provides distributors with greater flexibility in how they structure their tariffs.

5.88 Some submitters stated that smart meter penetration will influence the extent to which distributors can offer more efficient tariffs and that the prevalence of smart meters will influence the extent to which a distributor can reasonably introduce tariffs that rely on smart meter data.

5.89 Alpine submitted that tariff structures need to consider consumers who do not have access to half-hour metering services. Alpine submitted that a consumption charge is necessary to signal time of use for these consumers.

5.90 The ENA submitted that there has only been a partial roll out of AMI, with a range of coverage between approximately 15% and 80-90% on different networks. The ENA stated that this is a timing issue and that robust methods for determining volumes in situations where data is not available will need to be determined. The ENA noted that the approach of determining volumes where data is unavailable (as done by The Lines Company, for example) does not appear to be consistent with the Authority's opinion.

5.91 Similarly, Powerco submitted it would like to have at least 70% penetration of smart meters before introducing demand-based or time-of-use-based charges at the ICP level. Powerco stated that it felt that the consultation paper did not adequately acknowledge that the reason for the widespread mismatch between actual costs and charges in residential distribution tariffs is that, until recently, residential metering has not permitted demand-based tariffs or the use of detailed time-of-use tariffs (other than a day/night differential) at the ICP level.

5.92 PwC submitted that metering technology has had an effect on how distribution pricing has evolved over time. PwC stated that traditional mass-market meters are limited to measuring aggregate consumption between meter reads. PwC stated that distributors' adoption of kWh consumption charges, particularly for residential and small business connections, had therefore been to some extent a necessity, as it had been largely uneconomic to deploy more sophisticated time-of-use meters for these connections.

5.93 PwC submitted that recent technological advances and cost reductions in metering mean that it is now economic to deploy time-of-use and remote-read meters to most consumers. Accordingly, PwC stated that distributors (and retailers) are increasingly gaining access to the data required for billing advanced time-of-use and/or demand-based pricing to the mass market.

5.94 WEL stated that non-communicating meters present a constraint on introducing time-of-use price plans. WEL submitted that meters using the cell network for communications have limited coverage and it is generally accepted that up to 10% will be non-communicating. WEL submitted that for these sites, manual reads are required and the half-hour read data is not usually downloaded in these instances. WEL stated that this practice limits the data available to enable accurate cost-reflective pricing and billing.

Ability to manage smart meter data

5.95 Submitters stated that while the roll-out of smart meters is an important factor in assisting the transition to more efficient tariffs, distributors and retailers must ensure that they have billing and IT systems that are capable of supporting the data sets produced by smart meters.

5.96 PwC stated that advanced metering data is a critical component of implementing more service-based pricing. PwC submitted that there are still challenges to overcome before advanced meter data can be effectively used to introduce more service-based distribution pricing. These challenges include:

(a) Appropriate access to AMI meter data for developing and implementing advanced pricing options is crucial.

(b) Retailers, distributors and AMI providers do not currently have comprehensive billing and IT systems in place to support the much larger sets of meter data generated by AMI meters.

5.97 WEL identified retailer system limitations as a potential barrier. WEL stated that retailers did not use consistent frameworks for half-hour data collection and usage. Some retailers have the capability to work with half-hour data, while others do not and are reliant on third-party metering agents to summarise or format the data in the form required for time-of-use price plans.

Widespread uncertainty about the compatibility of the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 with the Authority's view on distribution pricing

5.98 The Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 (the LFC Regulations) generated considerable comment from submitters. The primary message delivered in submissions was that the interpretation and application of the LFC Regulations remain highly uncertain and that this uncertainty presents a considerable constraint on distributors moving to more efficient prices. Submitters stated that distributors need greater certainty about the interpretation and application of the regulations before distributors can introduce more efficient tariff structures.

5.99 Rather than seek clarification, some submitters stated the regulations should be changed or even repealed altogether.

5.100 Not all submitters considered the LFC Regulations to pose a constraint to distributors adopting more efficient prices. Some submitters agreed with the Authority's view that the LFC Regulations do not prevent distributors from adopting more efficient distribution prices.

5.101 Finally, one submitter stated that the wording of the LFC Regulations should be tightened to prevent the subversion of the intent and meaning of the regulations.

5.102 The predominant view amongst submitters was that uncertainty around the interpretation of and compliance with the LFC Regulations is a constraint on distributors introducing more efficient distribution prices and that uncertainty can be created by a number of factors. These include:

(a) **Disagreement on extent of the constraint presented by the LFC Regulations**: A number of submitters stated that there is not unanimous agreement among the industry and the Authority on the constraints that the LFC Regulations pose to cost-reflective pricing.

Submitters stated that despite the Authority's intent to suggest that the LFC Regulations may not be a barrier to efficient service-based pricing, the difference in opinion is limiting many distributors from implementing efficient tariff structures.

(b) **Uncertainty about the compliance of specific price structures**: Many submitters expressed particular concern about whether specific price structures comply with the LFC Regulations. Price structures queried included capacity, demand and peak variable charges.

(c) **Uncertainty about legal interpretation**: The issue of the broader interpretation of the LFC Regulations was also raised as a constraint. Some submitters stated that their legal advice did not support the Authority's interpretation of the LFC Regulations. Submitters expressed concern that the courts may adopt a different interpretation of the LFC Regulations to that adopted by the Authority. This presents a particular constraint for many submitters as the Authority cannot ensure that its interpretation of the LFC Regulations will be consistent with that of the courts, which ultimately determine the interpretation of the LFC Regulations

(d) **Inconsistencies between the Authority's interpretation and political and public expectations**: Similarly, some submitters expressed concerns about whether the Authority's interpretation of the LFC Regulations differs from the public or political expectations.

(e) **Uncertainty about Authority's position**: A couple of submissions suggested that the Consultation paper confused rather than clarified debate, increasing uncertainty. In particular one submitter stated that Authority assertions that the LFC Regulations do not prevent capacity, time-of-use, or peak demand–based charges are not fully explained in the consultation paper or in material from the Authority's recent investigation into alleged breaches by The Lines Company Limited.

5.103 Pioneer stated that it is inefficient for the Authority to expect distribution companies to 'test' the interpretation of the LFC Regulations with new charges only to find out later that their interpretation breaches the regulations and the Authority fines the distribution company, who then has to rework its tariffs.

5.104 Similarly, a number of distributors stated that they take regulatory compliance very seriously, and so need to be clear on their freedom of action before making material price changes.

5.105 Ultimately, submitters stated that uncertainty about the interpretation of the LFC Regulations presents a barrier to change and that greater certainty about the interpretation and application of the LFC Regulations is needed.

5.106 The primary solution to the issues discussed above was clarification on the interpretation of the LFC Regulations from the Authority. The nature in which clarification should or could be provided varied and included:

(a) **Clear and detailed advice**: A clear and comprehensive analysis of, and published guidance on, how the LFC Regulations apply in a manner that provides participants with sufficient confidence to proceed with price structure reform. The guidance could specifically clarify:

(i) the definition of a variable and fixed charge

(ii) how to comply with the LFC Regulations' compliance thresholds when using non-kWh variable charges.

(b) **MBIE's interpretation of the regulations**: A recommendation that the Authority's Compliance Committee writes to the Ministry of Business, Innovation and Employment (MBIE) requesting clarification of the LFC Regulations.

(c) **Published legal opinion**: The publication of a legal opinion that outlined the degree to which demand-based and capacity-based charges may be interpreted to be variable charges under the LFC Regulations.

(d) **Formal policy statement**: The publication of a formal policy statement with examples of tariffs that are consistent with service based pricing and the LFC Regulations.

5.107 Submitters also identified other actions that could be undertaken to remove some of the uncertainty around the interpretation of the LFC Regulations. These included:

(a) **Authority and MBIE alignment on the interpretation of the LFC Regulations**: Clarification of the degree to which the Authority's interpretation of the LFC Regulations aligns with that of MBIE. It was stated that if distributors were to introduce tariffs that appear to comply with the Authority's view of the regulations, but MBIE disagreed with this view, there is a clear risk that the LFC Regulations may be tightened on MBIE's advice.

(b) **Gaining political consensus on the policy intent of the LFC Regulations**: If the Authority was to publish a formal policy statement, the statement should be tested with both the Government and opposition parties to ensure that it meets expectations regarding the underlying policy intent of the LFC Regulations.

5.108 Clarifying the interpretation the LFC Regulations was not the sole suggestion for removing the uncertainty around compliance. Rather, a number of submitters stated that the LFC Regulations should be amended or even repealed. These included the following:

(a) Counties Power submitted that it is vital that any move towards cost-reflective service-based pricing can only be achieved if the government alters the LFC Regulations through either repealing the legislation or substantially lowering the kWh threshold and specifically excluding homes with installed distributed generation.

(b) PwC submitted that, given the ambiguity and emerging interpretations, the LFC Regulations should be amended to clearly provide for demand and capacity charges as variable charges.

(c) Vector submitted that the LFC Regulations should be repealed. Vector stated that the LFC Regulations have introduced inefficiencies and inequities. Vector submitted that they have prevented the development of consumer-centric pricing options and will continue to do so until they are repealed. Vector stated that the Authority had focused on the definition of a variable charge in the LFC Regulations, in an effort to demonstrate the LFC Regulations and service-based pricing are compatible, but the issues are present regardless of the interpretation of the definition of fixed and variable charges.

5.109 A small number of submitters agreed with the Authority that the LFC Regulations do not prevent distributors from developing more efficient distribution prices. These included the following:

(a) EMANZ noted that it has been suggested in some arenas that regulatory barriers exist that prevent distributors from moving to a higher fixed charge/capacity-based charging structure. It was EMANZ's view that these regulatory barriers are easily surmountable.

(b) Based on the material in the consultation paper, MEUG submitted that it had no reason to have a contrary view on the Authority's reasoning on the LFC Regulations.

(c) WEL agreed with the Authority that the LFC Regulations do not stop distributors from evolving their pricing. However, WEL disagreed that the fundamental issues with the LFC Regulations can be avoided or solved with work-arounds and strongly believed that efficient prices cannot be set while the LFC Regulations remain unchanged.

5.110 Orion observed that Section 23(d) of the LFC Regulations states that any retailer or distributor that has used a different assumption as to the consumption of the average consumer from that contained in the LFC Regulations must provide a detailed explanation and data to support their use of their different assumptions. Orion noted that the consultation paper stated that the definition of "average consumer" allows for some flexibility in how it is applied for the purposes of whether a variable charge complies with the LFC Regulations.

5.111 Orion agreed there is some flexibility imparted by 23(d), but did not believe it is accurate to say that the definition of “average consumer” allows for it. Orion said that definition is very clear and sought clarification on what flexibility the Authority believes is allowed.

5.112 Finally, Geoff Bertram submitted that the Electricity Authority’s failure either to sanction The Lines Company for its deliberate subversion of the clear meaning and intent of the LFC Regulations, or to recommend an immediate tightening of the wording of the LFC Regulations to restore their effectiveness, gives the impression that the Authority has aligned itself with industry attempts to kill the low fixed tariff option and thereby open the way for higher fixed charges. Mr Bertram stated that the Authority has no mandate for this.

Retailer re-bundling of price structures

5.113 A number of distributors and retailers submitted on the issue of the pass-through of distribution tariff structures and whether retailers should be allowed to re-bundle distribution tariffs.

5.114 Those distributors that submitted on this issue generally expressed strong opposition to the view that retailers will pass distribution prices through to consumers. These distributors broadly submitted that there is little reason for distributors to invest the time and money required to transition to more efficient tariffs if they cannot ensure that these changes will be passed through to retail consumers. Distributors stated that retail re-bundling of distribution prices prevents consumers from observing the price signals sent by efficient tariffs and therefore the efficiency benefits that the Authority is seeking from service-based prices will not be realised.

5.115 Distributors expressed scepticism that retail competition would encourage retailers to differentiate their products to the degree that distribution prices are passed through to consumers and some distributors suggested that it may be appropriate for them to ensure that pass-through occurs if the Authority does not.

5.116 Counties Power submitted that retail competition would encourage retailers to differentiate their service offering only if there is a requirement for retailers to pass on the price signals unless agreed otherwise by the relevant distributor. Counties Power stated that if the Authority maintains the view that competition will ensure pass-through then distributors may have little choice but to bill customers directly, as The Lines Company has done.

5.117 Powerco submitted that the suggestion that retailers have incentives to pass through cost-reflective distribution tariffs, lest they lose customers, is undermined by studies that show that consumers prefer simple, certain and familiar tariff structures, even if this means that they pay a little more overall. Powerco stated that if retail prices do not reflect efficient distribution tariffs, the benefits that the Authority expects to see from improvements to distribution tariffs may not be realised, or only partially realised.

5.118 Vector stated that its experience with residential time-of-use pricing (that only one retailer makes available to consumers) and mandated Commerce Commission price reductions suggested that the Authority’s confidence in retailers passing service-based prices through to customers may be misplaced.

5.119 While a number of distributors offered strong views that competition would not ensure retailers passed distribution tariffs through to consumers, this view was not unanimous amongst distributors.

5.120 PwC submitted that it agreed with the Authority that competitive retail markets are likely to deliver the pass-through of distribution charges over time, in most cases. However, PwC stated that competition could also result in re-bundling of distributor pricing signals to meet consumer demand for alternative retail products. PwC submitted that in either case, retailers will face significant financial exposure to distribution charges under current retail pricing structures, if distribution prices become more closely correlated to demand.

5.121 Other submitters, primarily retailers, stated that retailers' strategies, the competitive retail market, and the development of end-user tariff structures are all driven fundamentally by consumers' desires. These parties submitted that the retail market could be relied upon to pass through signals that consumers determine are ultimately in their interests.

5.122 EMANZ submitted that retailers are not obliged to always pass distribution tariffs on to their customers in the form in which they receive them. EMANZ stated that this discretion has been considered an important element of retail competition in the past and a potentially scaled and therefore presumably efficient way of managing risks for their customers.

5.123 Genesis submitted that in a competitive market the marginal cost of electricity will not always be easily distinguished by individual consumers. Instead, Genesis stated that competition will encourage retailers to aggregate and combine costs and products in ways that are attractive to, and meet the desires of, end consumers.

5.124 Genesis submitted distributors should be working proactively to encourage retailers to design products that encourage different behaviours on their network assets and not trying to bypass the retailer and impose their pricing tariff directly onto the end consumer.

5.125 Trustpower stated that that the retail market could be relied upon to pass through signals that consumers determine are ultimately in their interests.

Roles and interactions between the activities of the Authority and the Commerce Commission

5.126 Submitters raised a number of issues relating to the interaction of the Authority's work with that undertaken by the Commerce Commission. The constraints imposed by the Commerce Commission's Input Methodologies form of control on moves to more efficient price structures attracted attention from a number of submitters.

5.127 Other issues raised in submissions included the costs of an overlap (real and potential) of the Authority's and the Commission's regulatory focus, the need for regulatory alignment across the projects that influence distribution pricing being undertaken by the Authority, the Commission and other industry stakeholders, the influence of greater competition on the level of the regulated weighted average cost of capital and the manner in which distributors' activities in non-regulated business should be managed.

5.128 The constraints imposed by the Commerce Commission's Input Methodologies regulation of the form of control for distribution networks attracted the most attention of submitters on this issue.

5.129 Submitters stated that a move towards more service-based distribution prices may create issues for distributors subject to price control under Part 4 of the Commerce Act. Under a weighted average price cap changes in prices which result in changes in consumer demand introduce:

(a) compliance risk because they are unable to be quantified in advance

(b) revenue risk, because forecast quantities assumed when setting the price path may be less appropriate if changes to pricing structures are introduced.

5.130 Powerco outlined the effect that these risks have on the introduction of time-of-use (ICP-based) charging in its Western Region. Powerco stated that in order to make this change, it needs to collect two years' worth of comparative ICP-based price and quantity data before it could be in a position to transition its Western Region from GXP-based to ICP-based charging.

5.131 Powerco submitted that it must do this is because clauses 8.8, 8.9 and 8.10 of the Electricity Distribution Services Default Price-Quality Path Determination 2015 (DPP) require a distributor to demonstrate that any tariff restructuring has not increased its allowable notional revenue for the relevant assessment period above that which would have applied if the restructuring had not occurred. Powerco stated that because the allowable notional revenue calculation uses quantity values that are lagged by two years, this demonstration requires it to collect two years' worth of comparative data before it will be able to make the change, should it decide to do so.

5.132 The main implication of this is that the speed at which DPP-regulated distributors implement service-based pricing is likely to be constrained.

5.133 Unison submitted that the constraints imposed by the DPP regulation under Part 4 of the Commerce Act mean that it is likely that non-exempt distributors will wait until the 2020 DPP reset before implementing any significant service-based price changes. Unison submitted that the Authority should consider this timing constraint when assessing the speed of adjustment that distributors adopt in moving towards more service-based pricing.

5.134 Vector submitted that coordination between the Authority, the Commerce Commission and industry is needed to minimise regulatory impediments to pricing structure changes.

5.135 A number of submitters expressed a view that there is, or is a risk of, overlap and duplication in the work being undertaken by the Authority and the Commerce Commission.

5.136 The ENA identified this as a potential issue with respect to information disclosure requirements. The ENA stated that the Authority should seek to avoid duplication and overlap with the Commerce Commission in this arena and submitted that in this context, it disagreed with Castalia that there is a need for further disclosure of capital contributions policy.

5.137 Pioneer submitted that the consultation paper describes the demarcation between the Authority and the Commerce Commission (Commission) relating to regulation of distribution companies—stating the Commission's jurisdiction is investment and operation of the networks. However, Pioneer submitted that the Authority has developed its own view of investment and operation of the networks in order to be able to do the analysis it has undertaken in this report.

5.138 Pioneer stated that this duplication of analysis is an unnecessary cost, which is paid for by electricity consumers. Pioneer submitted that the Commission should be responsible for all aspects of regulation of the monopoly network part of the delivery chain—both distribution and transmission.

5.139 More broadly, EMANZ stated that distributors are primarily regulated by the Commerce Commission and that the Authority should be acutely aware of the risk of regulatory double jeopardy when considering its purpose and role in addressing these emerging technology issues.

5.140 Retailers expressed some concern about the influence of distributors' investment in non-regulated sectors and the potential for distributors to affect competition in these sectors.

5.141 EMANZ stated that when distributors invest in future technologies, care is needed to ensure that they are not taking unfair commercial advantage from their unique position as the electricity network service provider.

5.142 Genesis noted that the Commerce Commission is currently reviewing input methodologies for distributors. Genesis submitted that both the distribution prices and the input methodologies need to ensure that the costs and revenues of distribution networks are ring-fenced and attributed to the monopoly regulated business. Genesis stated that anything not required for network operation needs to be clearly defined so that the emerging technology market remains as a competitive market where participants operate on a level playing field and with the relevant regulations facilitating a competitive market.

5.143 On this same point, Mighty River Power expressed a view that battery investments should be excluded from the regulatory asset base of distributors with any investments made at arm's length

5.144 Mighty River Power stated that it was pleased to see the Authority participating in the Commerce Commission forums to date and supported the Authority widening its current review to consider the how consumers' interests can be better protected in the network regulation of emerging technologies.

5.145 The issue of alignment between the Authority, the Commerce Commission and other industry bodies was raised as an issue, given the number of concurrent work streams being undertaken that affect the future of distribution pricing. Submitters stated that the work streams may not be sufficiently aligned and suggested that the Authority help facilitate communication to help improve alignment across the various work streams.

5.146 A number of submitters stated that distributors now face a more risky investment environment as a result of increasing competitive pressure and that the weighted average cost of capital applied to distributors should be increased to account for these changes.

Transition to efficient price structures

5.147 Submitters stated that transitioning to more efficient prices entails much more than simply changing price structures. Submitters identified a range of issues that need to be considered as part of any transition to more efficient tariff structures. These include:

(a) the approach to transition

(b) which party or parties should be responsible for the process

(c) the timeframe for the transition to more efficient tariffs should be undertaken

(d) how to manage any effects on consumers.

Approach to transition

5.148 Trustpower submitted that despite its support for consideration of more cost-reflective pricing, it believes that the expectations of those who have already invested should be met by network companies if any signals are changed dramatically. Trustpower stated that change management mechanisms, including appropriate transitions, would be critical—especially with regard to the implementation of any changes to regulation, such as Part 6 of the Code. Trustpower stated that such mechanisms could include grandfathering existing tariff structures for the owners of small-scale distributed generation, but closing off the existing structures for any new distributed generation investors.

5.149 Unison stated that to benefit from the advances in technology, it is vital that price reform is implemented in a form and manner that will achieve the highest uptake and optimal usage. Unison submitted that to achieve this goal in the most informed and effective way it recommends the Authority consider recent Australian research on implementation aspects of cost-reflective pricing.

Which party or parties should be responsible for facilitating the transition process

5.150 Submitters commented that responsibility for the transition process should be either: a joint approach between the Authority and industry; or the Authority taking the lead.

5.151 The majority of submitters on this issue stated that they considered that a joint approach between the Authority and industry stakeholders would best contribute to the successful transition to more efficient distribution tariffs.

5.152 Submitters identified a range of reasons for taking a co-operative approach to consultation. These include:

(a) building public support for change

(b) there is a danger that the current issues will be replaced with new issues without addressing underlying barriers to providing end-consumers with innovative tariffs and a highly competitive electricity market

(c) ensuring the issues are understood and considered by all

(d) there is a risk that without a cooperative approach that includes major stakeholders, consumers will not be adequately informed and consulted and will end up becoming alienated by the process or outcomes.

5.153 Greenco Solutions submitted that the industry needs to work together with consumers for the betterment of both consumers and New Zealand. Greenco

Solutions stated that if the industry doesn't work together then there is a high risk that consumers will be further alienated.

5.154 Transpower said a pan-sector 'project' involving distributors, retailers, regulators and consumers, amongst others, was desirable. Transpower submitted that the Authority has an important enabling and supporting role in facilitating pricing reform. For example, Transpower stated that this included the responsibility to provide policy guidance and provide a regulatory back-stop to help overcome inertia and provide confidence that price reform will occur.

5.155 Unison submitted that more long-term changes towards service-based pricing need to be industry-wide and not just reliant on distributors. Unison submitted that retailers are key, as they hold the relationship with consumers. Unison stated that regulators and policy-makers' roles are also critical to provide important communications to consumers and to ensure regulations support and enable service-based pricing.

5.156 The submitters that considered that the Authority should be responsible for leading the transition process focused on the benefits of the Authority engaging with distributors to communicate the Authority's goals and demonstrating to consumers that it is working collaboratively with distributors.

5.157 Electra recommended that when the Authority work more closely with distributors to review the regulatory framework with a view to reducing constraints and opening doors to progress to meet a changing electricity supply and usage environment.

Timeframe for transition

5.158 Many submitters expressed views on the timeframe within which a move to more efficient distribution tariffs can be achieved. Views about the timeframe broadly depended on whether the submitter placed greater weight on:

(a) reducing uncertainty and the costs of a more gradual transition or

(b) the scale or the difficulty of introducing more efficient tariffs and reducing market disruption.

5.159 Submitters advocating that any transition period should be minimised offered the following reasons:

(a) Any transition to more efficient prices should be minimised to reduce uncertainty.

(b) There are few practical constraints to moving to more efficient prices and transition could happen reasonably quickly.

(c) There is a need to introduce more efficient prices in an expedient manner because it is important to give the certainty consumers require for efficient, 'no regrets' choices to be made. Consumers have made investments based on signals that may not necessarily be efficient. The sooner more efficient signalling could be introduced, the better.

5.160 Those submitters advocating for transition occurring over a longer period identified the following issues as reasons for doing so:

(a) Rapid price changes can result in material changes to consumer electricity bills. Transitioning to more efficient prices over a period of years will reduce the likelihood that consumers will experience price shock and disruption.

(b) Changes to more cost-reflective price structures occurring over time will avoid the likelihood that distributors will face significant revenue risk.

(c) Existing systems, data availability and metering (service provided and coverage) would prevent some forms of service-based pricing in the short term.

(d) The Australian experience suggests that a transition period of 2-5 years is reasonable.

(e) Constraints imposed by the by the Commerce Commission's default price path regulation mean that non-exempt distributors are likely to wait until 2020, when the conditions applied to distributors are reset, to introduce more efficient prices.

(f) Many retailers are likely to face significant development to be able to bill service-based pricing, especially where there is significant diversity among distributors' pricing approaches and distributors' pricing structures. These limitations could be overcome, but the changes will take time and resource to implement.

5.161 Submitters also identified a couple of considerations or constraints that should be taken into account in considering the length of any transitional arrangements to more efficient distribution prices.

5.162 For example, Trustpower submitted that to avoid any chance of reducing the efficacy of future signalling, it is important that the appropriate tariff structures and signalling methodologies are considered deeply before implementation, and then only enhanced infrequently and to a small degree.

Managing the effect on consumers

5.163 The effect that a move to more efficient prices will have on consumers was an issue that many submitters raised. Specific issues discussed in submissions included: the magnitude and speed of any changes, the tools available to consumers to react to price signals, the extent to which changes affect customer segments and the degree to which price changes affect consumer decisions.

5.164 A transition to more efficient prices means changing price structures and also retail electricity bills. Submitters expressed concern about the possibility of changes resulting in consumer bill shock. Some submitters stated that the magnitude with which consumers will be affected by changes is a factor that needs to be taken into account as part of any transition.

5.165 Submitters stated that consumer engagement and education will assist with working through detailed elements of specific charging changes. Not all consumers are aware of existing distribution price structures and discussions about efficient price structures are likely to confuse many consumers.

5.166 Submitters also stated that the Authority could play a role in engaging with and educating consumers in order to understand their preferences for more service-based price structures, and to educate them about the consequences of different behaviours under different pricing options. This could include engaging with community stakeholder groups (e.g. Age Concern, the Salvation Army, Family Budgeting Services).

5.167 In addition to engaging with and educating consumers, some submitters stated that consumers must be able to respond to the price signals sent by more efficient prices. To be able to do this, it was stated that consumers must have access to tools that enable them to observe, manage and respond to these price signals.

5.168 The issue of how equitable price changes will be was raised as an issue by a some submitters. Consumer NZ expressed its concern that changes to price structures could unfairly affect consumers who are unwilling or unable to adopt solar PV, electric vehicles and battery storage.

5.169 Consumer NZ also submitted that changes need to occur gradually and must be accompanied by safeguards to prevent bill increases for those who spend the greatest proportion of their income on power.

5.170 MEUG agreed that the capacity service tends to be identifiable only in the electricity price that larger non-residential consumers pay (e.g. commercial and industrial consumer). MEUG submitted that this is true in terms of such charges being separately identified. MEUG stated that it has no benchmark to say those tariffs are the lowest cost possible, reasonable in terms of similar sized consumers in different regions with similar networks paying similar tariffs or reflect network services demanded. MEUG submitted that it is unable to do this because it did not have the resources to comprehensively survey and compare all such non-household distribution tariffs. MEUG submitted that if it cannot do so, it doubted any household consumer(s) could have undertaken such an analysis.

5.171 MEUG submitted that large commercial and industrial consumers have little if any negotiating power when distributors set pricing structures. MEUG stated that distributors may claim tariffs are cost-reflective or service-based but it does not know if those are reasonable because the range of discretion to set tariffs is very wide.

5.172 Shona Edgerley's submission discussed her and others' concerns and frustrations with the tariff structure for electricity consumers in The Lines Company area. Ms Edgerley expressed frustration at the limited information that consumers have about how their distribution charges are set and consumers' inability to respond to price signals. Ms Edgerley stated that despite having undertaken widespread correspondence with a range of stakeholders (The Lines Company, Commerce Commission, Electricity and Gas Complaints Commission) she is still unable to establish how much her distribution charges will be.

5.173 Ms Edgerley submitted that this uncertainty is very stressful, disheartening and considerably restricts consumers' ability to plan their finances. Ms Edgerley submitted that this creates a considerable burden on consumers, the extent of which Ms Edgerley highlighted in her submission when she stated that the situation had made her question whether she should continue living in The Lines Company's catchment, despite enjoying the area.

5.174 Ms Edgerly stated that she is not alone in facing these issues and provides links to various platforms where consumers have documented their frustrations with the price structures and their inability to respond to the price signals sent by these structures.

5.175 Wellington City Council expressed concern that as the number of 'smart users' grows, there could be a potential conflict with others not so fortunate or tech-savvy. The Council submitted that it is fair to reward consumers who reduce demand on the network at high and peak times. However, the Council submitted that some people cannot become smart users to the same degree through choice or circumstance.

What incentives do distributors have to make changes?

5.176 There were conflicting views on whether distributors have the incentives to adopt more efficient price structures. The views were broadly divided between:

(a) distributors, who asserted that they have the incentives to update their prices without Authority intervention

(b) retailers and major users, who stated that distributors do not have sufficient incentives to do this.

5.177 The ENA agreed with the Authority that distributors have strong commercial incentives to restructure their prices to reflect changes in consumer behaviour and more diverse usage patterns. The ENA submitted that there is no reason for the Authority to prescribe the structure of prices. The ENA stated that the role of the Authority is to enable distributors to respond to commercial incentives and customer preferences.

5.178 Similarly, PwC stated that evolving technologies create both commercial opportunities and challenges which distribution businesses must respond to. PwC agreed with the Consultation Paper that there is a natural commercial incentive on distributors to review pricing structures as a result.

5.179 Transpower agreed that distribution companies should have natural incentives to reform pricing structures and stated that the Authority has an important role to play in enabling and supporting this reform.

5.180 Retailers were less convinced that any incentives that distributors may face are strong enough for them to reform their prices.

5.181 In Contact's view the current non-prescriptive pricing principles approach is not working and Contact disagreed with the Authority's conclusion that distributors have strong incentives to change their pricing structures to meet the changing market.

5.182 Contact submitted that distributors' incentives are multi-faceted and complex, with other settings within the regulatory regime, such as Part 4 of the Commerce Act and Part 3 of the Electricity Industry Act, as well as distributors' own diverse business interests, ownership structures and drivers e.g. listed companies versus community trusts, having the ability to influence distributors' incentives around pricing structures.

5.183 Nova stated that if the Authority's claims that 'Distributors face strong incentives to change their pricing structures' were true, then Nova would have expected to see more evidence of demand-based pricing structures than it has to date. It is Nova's view that there is clear evidence that distribution companies are not incentivised in the current regulatory environment to respond to market conditions in an economically efficient manner.

5.184 Submissions also identified other incentives facing market participants. Included in this was the AECT's observation that a shift to full service pricing [covering fixed costs] may have the perverse effect of accelerating consumers away from the grid.

5.185 EMANZ questioned what the incentives for efficient investment in the network are. EMANZ stated that it is very important that all tariffs should have a demand component as a driving factor to ensure there is the strongest link possible between the demand for distributors' services and the assets to provide them.

5.186 ETNZ disagreed with the Authority's conclusion that "distributors will eventually need to reduce their prices in order to compete". ETNZ submitted that this may happen but, alternatively, distributors may find that the use of networks' facilities rises due to the combined impacts of electric vehicles, two-way power flows, battery storage and other new technologies.

5.187 SEANZ submitted that distributors need to be encouraged to drive new business models, innovation and encouraged to participate in non-regulated business as opposed to depending on the traditional assumption of regulated long-term returns from historic asset investments.

Is it necessary for the Authority to mandate change?

5.188 The question of what role stakeholders should take in driving change was largely answered by submitters' responses to whether they thought that distributors had incentives to adopt more efficient prices. Submissions that stated distributors face strong incentives, took the view that distributors should be responsible for driving change, whereas submissions that did not believe that distributors face strong incentives to adopt more efficient prices stated that the Authority should be responsible for driving change.

5.189 Distributors broadly agreed that they faced sufficient incentives to adopt more efficient prices and urged the Authority to adopt a facilitative approach to the issue and allow them the opportunity to introduce efficient prices without regulatory intervention.

5.190 For example, the AECT encouraged the Authority to focus on information and its role in providing a degree of coordination, perhaps along with some broad industry guidance about future tariffs and their signal content—as they reach consumers.

5.191 Powerco welcomed the fact that, while the Authority's paper described a preferred direction for change, it did not prescribe in detail how distributors must achieve that change or set a timetable. Powerco also welcomed the fact that the Authority is adopting a genuinely collaborative approach to this issue.

5.192 PwC agreed that there is a natural commercial incentive on distributors to review pricing structures. PwC submitted that the distributors are optimistic that ongoing distributor-led work streams can deliver meaningful improvements to the structure and efficiency of distribution pricing, and consequently network use.

5.193 PwC stated that significant progress is already being made by some distributors towards more service-based pricing. PwC submitted that Vector, WEL Networks and Unison Networks have introduced peak time pricing for mass-market residential consumers, whereas The Lines Company and Orion New Zealand have implemented demand based pricing across their customer base.

5.194 Retailers and major electricity users were the primary parties to submit that distributors do not have incentives to adopt more efficient prices. For example, Contact disagreed with the Authority's conclusion that distributors have strong incentives to change their pricing structures to meet the changing market. Contact stated that it has concerns with the current non-mandated pricing principles approach. Contact submitted that a more prescriptive process is needed for the resetting of distribution pricing, and for this process to be incorporated into the Code. Contact stated that a cross-industry working group needs to be established to work through and agree processes and principles.

5.195 Contact submitted that a nation-wide communication programme should precede the rollout of new pricing and that the Authority has a key role in ensuring that service-based pricing changes are well-coordinated across all network regions.

5.196 MEUG did not share the Authority's optimism that distributors will be sufficiently motivated to make, or capable of making, the right choices on distribution pricing and stated that apart from Orion, distributors have not exhibited effective consumer participation to date in considering tariff design.

5.197 Mighty River Power supported the Authority continuing to play a key part in developing regulatory outcomes to ensure greater consistency and transparency in distribution pricing.

5.198 Nova noted that the Authority claimed that distributors face strong incentives to change their pricing structures. Nova stated that if this were true, it would have expected to see more evidence of demand-based pricing structures than it has to date.

5.199 Nova submitted that there is clear evidence that distribution companies do not have incentives in the current regulatory environment to respond to market conditions in an economically efficient manner.

There are conflicting views on the merits of the existing pricing principles

5.200 Two issues discussed by submitters related to whether there should be a hierarchy to the existing pricing principles (and what that hierarchy should be) and whether the voluntary nature of the existing principles should be reconsidered.

5.201 A number of submitters expressed a view that it would be useful for the Authority to establish a hierarchy for the existing distribution pricing principles.

5.202 Alpine did not express a view on what the hierarchy should be, but did express a view that an order of priority would be helpful.

5.203 Consumer NZ stated that it considered that the greatest weight should be given to the pricing principle that promotes price stability and certainty for stakeholders.

5.204 Powerco submitted that the principles cannot always be complied with simultaneously and that prioritisation of the principles would help resolve these conflicts. Powerco submitted that in particular, it would be helpful if the Authority were to advise whether principle (d) – "Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders" – should rank equally with the other principles.

5.205 In contrast, the ENA submitted that the distribution pricing principles are not inherently unsound and that it would be concerned if the Authority gave absolute priority to cost reflectivity over stability and certainty.

5.206 Submitters also discussed whether the voluntary nature of the pricing principles should be retained.

5.207 A number of submitters stated that the current non-prescriptive pricing principles are not working and do not provide sufficient guidance to distributors to structure their tariffs appropriately. As such, these submitters stated that the pricing principles may benefit from greater regulatory attention.

5.208 The ENA disagreed with this idea and submitted that the Authority should maintain an open mind about the extent to which detailed pricing principles are required to ensure an efficient distribution price structure in the face of emerging competition.

5.209 PwC submitted that it continues to support the Authority's voluntary pricing principles for guiding distributors in making efficient pricing decisions. PwC stated that they provide sound guidance on the economic principles for setting network prices and on other consumer and market considerations.

5.210 PwC supported the voluntary nature of the principles and valued the fact that they provide sufficient flexibility to innovate. PwC did not support mandatory alignment to principles or prescriptive pricing rules that restrict distributors' ability to address the commercial implications of emerging technologies.

Stranding of network assets

5.211 The issue of asset stranding in the face of greater competitive pressure was an issue that attracted the attention of some submitters. The majority of submissions stated that if the demand profile changes or there is an overall reduction in demand for electricity delivered by the electricity network, distributors must be prepared to review the relevance of their asset base and write off assets if appropriate. The result was generally seen as a result of the free market and that that any dynamic system could expect to see change and the abandonment of old technology.

6 Summary of Submissions – Responses to questions

Question 1: What are your views on the scope of the Authority's review? Please give reasons for your answer

6.1 Thirty-three submitters responded to this question.

6.2 Nova stated that its views on this issue are covered in its cover letter.

6.3 No comment or no further comment was received from Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ and Trustpower.

6.4 Submitters offered a range of views on the scope of the Authority's review.

The scope is appropriate

6.5 Grey Power stated that it considered that the Authority's consultation paper covers all the concerns and questions relating to the current principles of Distribution Pricing.

6.6 ITP agreed with the scope of the consultation paper, although it noted the reference to 'inefficient over-investment by customers in solar panels'. ITP stated that it considered this to be a technology-specific, rather than a neutral, stance by the Authority in considering the impacts of new technology on distribution services. ITP commended the Authority on its otherwise well-considered background and scope, and on its overall aim of providing market signals which lead to the best outcomes for the community.

6.7 IPWEA agreed with the scope, but submitted that the consultation document assumes that all distribution pricing is (at least reasonably closely) cost-reflective. IPWEA stated that this is not the case for public lighting.

6.8 John Crook submitted that the scope of the review is well conceived. John Crook stated that ample evidence is provided in the Authority's consultation paper that present pricing does not promote economic efficiency.

6.9 MEUG agreed that the scope, as described by the Authority ("The initial focus is on the implications of evolving technologies on distribution pricing") is a good place to start.

6.10 Orion submitted that it is satisfied with the scope.

6.11 Vector stated that it was encouraged by the Authority's recognition that these technologies will have implications for traditional pricing structures. Vector submitted that the Authority's approach of taking a broad consultative approach, without proposing any specific solution, encourages the robust discussion needed to determine an appropriate outcome.

Scope is broadly appropriate

6.12 Alpine submitted that the scope of the review is useful and provides a platform for in depth discussion on efficiency aspects. However, Alpine submitted that the scope is limited in not discussing other aspects of pricing such as consumer equity, customer satisfaction particularly around consumption charging, as well as the impact of price shocks on consumers.

6.13 In Contact's view, the consultation paper has accurately identified the key issues facing the sector. Contact identified a number of additional issues that the Authority may like to consider in the review. These include:

(a) access costs/standards/terms and conditions for new technology connecting to the network (e.g. are there central standards, governance over connection process for new technologies etc.)

(b) the complexity resulting from the Authority and the Commission both having roles in setting distribution pricing

(c) whether the principles approach used currently works, or whether more prescriptive price-setting rules are needed

(d) the uncertainty created by the current transmission pricing methodology (TPM) and possible regional implications and ability to pass the possible cost increases through to consumers

(e) the ease of implementation

(f) whether the large number of networks in New Zealand is delivering the best and most efficient long-term outcomes for consumers.

6.14 Contact stated that the review needs to ensure consumers are at its core and that the outcome ensures the coordinated implementation of service-based pricing across New Zealand to ensure consumers are well positioned to manage the transition.

6.15 The ENA agreed that:

(a) distributors have commercial incentives to restructure prices to reflect consumers' usage patterns

(b) distribution pricing structures will best promote the long-term benefit of consumers when they are informed by local circumstances (i.e. that there is no single distribution pricing structure that is appropriate in all areas)

(c) evolving technologies might place reasonably strong competitive pressure on distributors even at low levels of uptake

(d) distributors should aim to set more cost-reflective prices

(e) distributors need to be aware that consumers' ultimate consumption choices are driven by multiple factors and that consumers typically prefer simple flat rate charges and are often willing to forgo possible cost savings in order to retain a simple and familiar pricing structure.

6.16 Meridian generally agreed with the Authority's intended approach to this initial phase of its review. Where Meridian differed is in terms of the extent of focus required on the LFC Regulations. Meridian submitted that it is critical that retailers retain the flexibility to develop their own price structures in response to customer preferences. Meridian agreed that competitive market pressures will provide retailers with incentives to adapt their charging methods.

6.17 In Meridian's view, the potential for efficiency improvements from greater standardisation and consistency in approaches will be an important topic for later stages of the review. Meridian submitted that consistency in pricing structures, where possible and in similar circumstances, will involve benefits from a retailer's perspective.

6.18 PwC supported the scope of the Authority's review. However, it did question why the distributed generation pricing principle under Part 6 of the Code has not been reviewed at the same time, given the overlap.

6.19 Pulse submitted that although the purpose is wide, the Authority appears to have focused on evolving technologies and their effect on distribution pricing even though the Authority acknowledges that they have implications for all of the components that comprise the product that is actually demanded by end consumers; that is, delivered energy.

6.20 Unison submitted that the scope of the current consultation is a good starting point, and the description and analysis of the current state of evolving technologies in the electricity industry is very useful. However, Unison stated that the consultation paper intentionally does not suggest best approaches to overcoming the limitations to implementing service-based pricing. Unison submitted that the Authority might in the near future need to be more proactive in facilitating change to assist with implementing successful service-based distribution pricing.

6.21 Wellington City Council stated that the scope seemed comprehensive regarding residential use. The Council is of the view that consideration should also be given to commercial enterprises of various sizes and local-authority-specific use such as street lighting. The Council submitted that there are other influences on consumer behaviour and encouraging people to use electricity outside peak hours could be achieved through time-of-use energy pricing.

The Authority should broaden the scope

6.22 The AECT stated that the consultation needs a wider scope. The AECT submitted that the consultation must include all the aspects of the industry as they are all affected and all need to act to address the issue. The AECT submitted that changes to the industry have impacts well beyond those considered in the consultation document. The AECT submitted that the consumer/retail interface needs to be carefully examined and better attention paid to the way it is likely to pan out. The AECT stated that if the approach is not wide-ranging the whole endeavour is likely to be a wasted effort.

6.23 Auckland Airport submitted that the scope of the consultation could be expanded to review all market mechanisms that are available to influence consumer behaviour, to ensure that the considerable efforts and resources (of both market governance and participants) are spent to achieve the greatest outcome.

6.24 Bryan Leyland submitted that he thought the scope was deficient. Mr Leyland stated that the consultation should have commented on ripple control and the role that previous electricity reforms had in removing distributor incentives to use it and should have had proposals on how we could return to the previous situation. Mr Leyland submitted that finding out why other distributors have abandoned it and remedying the situation should be top priority for the Electricity Authority.

6.25 Mr Leyland submitted that the consultation also failed to discuss other new technologies such as smart thermostats on water heaters that could deliver even more benefits than ripple control.

6.26 Consumer NZ submitted that the scope of the Authority's review should have taken into account the effect of distribution prices on consumers on low or fixed incomes, who spend a higher proportion of their income on electricity and are unlikely to adopt technology like solar PV, electric vehicles or battery storage in the short to medium term. Consumer NZ stated that low- or fixed-income households are also likely to be most affected by changes to tariff structures that result in higher peak charges.

6.27 Counties Power agreed that service-based pricing is desirable in the long term and Counties Power noted the ENA's support of efficient cost-reflective prices. Furthermore, Counties Power submitted that changing distribution tariffs so that this option is available to retailers would not be difficult. However, Counties Power stated that where the scope of the consultation needs to be expanded is around how these new tariffs would be adopted by the retailers and the existing LFC Regulations that prohibit more cost-reflective pricing. Counties Power submitted that these areas appear to be excluded from the scope of work by the Authority but need to be included if there are to be meaningful changes in existing distribution pricing.

6.28 Embrium agreed that retailer "re-bundling" should be outside of the scope of this paper, although for different reasons. Embrium disagreed with the justification for excluding retailer pricing from the scope of the review. Embrium doubted that retailers would be able to respond efficiently to distribution pricing signals through load control, unless the retailer can aggregate the capacity and demand of all or some of its customers on a distribution network.

6.29 ETNZ disagreed with the following the key premises that the review is based on:

(a) the Authority's conclusion that existing distribution pricing encourages over-investment in solar panels

(b) the Authority's conclusion that distributors will eventually need to reduce their prices in order to compete

(c) the comment that the Authority does not favour one form of generation over another.

6.30 ETNZ submitted that putting the review in the context of likely changes in the overall regulatory environment would be important going forward. ETNZ stated that a move from clear linkages to volumes delivered to a more amorphous concept of 'service delivery' could create compounding uncertainties – especially at a time when the Commerce Commission is looking at shifting away from volume-based controls.

6.31 Flick appreciated that the scope of the consultation is constrained by the Authority's statutory objectives. However, Flick stated that given the broad subject matter of evolving technologies, any review of distribution pricing needs to be mindful of the impact of evolving technology on New Zealand's GHG emissions profile—and importantly on enabling consumer choice.

6.32 Genesis submitted that the scope of the consultation document is too narrow and ignores more pressing distribution pricing issues. Genesis stated that the current environment creates barriers to entry and increases costs to end-consumers because of the high levels of resourcing needed to administer the numerous and complex distribution pricing methodologies. Genesis submitted that in order to address these issues, the sector needs to firstly consider three key questions:

(a) Who is the customer? Genesis stated that the retail market is subject to competition and stated that competition encourages retailers to design services that best meet the needs of their consumers. Genesis stated that distributors should be seeking to encourage retailers to design services that encourage different behaviours on their network, rather than trying to bypass retailers and billing end users directly.

(b) What about consumer choice? Genesis submitted that the consultation paper focussed too heavily on solar PV. Genesis stated that the Authority should be concerned with all distributed generation that reduces a consumer's contribution to network charges. Genesis stated that the Authority's statements about solar PV appeared to be an attempt at influencing consumer choice.

(c) What effect do the LFC Regulations have? Genesis submitted that there needs to be more comprehensive analysis and greater published guidance on how the LFC Regulations apply on which participants can rely. Genesis urged the Authority to clarify the application and enforcement of the LFC Regulations.

6.33 Genesis submitted that once these three questions have been answered there are three key areas for change to ensure market flexibility:

(a) greater standardisation of distributor tariffs

(b) simple, clear and certain distribution tariffs

(c) cost-reflective pricing.

6.34 Ms Melhuish notes that "scope" also includes the time frame of analysis. Ms Melhuish submitted that the 10-year timeframe is not long enough, nor does it align with the Authority's purpose of promoting competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

6.35 Mighty River Power considered that the scope could be expanded to consider how service-based pricing could be implemented in a more standardised way. Mighty River Power submitted that distribution pricing is already highly complex, creating barriers to competition and new entry that are not in the long-term interests of consumers. Mighty River Power also supported the Authority widening the scope to consider what market impacts may arise from the Commerce Commission's review of the input methodologies.

6.36 Network Tasman considered that two additional issues that should be within the scope of the Authority's consultation of distribution pricing are:

(a) Transmission component of distributors' pricing: Network Tasman submitted that transmission charges are a key component of cost to distributors and account for a significant portion of the total price charged by distributors to retailers (and direct-billed customers). Network Tasman submitted that it follows that consideration of appropriate prices for distribution networks should also have regard to the best price structure for use by distributors when passing on transmission costs to retailers.

(b) ICP density as a driver of cost: The Authority noted in the consultation paper that it does not address issues regarding the ratio of urban to rural pricing. However, Network Tasman submitted that ICP density is a key driver of costs and that it should be considered in any review of distribution pricing.

6.37 Network Tasman submitted that it might also be useful for the Authority to clearly identify the role of distribution pricing. Network Tasman stated that distribution prices appear to lie somewhat awkwardly between a wholesale price and a retail price. Network Tasman submitted that while distribution network pricing relates to an input that is used to supply retail services to end-customers, distributors are required to both reflect underlying costs of provision and ensure that their pricing is simple enough to be understood by end-consumers (even though retailers may not choose to pass on distributor’s pricing structure).

6.38 Powerco submitted that the main deficiency in the scope of the Authority’s consultation is that it does not adequately address the problems caused by the interposed pricing arrangements that apply to most distributors, given the fact that competitive pressures will continue to reward retailers that retain tariff structures based on simple flat rate c/kWh charges.

6.39 SEANZ is of the view that the approach is constrained and limiting and requires wider terms of reference to facilitate and discover new, fresh and alternative thinking to work towards the impending new electricity model. SEANZ stated that all current participants have a part to play so taking into account impacts of consumer-centric technologies across the wider electricity sector is essential.

6.40 SEANZ submitted that the dominant new technologies are demand-led and so the consumer and organisations representing new consumer-centric technology with embedded knowledge must be part of all related consultations including this one. SEANZ stated that in the past this has not been so necessary, because most matters addressed since the Authority’s inception have been supply-side-oriented.

6.41 SEANZ also called for an open and in-depth review (led by the Authority) of the sources of the main distribution costs and a discussion paper on alternative charging methodologies, with focus on time-of-use tariffs which create technology- demand-response signals which are supportive of efficient network operation.

6.42 In Solarcity’s view, the scope of the consultation document is limited and needs to be significantly broadened. Solarcity submitted that a critical part of new technology that the review has not considered is the ability of new technologies such as solar, batteries, electric vehicle charging etc to be managed in real time. Solarcity stated that this real-time aspect and the benefits that this can bring to the distribution and national grid system have been largely overlooked in this consultation paper.

6.43 Solarcity submitted that cost-effective metering, data and management systems can empower a new era of innovation in the electricity sector at the distribution level. Solarcity stated that the Authority should consider policies and approaches that will drive this innovation. Solarcity submitted that this area needs to be within scope of the Authority's work on evolving technologies and distribution pricing.

6.44 WEL agreed with the Authority that distribution pricing needs to evolve to become more cost-reflective to ensure distributors have sustainable business models. WEL stated that it would encourage the Authority to expand the scope of its concern to form contingency plans in the event the market does not act as anticipated and retailers, at the customer's preference, continue to repackage distribution pricing.

Question 2: What other technologies do consumers invest in or use that are likely to have a material effect on investment or operation of distribution networks? Please give reasons for your answer and an estimate of when you expect the technologies will have a material effect.

6.45 Thirty-two submitters responded to this question.

6.46 No comment **(**or no further comment) was received from AECT, Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ and Trustpower.

6.47 Consumer NZ, Counties Power, Embrium, Grey Power, Meridian, Mighty River Power, Orion, Powerco and Unison considered that the Authority's consultation paper correctly identified the evolving technologies that are likely to have a material effect on investment or operation of distribution networks.

6.48 The remaining submitters identified a range of evolving technologies not identified in the consultation paper that they considered likely to have a material effect on investment or operation of distribution networks.

Additional relevant evolving technologies

6.49 Alpine identified a number of technologies that promote energy efficiency as being likely to have a material effect on investment or operation of distribution networks. The technologies identified were:

(a) new building codes requiring insulation and double glazing

(b) modern electrical appliances that require less power than previous models; and

(c) sustainable energy-focused design such as orientation of the building, thermal performance concrete, landscaping etc.

6.50 Bryan Leyland submitted that changing to LED lamps is likely to have a material effect on investment or operation of distribution networks. Mr Leyland stated that the technology is already available and economic.

6.51 Genesis submitted that any item that drives daytime efficiency but not specifically night-time peak would have a material effect on distribution networks.

6.52 ITP submitted that heat pumps may drive the size of the network as they determine the timing and the size of the winter peaks as householders return home from work. Similarly, ITP submitted that efficient lighting such as CFLs and LEDs could materially reduce the evening peak.

6.53 Molly Melhuish submitted that technology that is currently available includes appliances that are becoming more energy efficient, including LEDs, computers, TV and fridges. Ms Melhuish submitted that technology that will progressively become more relevant includes improved insulation of building structure and windows (e.g. triple glazing), all of which will cut winter peaks.

6.54 Network Tasman identified three technologies that were not addressed in the consultation paper that are likely to have an effect on distribution networks. These three technologies are:

(a) Heat pumps: Network Tasman submitted that heat pumps have potential to reduce winter network peaks when replacing inefficient electric heating alternatives, though it stated that they could also add to peak load when replacing alternatives such as wood-burners.

(b) Energy efficient lighting: Network Tasman stated that energy efficient lighting has already had an effect on distribution networks.

(c) Energy efficient building: Network Tasman considered it likely that energy efficient building has already had an effect on average electricity consumption of residential consumers and presumed that it will continue to do so.

6.55 Pioneer stated that energy efficiency is an existing activity that achieves the same outcome as evolving technologies of reducing peak demand on a distribution network.

Distributed generation

6.56 Alpine submitted that distributed generation (with or without batteries), including photo voltaic, wind, hydro, and natural gas, is likely to have a material effect on the investment or operation of distribution networks.

6.57 Consumer NZ submitted that an area not covered in the consultation paper was non-solar PV distributed generation. Consumer NZ stated that this includes micro-hydro schemes and small wind turbines. Consumer NZ acknowledged that while the uptake of these systems has not been, and is likely to remain, lower than solar PV uptake, they should be taken into account.

6.58 Consumer NZ also identified smart water heating controllers and power diverter modules as two related technologies not mentioned specifically in the consultation paper.

6.59 Contact submitted that other distributed generation such as micro wind generation and inverters could have an effect on distribution networks. Contact also submitted that smart hot water is an emerging technology that could influence the operations of distributors in the future.

6.60 Counties Power submitted that while it is not experiencing a significant growth in summer peak demands, it believes that there is increasing use of air conditioning and irrigation in its territory and this will likely see a continued growth in our summer peak demand. Counties Power submitted that for summer peak growth the increasing use of photovoltaic generation would be positive because their power output would correlate with a summer peak demand.

6.61 ETNZ submitted that it seems probable that rapid advances in micro-generation and energy storage will have a profound impact on consumers. ETNZ suspected that new energy loads would emerge in parallel with electric vehicles, especially if households begin to produce surpluses of available energy themselves. ETNZ submitted that it is not clear whether such new loads will be offset by further advances in energy efficiency.

6.62 ITP stated that solar water heaters may have an effect, but submitted that the effect of solar water heaters depends on how customers normally heat their water. ITP submitted that if consumers use off-peak electricity, solar water heaters would only reduce their overnight use. However, ITP stated that if they use an instant electric heater then solar water heaters could reduce the evening peak.

6.63 John Crook submitted that other technologies not mentioned include energy storage for central heating in floor slabs and buffer tanks (now), and the use of hydrogen generation (later) as a means of energy storage.

6.64 Network Tasman stated that while widespread uptake of EVs is unlikely to occur in the short-term, it is possible that there will be pockets of high uptake (for example, in high-wealth suburbs) in the relatively near term which could impact on network investment requirements.

6.65 Network Tasman submitted that there is a potential for voltage management issues due to solar PV penetration in New Zealand. Network Tasman stated that the growth of solar PV and impact of network investments is uncertain. However, Network Tasman submitted that it is clear that there will be, and already is, significant variation across (and even within) geographic regions. Network Tasman submitted that the Authority's conclusion that that inverter standards will adequately address this such that voltage issues arising from solar PV are unlikely to have significant effects on competition, reliability or efficiency is overly dismissive of the potential for voltage management issues due to solar PV penetration within New Zealand distribution networks.

6.66 Orion submitted that in terms of the technologies discussed in the paper, the growth rates and levels assumed for solar PV by NZIER are greater than their own modelling indicates. Orion nevertheless agreed that inefficient investment in solar PV is the area of greatest concern.

6.67 Pioneer submitted that non-household level distributed generation would have an effect on distribution networks in the future.

6.68 Wellington City Council stated that small wind turbine generators have been getting increased attention recently and they could have an influence in future. The Council accepted that noise and reliability are currently problematic and it does not seem likely that they will become commonplace within the next 10 years.

Sharing, interpreting or accessing information

6.69 Alpine identified smart technology that allows consumers to actively manage power requirements as being a technology that will influence the manner in which distribution networks operate in the future.

6.70 Auckland Airport submitted that the increasing availability of comparative retailer and intra-day pricing information available via smart meters and mobile applications will further transform the consumption profile, enabling customers to become much more selective and pricing signals (if available/transmitted successfully to the customer) to be more effective. Auckland Airport submitted that house intelligence (residential equivalent of a commercial B.M.I.S.) and scheduling automation (such as Google's Android@Home application) are likely to have an increasing effect over time about phase shifting residential consumption.

6.71 Contact identified demand response capability as a likely influence on future distribution networks.

6.72 Embrium submitted that a reader could mistakenly read the consultation paper and think that AMI should be placed alongside the "already implemented" technologies of heat pumps and energy efficient lighting. Embrium stated that, in reality, the AMI described in the paper is still to be delivered. Embrium said that the consultation paper does not necessarily reflect the AMI services that have been introduced to many parts of New Zealand.

6.73 Embrium submitted that technology that enables such developments will include smart devices installed in the home as well as cloud services that provide customers and intelligent agents the ability to understand up-to-the-minute market conditions.

6.74 Embrium submitted that the advent of local (within the same distribution network) transactions between suppliers of kW and consumers of kW will drive the need for markets that settle in much shorter time-frames than those currently managed by the Authority. Embrium stated that these include:

(a) Real-time intra-network trading of load can avoid transmission costs, affecting Transpower.

(b) On sites with solar panels, real-time calculation of the merits of exporting electricity versus storing it, affects the generators and the distributors.

(c) Real-time analysis of distribution and energy pricing can allow the consumer to manage discretionary load (hot-water cylinders, electric vehicles, battery storage charging) dynamically, shifting its basis for control (network driven, energy price driven or ancillary services related) to maximise value for the consumer, rather than the distributor.

6.75 Flick stated that information provision (particularly real time information) should be included as an evolving technology itself. It is important that the regulatory environment and the industry structures are geared for evolving technologies.

6.76 IPWEA submitted that organisations responsible for public lighting are at the point of investing in solid state LED luminaires, control systems, solar PV charging, Electrical Vehicle, Central Management Systems and smart city sensors and services that are likely to most efficiently physically and financially "piggy back" on street lighting infrastructure. IPWEA submitted that it is therefore very important that investment signals are efficient, and public lighting distribution charges are both cost-reflective and service-based.

6.77 MEUG stated that the roll out of smart meters, access to 30 minute data and smart systems to manage household demand and supply (from small scale distributed generation), together called AMI, is key to the efficient uptake of emerging technologies and implementation of service-based pricing for distribution and transmission services.

6.78 Network Tasman submitted that within Network Tasman's region, the current deployment of AMI is expected to be largely complete within the next two years. However, Network Tasman stated that not all retailers have deployed AMI, and even if they eventually all do there will continue to be a residual group of customers without AMI due to either: (1) a preference against AMI been installed on their premises; or (2) unavailability of communications to access meter data remotely.

6.79 PwC believes the use of home automation and energy management systems will have significant implications for distribution pricing. PwC submitted that in time, these systems are likely to manage consumer loads and the charging of home and EV batteries. PwC stated that how they interact with distribution and retail pricing (and vice versa) would have implications for the design of distribution prices.

6.80 Pioneer stated that demand side management activities will have material effects on investment or operation of distribution networks

6.81 Solarcity stated that the paper did not cover the "softer" technologies that are enabled by the communications and control systems inherent in new technologies, particularly solar, batteries and electric vehicles. Solarcity submitted that consumers would respond to price signals. For example, Solarcity stated that EV owners make use of night rates to charge their vehicles at a cost of around $1 to travel some 70km. Solarcity submitted that the technology to enable consumers to respond to price signals is now readily available but the policy settings to unleash this innovation into the market are missing.

6.82 Solarcity submitted that some companies in New Zealand are exploring "mini-markets" where consumers with surplus electricity sell to their neighbours, electric car batteries contribute to the power system etc. Solarcity stated that the pace of uptake of this technology is dependent on the policy settings and the degree to which these encourage or discourage this innovation.

Substitutes for electric powered technology

6.83 Alpine submitted that substitution from electric powered heating to alternative heating such as wetback fires, gas and solar water could influence the operations of distributors in the future.

6.84 Genesis submitted that reticulated gas and LPG as integrated existing alternative energy sources could have a material impact on electricity distribution networks, especially if the customer uses the gas during non-peak periods (for example, gas hot water storage).

6.85 Molly Melhuish stated that within a decade, commercial availability of advanced gasifier burners suitable for polluted airsheds would be economic. Ms Melhuish submitted that these would be most influential in winter.

6.86 Nova submitted that natural gas and LPG are widely available and already have a material effect on peak electricity demand.

6.87 PwC submitted that growth in natural gas and LPG connections is currently having a similar impact to that of solar, reducing rates of household electricity consumption. Consumption-based charges offer savings to consumers with gas (particularly when on the LFC tariff), which are not reflected in reduced network capacity.

6.88 SEANZ identified residential-scale fuel-cell micro-generators operating on distributed gas as a relevant new technology currently being introduced into Japan and Korea. SEANZ submitted that the most recent systems are claimed to achieve 95% CHP efficient and have over 60,000 hours' service life. SEANZ stated that the Japanese systems are currently designed to be grid-connected but non-exporting, which has limited their most cost-effective size to around 600 – 700W electrical. SEANZ submitted that if the New Zealand electricity prices continue to increase and gas prices do not, the technology could become a serious competitor to the electricity grid.

Implications of evolving technologies

6.89 Alpine stated that if they use a consumption charge to recover distribution costs, a reduction in consumer consumption will cause them to under-recover their costs if they have not planned for the reduced consumption. Alpine submitted that because their distribution costs are fixed in the short run, a reduction in consumption will not reduce their costs.

6.90 Alpine stated that as the risk of not being able to recover costs increases, they will require larger capital contributions from investors. Alpine submitted that they will also be more risk adverse to upgrading and replacing aging network equipment if asset stranding becomes an issue.

6.91 John Crook submitted that there is a need to look beyond the issues raised by new technologies. Mr Crook stated that if efficient pricing is introduced then ordinary consumers could manage their existing load profiles in ways that will reduce their power bills and reduce network costs by levelling out the demand peaks. Mr Crook submitted that efficient pricing would also guide investment decisions of consumers, embedded generators and industry participants in the value of investment of new technologies.

6.92 Mighty River Power submitted that technology change and effect is challenging to predict but as long as pricing is efficient, broadly reflecting the services consumers receive, it should not matter which new technologies emerge or in what sequence as any regressive consumer impacts should be mitigated.

6.93 Network Tasman stated that ideally pricing structures that are set appropriately should be able to provide efficient outcomes regardless of which technologies are used. However, Network Tasman submitted that consideration of specific technologies could be a good means for testing the efficacy of pricing.

6.94 In WEL's view, the types of technological improvements are less important than the effect. WEL has observed a steady decline in average consumption for a number of years. WEL stated that it is forecasting a further 1.5% for the coming year. WEL stated that customers clearly have incentives and are making choices to become more energy efficient and volumetric charging by distributors is encouraging of this.

Technology neutral approach preferred

6.95 Contact submitted that its view is that the type of technology is irrelevant. Contact stated that what is important is ensuring fit-for-purpose, service-based pricing which future-proofs networks against whatever technologies come along in the future.

6.96 It is the ENA's view that it is not worthwhile to try to predict the future of technology. The ENA submitted that the Authority's objective should be to ensure that there are no material barriers to distributors' ability to respond to whatever future changes in technology actually occur.

6.97 ETNZ stated that forecasting the scope of technological change is a very imprecise science. ETNZ submitted that attempting to forecast consumer behaviour would be even less precise.

6.98 Flick submitted that given the rapid technology advances the regulatory environment should ideally be neutral to specific technologies.

6.99 Meridian agreed with the Authority's premise that it should not seek to favour certain types of technologies over others. Meridian considered this and general uncertainty regarding future technologies indicates a need for a principles-based approach.

6.100 Pulse stated that while information on the potential and actual technologies and their timing, impact etc is interesting, the real question is whether the distribution pricing is fit for purpose, irrespective of whether demand is increasing or decreasing and what is causing the changes.

6.101 PwC submitted that as a general principle, pricing needs to be durable and technology-neutral, for today's known technologies and future technologies.

6.102 Vector stated that the Authority has recognised many of the key technologies that currently, or have the potential to, affect distribution networks. Vector cautioned against focussing on or singling out any particular technology. Vector submitted that technology would invariably evolve in ways no one can predict. Vector believes the industry and regulators should be focused on removing any regulatory barriers and establishing the right incentives that are appropriately responsive to any technological development. In other words, regulation should be technology-neutral.

Question 3: What do you think about the Authority's concerns that existing distribution pricing structures do not reflect the costs of the different distribution services provided and may not be durable?

6.103 Thirty-three submitters responded to this question.

6.104 IPWEA stated that its views on this issue are covered in its cover letter.

6.105 No comment or no further comment on this question was received from Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.106 Submitters that responded to this question generally agreed or expressed a qualified agreement with the Authority's concerns that existing distribution pricing structures do not reflect the costs of the different distribution services provided. Several submitters raised other matters in responding to this question.

General agreement with the Authority's concerns with existing pricing structures

6.107 Auckland Airport stated that historically, consumption-based pricing was a fair proxy for establishing network charges due to the well understood and consistent profiles of consumers. However, it submitted that consumer profiles are changing in unpredictable way due proliferation of distributed generation, consumption shifting (batteries, scheduling technology) and shifts in consumer behaviour (transition to EVs).

6.108 Auckland Airport submitted that these changes are not happening equally in the same geographical areas either which results in greater magnitudes of distortion across the distribution grid. Auckland Airport stated that this supports the Authority's view that the current structure of distribution pricing is not durable for the future.

6.109 Bryan Leyland agreed with the Authority's concerns that existing distribution pricing structures may not be durable. Mr Leyland submitted that charging for distribution costs based on kWh consumption is wrong and has produced distortions such as uneconomic investment in solar panels.

6.110 Consumer NZ submitted that it shares the Authority's concerns that existing price structures do not reflect the cost of the different services distributors provide, and acknowledge that the cost of premature investment in greater network capacity could be deferred by separating charges for transport, power quality, capacity and management services.

6.111 Counties Power agreed with the Authority's concerns and that a significant uptake in distributed generation will not be efficiently managed under the current volume based pricing. Counties Power submitted that this could be partly resolved by the Authority changing the Code to enable distribution pricing of distributed generation so that customers with photovoltaic generation pay their fair share for use of the distribution network.

6.112 Embrium agreed that distribution prices are not durable. Embrium stated that distributors' sensitivity to a fall in kWh usage highlights the disconnect between their revenue streams and the true cost of providing a service. Embrium submitted that distributors would plug the revenue gap by simply increasing their fixed charges, further propelling customers to consider options to avoid these costs. Embrium stated that this would burden the lower socio-economic energy consumer in the short to medium term, as they are less likely to afford the capital investment required.

6.113 The ENA would like the Authority to explain whether the term "service-based prices" is intended to be a more consumer-friendly description of what it has previously referred to as a cost-reflective price or is intended to mean something different. The ENA welcomed the use of language that consumers can relate to more easily. However, the ENA is cautious about service-based pricing, if the Authority is also considering specifying the different distribution services that consumers use. The ENA submitted that the Authority should be agnostic about how distribution services are defined as long as "the price a consumer pays for a distribution service reflects the cost of providing that service" and takes account of consumer preferences.

6.114 ETNZ agreed that distribution pricing is likely to need to adapt to remain relevant as new services emerge. ETNZ submitted that this is an area where ongoing dialogue will be important.

6.115 Flick concurred with the Authority that some existing distribution pricing structures do not reflect the cost of different distribution services provided. Flick stated that at some point in the future these pricing structures might not be durable in New Zealand. Flick submitted that distribution pricing should be real - time and transparent to enable technological benefits both at an individual and national level. In general, terms Flick stated that it believes in transparency of costs – and that accurate and fair pricing is what customers want.

6.116 Genesis stated that one of its major issues with the current situation is that it makes it difficult for retailers to have national tariffs and it is not durable. Genesis submitted that it needs to be future-proofed. Genesis submitted that distributor tariffs need to better reflect the costs of running the networks, be neutral to the type of generation (this will continue to change and we cannot anticipate those changes) and be standardised across the 29 different distributors. Otherwise, Genesis stated that it would be impossible for retailers to develop efficient tariffs indicating costs to end consumers of their use of the network.

6.117 John Crook fully agreed. Mr Crook submitted that the present pricing mostly fails to match the underlying cost drivers and therefore sends the wrong signals to consumers and distributors alike. Mr Crook stated that the present pricing systems and levels are potentially promoting unnecessary and therefore wasteful investment by consumers and by the electricity supply industry.

6.118 ITP agreed that current tariff structures may not adequately reflect the component costs of grid electricity provision, and that distribution prices should be set to reflect provision of a service and that past pricing structures need to change. ITP submitted that the reasons for change provided by the Authority appear more backward looking and focussing on implementing changed tariff structures merely to maintain the business models of incumbents, albeit on the presumption that this is the best outcome for the community.

6.119 MEUG submitted that the analysis in the consultation paper demonstrates that if there is no change from current predominately consumption, i.e. per kWh, based distribution prices there will be material detrimental impacts to the economy. MEUG stated that some might argue about some of the underlying assumptions of that analysis; though MEUG believes it would be hard to deny even with a range of other assumptions that the impact is likely to be material.

6.120 MEUG submitted that while the effect may not be material in the early stages of consumers adopting an emerging technology, it is vital the appropriate pricing signals are in place to encourage behaviours for the most effective outcome.

6.121 Mighty River Power agreed with the Authority's concerns. Mighty River Power stated that network charges should encourage efficient behaviour. Mighty River Power submitted that those consumers that are currently able to afford the upfront capital costs of energy efficient appliances and distributed generation and storage are able to avoid the variable costs of the network. Mighty River Power stated that this has the potential in the long term to result in regressive impacts as these costs fall on those consumers who are unable to afford or gain access to such investments in new technologies (e.g. tenants in rental accommodation).

6.122 Powerco submitted that it interprets service-based prices to be synonymous with cost-based prices. Powerco agreed that moving to more cost-reflective pricing should ultimately lead to tariffs being more durable.

6.123 Powerco accepted that many residential distribution tariffs are not fully cost-reflective and that this is genuine problem, particularly in relation to the incentives provided with respect to the uptake and use of some emerging technologies, particularly small-scale photovoltaic generation.

6.124 PwC agreed that some consumption based pricing structures might not provide strong signals as to the cost of capacity (i.e. anytime consumption charges). PwC submitted that consumption based pricing structures were adopted partly due to limitations in the non-time-of-use meter fleet, deployed across mass-market consumers. PwC stated that these meters were unable to measure anytime or coincident peak use. PwC submitted that retailers and the LFC Regulations have also effectively endorsed consumption charges, and consumers are familiar with them.

6.125 Nonetheless, PwC agreed with the Authority that it is timely for distributors to review their pricing structures to utilise the smart meter technology that is being deployed.

6.126 Orion agreed that most distribution pricing for residential consumers offers too high a reward for reduced consumption due to investment in solar PV when compared to the cost. However, Orion believes the paper overstated the extent to which current pricing is:

(a) two-rate (fixed and variable), and

(b) based too much on consumption charges.

6.127 SEANZ agreed that distribution pricing can be improved and future proofed. SEANZ's view is that changes to achieve more accurate pricing are necessary across the board, and that distribution prices are just one component of this. SEANZ submitted that any changes to distribution pricing must be carefully researched and analysed. SEANZ stated that since electricity costs are strongly time dependent, changes should primarily be enacted if they improve the ability of the consumer to respond to clear time-of-use pricing signals.

6.128 Solarcity submitted that the work by Castalia undertaken in 2013 demonstrated that distributor performance has been modest. Solarcity stated that under current arrangements the prospect of introducing pricing regimes that make the true cost of electricity services visible to consumers would be a long-term process. Solarcity submitted that the current pricing regime is therefore durable simply because of the inertia associated with 29 distributors and a number of retailers who seem slow to even make day-night rates visible to consumers.

6.129 According to Solarcity, the question is how to shift pricing structures to better reflect the true costs and recognise the benefits that new technology can deliver? Solarcity is of the view that it would seem that encouraging the distributor to enable markets to develop within the distribution system would seem the best approach to driving better outcomes for consumers, just as it has proved the best approach at the national level.

6.130 Solarcity asserted that technology has now developed to the point where it can be cost-effectively applied at the distribution level. Solarcity submitted that the distribution level can now move to time-of-use charging and consumers can then respond to this, just as companies respond at the wholesale level.

6.131 Vector submitted that in the face of increasing consumer choice enabled by evolving technology and significant improvements in metering technology, it sees that the current consumption-based pricing structures are not best suited to pricing the services distributors provide to consumers. Vector believe changes to distribution price structures are required but these changes may be hindered by regulation, including the revenue uncertainty of price restructuring under the current price cap formula, and the LFC Regulations.

6.132 Wellington City Council submitted that the concerns expressed appear to be well founded. The Council stated that some predictions and estimates appear difficult to prove, but the general point is likely to be accurate.

Other matters were raised in responding to this question

6.133 Several submitters raised other matters in responding to this question: LFC Regulations; efficiency of commercial pricing approaches; constraints on pricing due to non-smart metering technology; and thinking about pricing to end-consumers.

6.134 Orion submitted that distributors see the LFC Regulations as a binding constraint on more efficient pricing. WEL's experience in moving to more cost-reflective pricing has identified real problems with the LFC Regulations. WEL believes LFC Regulations restrict a distributors' ability to reflect the true fixed cost structure to customers and result in high variable charges which customer will naturally seek ways to avoid.

6.135 The ENA stated that distributors employ different pricing structures and some may be more durable than others. The ENA also submitted that distributors often use different price structures for residential consumers as compared to commercial and industrial consumers and that the Authority's concerns are more relevant to residential price structure.

6.136 Powerco submitted that the tariffs set for industrial and commercial customers are typically much more cost-reflective.

6.137 Vector submitted that in the past, the consumer had little choice on how their energy demands were met. Vector stated that metering infrastructure was far less sophisticated than today, with manually read meters only capable of measuring usage or maximum demand over a defined period. As a result, Vector submitted that consumption-based prices were possibly the most appropriate structure for the time.

6.138 Pulse submitted that markets almost always produce simple pricing outcomes of either completely variable or complete fixed prices and almost never break the supply chain components out into individual charges for an end consumer.

6.139 Pulse stated that pricing, systems and approaches need to facilitate innovation and simplicity, not dictate a central view of the “optimal” outcome. Pulse believes that there are a number of reasons for this, which include:

(a) infeasibility or practicality of making the necessary fine calculations of SRMC

(b) marginal costs can vary from one moment to the next, with buyers having to grapple with constantly changing prices and whose ability to plan intelligently would be impaired.

(c) the practically achievable version of SRMC pricing is likely to be average variable cost, but more likely to be average total cost

(d) the prevalence of common costs can affect the ability to discretely price

(e) long-run marginal cost is likely to be the preferred criterion, particularly in competitive situations.

Question 4: What is your view of the potential for a significant amount of inefficient investment in solar panels if distribution pricing structures continue to be based primarily on a consumption-based approach?

6.140 Thirty-one submitters responded to this question.

6.141 MEUG stated that its views on this issue are addressed in its response to question 3.

6.142 No comment or no further comment was received from AECT, Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, Solarcity, The Lines Company, Transpower NZ and Trustpower.

6.143 Submitters provided a range of views on the Authority’s conclusions relating to household investment in solar PV. Several submitters raised other matters in responding to the question.

Views on the Authority’s conclusions relating to solar PV

6.144 Alpine agreed that a distribution consumption charge could motivate consumers to over invest in solar panels in order to reduce this charge. Alpine stated that if a distribution consumption charge were replaced by a demand charge then there would potentially be less investment in solar panels.

6.145 Bryan Leyland submitted his view is that there is not much potential for inefficient investment because of existing distribution tariff structures because solar power is uneconomic whichever way you look at it. However, Mr Leyland stated in an environment where a solar cell producing electricity worth seven or eight cents can generate an income of $.25, it is significant.

6.146 Consumer NZ agreed there is a risk consumption-based distribution prices could lead to over-investment in solar PV. However, Consumer NZ disagreed with the extent of the issue as portrayed by NZIER.

6.147 In Contact's view, there has already been a very material level of inefficient investment. Contact submitted that without a change to more mandated service-based pricing this would only increase over time.

6.148 ETNZ did not regard this as a significant issue at present. ETNZ stated that early adoption of new technologies tends to be inefficient until economies of scale emerge. In addition, ETNZ submitted that given the very low marginal cost of New Zealand's established hydro-based generation system, ample scope exists for energy suppliers to respond to competition from solar panels by reducing prices.

6.149 The ENA believes that consumers should pay the costs that their usage gives rise to and should not impose costs on other consumers or groups of consumers. The ENA agreed with the conclusions in the consultation paper that the effect of consumption-based prices is to generally increase the attractiveness of solar panel investment. The ENA submitted that the Authority should not focus on which consumers are most likely to adopt new technology. The ENA stated that it is not clear that solar panel owners will necessarily be the "least deprived". According to the ENA, current data is sparse, uptake is low, and it is not known whether differences are statistically significant.

6.150 IPWEA strongly agreed, and stated that this same investment inefficiency is likely to occur in the cash-strapped local government sector for public lighting if transparent, cost-reflective, service-based, distribution pricing is not implemented.

6.151 John Crook submitted that there is a problem but consumption based prices are not to blame. Mr Crook stated that the existing problem lies with widespread use of uniform consumption based pricing. Mr Crook's view is that introducing a properly constructed time-of-use version of consumption based pricing will send the correct messages to consumers and distributors to behave optimally. Mr Crook submitted that it is also important to keep the pricing system simple so that all users/consumers will understand it and be able to make the correct decisions.

6.152 Meridian agreed there is potential for consumption-based pricing to encourage inefficient solar investment at the system level. Like the Authority, Meridian considers that inefficiencies could be significant, given the relatively lower costs of other forms of grid-connected generation. Meridian submitted that its analysis indicates sustained solar technology cost reductions in the order of 5% p.a. will be required for investments to break even in system cost / value terms within two decades.

6.153 Molly Melhuish stated that investment that's "inefficient" by business modelling could make excellent sense to those householders who intend to stay in their houses long-term. Ms Melhuish disagreed that solar PV investment is necessarily "inefficient". Ms Melhuish submitted that the long-term benefit of consumers should reflect asset lifetimes much longer than the 10-year focus of this consultation document.

6.154 Mighty River Power stated that that despite the fact that people invest for non-economic reasons, it agreed now is the time to act to make distribution pricing efficient as ‘changing the rules’ once significant investment has been made is very damaging for investor certainty and the electricity sector’s reputation.

6.155 Network Tasman submitted that its shares the Authority’s concern about inefficient investment in solar PV because of current price tariffs.

6.156 Nova submitted that under the current regulatory structure and incentives on distribution companies, the consumption based approach is likely to continue for many years without being addressed. As such, Nova expects to see a continuation of inefficient solar PV investment.

6.157 Powerco agreed that, where solar PV avoids flat rate volumetric charges during the day, but does not avoid distribution costs during the peak demand periods; there is an inefficient incentive to invest in solar PV.

6.158 PwC agreed that non-time-of-use consumption charges are likely to encourage inefficient investment in solar, as there is an expectation from consumers considering solar that their distribution consumption charges will reduce. PwC stated that this saving does not reflect the underlying costs of providing capacity to consumers with solar, which typically is no different to that required to supply consumers without solar.

6.159 SEANZ submitted that this question is biased and misleading. SEANZ stated that if solar PV energy is more cost effective than delivered network energy, it is clearly the network capacity that is inefficient, not the solar PV generation.

6.160 SEANZ stated that its research clearly shows prosumers will move to become self-sufficient and abandon grid-supplied electricity for many reasons if unacceptable distribution pricing is enacted.

6.161 Solarcity stated that this is the wrong question to be asking. Solarcity submitted that solar generation located at the point where people consume the electricity is now the most cost-effective form of generation. Solarcity stated that it is odd that the Authority does not recognise this fact and does not view solar as part of the way New Zealand can meet a projected shortage in generation.

6.162 Solarcity is of that view that for the Authority to judge that there could be a “significant amount of inefficient investment in solar panels” requires something akin to the wisdom of Solomon.

6.163 Solarcity submitted that to suggest that the key reason is distribution pricing structures simply misses the point. Solarcity stated that solar is a now a cost-effective technology that will grow rapidly in New Zealand as it has done in other parts of the world as costs continue to decline.

6.164 Unison agreed that there is potential for significant inefficient investment in solar panels if pricing continues to be based largely on a consumption-based approach.

6.165 Vector recognised that there are better pricing structures than anytime-consumption prices to send the appropriate price signals to consumers but that these should not be at the expense of consumer preferences.

6.166 WEL agreed with the Authority that distribution pricing needs to evolve to become more cost-reflective to ensure distributors have sustainable business models.

6.167 Wellington City Council submitted that significant inefficient investment seems very likely in areas where consumption based pricing prevails. The Council stated that in areas where distribution charges are consumption based, changing the pricing structure to be more service-based would correct this and would seem to be a fairer system.

Other matters raised in responding to this question

6.168 Several submitters stated that price is not the only driver of consumer decisions to invest in solar PV.

6.169 For example, Counties Power submitted that for an average residential home a solar investments is already economically inefficient and being driven by non-financial drivers.

6.170 Network Tasman shared the Authority's concern. However, Network Tasman submitted that price is not the sole driver of solar PV uptake. Network Tasman stated that other drivers include a perception by some consumers that installing and using solar PV is more eco-friendly than use of grid-supplied electricity; a desire to be self-sufficient/less reliant on the grid; a preference for upfront capital investment rather than ongoing monthly bills; and in some cases a perception that solar PV installation could increase house sale prices. Network Tasman stated that it seems likely that non-price factors have played at least some role in the relatively high uptake of solar PV in the Tasman region.

6.171 SEANZ submitted that consumers in a free, commercially competitive society make daily purchasing decisions and lifestyle choices that could be charged as "inefficient investment" in relation to use of resources, or other factors based on whatever benchmark is chosen. SEANZ submitted that it should be noted that there are many societal benefits from use of rooftop solar PV, for example lower losses, and lower GHG and other atmospheric emissions. SEANZ stated that these considerations are not taken into account in the rather extreme scenarios considered in the Electricity Authority analysis.

6.172 Several submitters raised issues with the analysis of the effects of distribution charges on household investment in solar undertaken by NZIER.

6.173 Powerco did not think that the present value of the mis-investment is likely to be anything like as high as the up to $5 billion figure estimated by NZIER, but it accepted the general tenor of the argument.

6.174 Pulse submitted that the analysis by NZIER is interesting, but potentially of little relevance. Pulse stated that the underlying assumption set is effective unconstrained and no limits are applied to the practical ability to deploy, budget or capital constraints faced by consumers, physical site limitations, the effective rate of return etc. Consequently, Pulse stated that the 'cost' of a level of inefficient investment and its effect on prices is potentially a worse case, but potentially not even relevant. Similarly, Pulse noted that significant caveats are made about the data and statements that it represents technically feasible etc. but there is no analysis that defines what this actually means. Pulse submitted that it is always possible to assume or 'caveat' away a range of real constraints and end up with an extreme outcome when modelling. However, Pulse stated that this generally means that the results are unable to be used in a practical sense as they are unbounded by the realities of what is being considered.

6.175 Vector submitted that the extent of inefficient investment in solar PV is grossly exaggerated by the NZIER through its simplification of working assumptions.

6.176 Several submitters indicated that consumer investment decisions regarding solar PV are distorted by retailer re-bundling of distribution prices.

6.177 Network Tasman stated that the ability of the distribution price structure to result in efficient levels of solar PV investment depends on the extent to which it is passed through to retail prices.

6.178 Powerco submitted that the problem in practice is that end consumers respond to retail tariffs and retailers have a commercial incentive to retain flat rate volumetric tariffs, because that is what consumers prefer. Powerco concluded that if retailers fail to pass on more efficient distribution tariffs, the incentive to invest in solar PV inefficiently may remain.

6.179 Orion stated that in most cases, it is retail prices that influence investment decisions, and while distribution prices are a material influence on retail prices, it is possible that even with service-based distribution pricing the retail pricing signals seen by consumers remain unchanged, or are much less sharp.

6.180 Several submitters made points about the importance of efficient price structures.

6.181 Contact submitted that ultimately, the type of technology, be it solar, EVs, heat pumps or batteries is not the most important aspect. What is important in Contact's opinion is to have service-based pricing that is customer friendly, sends through the correct price signals and is durable for the future. Contact submitted that assuming this is in effect, it should not matter what type of technology comes along, as the prices will send through the right signals. Contact stated that a further benefit of real service-based pricing is that there is no discrimination against any consumer group and it will likely result in increased buy-in.

6.182 Embrium submitted that when distributor revenues begin to be affected, distributors (and energy retailers) are likely to respond by increasing their fixed charges. Embrium submitted that by aligning their revenue dependency with kWh consumption, networks and energy retailers become allies in discouraging efforts by consumers to reduce their overall kWh usage.

6.183 Flick stated that at an individual level certain consumers clearly want to install solar. Flick stated that individuals make these kinds of purchasing decisions for all manner of rational and irrational economic reasons and those individuals may not be concerned about inefficient investment. However, Flick submitted that distributors could amend their pricing and to introduce more service-based pricing (by way of transparent, fair, pass through pricing – including strong price signals), to ensure that economically efficient signals are provided.

6.184 Vector submitted that under a service-based (or cost-reflective) pricing approach, the price a consumer pays for a distribution service reflects the cost of providing that service. Vector asserted that the expected consequence should be to "signal to users the cost of new capacity in a way that encourages efficient network and consumer investment." Vector stated that provided pricing is in place that is service-based while meeting consumer preferences then the Authority should be agnostic to behavioural outcomes.

6.185 Wellington City Council submitted that having guaranteed and reasonable feed in tariff for solar electricity injected into the grid would make for better investment decisions and may increase uptake.

6.186 Several submitters discussed regulatory constraints as a factor influencing household investment in solar PV.

6.187 For example, Counties Power stated that the Authority needs to amend the Code to ensure distributed generation owners pay a fair proportion of the infrastructure costs that they use when exporting power.

6.188 Genesis stated that the issue here is not distribution pricing methodologies, but there may need to be reform to Part 6 of the Code regarding connection of distributed generation if the Authority is of the view that distributed generation payments are not accurate.

6.189 Orion stated that retailers themselves face regulatory constraints on recovery of their own fixed costs (which are considerable), and if these constraints stay in place investment in solar PV will continue to be over rewarded even if distribution pricing is optimal and the pricing signals are clearly seen by 'prosumers'.

6.190 Pioneer stated that the consultation paper explains that the level of future investment in networks is in the Commerce Commission's jurisdiction but then includes the Authority's view about future possible investment. Pioneer submitted that the Commerce Commission should be responsible for all aspects of regulation of the monopoly network part of the delivery chain – both distribution and transmission to avoid this inefficient duplication of analysis and views.

Question 5: What is your view of the potential for inefficient investment in distribution networks if there is a high uptake of electric vehicles and distribution pricing structures continue to be based primarily on a consumption-based approach?

6.191 Thirty-two submitters responded to this question.

6.192 MEUG stated that its views on this issue are outlined in its response to question 3.

6.193 Contact, John Crook, PwC and SEANZ stated that their views on this issue are outlined in their responses to question 4.

6.194 No comment or no further comment was received from AECT, Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ and Trustpower.

6.195 Submitters' views on the potential for inefficient investment in distribution networks if there is a high uptake of electric vehicles and distribution price structures continue to be primarily consumption-based broadly aligned with the Authority's views.

Views on the Authority's conclusions on electric vehicles

6.196 Consumer NZ agreed there is potential for inefficient investment in networks if electric vehicle owners do not receive price signals that encourage them to charge their cars during off-peak hours. Consumer NZ stated that this is not likely to be a large issue for a number of years. Consumer NZ agreed with the Authority any changes to distribution prices are unlikely to affect the uptake of electric vehicles due to their high capital costs.

6.197 The ENA agreed with the Authority's broad conclusion that distribution prices should reflect the costs of recharging a vehicle when the network is congested (and when it is not congested). However, the ENA qualified this agreement by stating that its agreement with the direction of the conclusion did not imply its support of the examples used in the analysis.

6.198 Meridian agreed with the Authority's analysis regarding the potential for inefficient distribution investment from high EV uptake and limited signalling of peak demand costs. Meridian submitted that as distribution costs will account for only a small proportion of the cost of EVs and are unlikely to affect purchase decisions and uptake in any significant way

6.199 Mighty River Power agreed with the Authority that current network pricing acts as a disincentive for EVs, which are not regressive, as EV households tend to demand more network services and therefore bear a higher proportion of network costs.

6.200 Orion agreed that under almost any scenario, electricity will be so much cheaper than fossil fuels that it is unlikely to affect the decision to buy an EV. Orion submitted that in the wider New Zealand sense EVs, rather than being a problem, are a tremendous opportunity to respond to the country's emission reduction commitments.

6.201 Powerco agreed with the general conclusion that more cost-reflective tariffs, which would result in higher peak demand or peak time-of-use charges, should encourage EV owners to charge during off-peak periods, and that without such incentives there is a significant risk that EV charging could occur during peak demand periods, which could create the need for further network augmentation.

6.202 SEANZ submitted that it is puzzling as to why Authority poses this question in the context of "inefficient network investment" whereas Q4 is in the context of "inefficient solar panel investment". SEANZ stated that this suggests flawed thinking on the part of Electricity Authority or its advisors. Stated that alternatively the difference in posing the questions seems to indicate a bias against solar PV and that this bias is unacceptable and unfair.

6.203 Unison agreed with the Authority that distribution prices should reflect the cost of charging an electric vehicle, and a consumption based approach is likely to lead to inefficient investment. However, Unison submitted that further scenario modelling around take-up would be needed to explore the impacts further.

6.204 WEL submitted that it had not undertaken detailed research to substantiate the problem, but that it WEL agreed with the Authority that distribution pricing needs to evolve to become more cost-reflective to ensure distributors have sustainable business models.

Other matters were raised in responding to this question

6.205 Several submitters raised other matters in responding to this question.

6.206 Consumer NZ submitted that issues such as the need for better charging infrastructure, short driving ranges and enduring high capital costs of EVs will prevent them becoming widespread in the short term.

6.207 Counties Power stated that inefficient investment in distribution networks because of EV us could be easily avoided through the electric vehicles being connected to the distributor's controlled supply in the same way that home water heating occurs. Counties Power stated that this would require dedicated wiring or the vehicle charging from the distributor relay on the same basis as the houses' hot water cylinder. Counties Power stated that as the controlled supply is only load controlled during winter morning and peak times it would be unlikely to interfere with the charging of the electric vehicle.

6.208 ETNZ stated that a wider review of automotive fuel pricing and taxation arrangements would seem sensible before too much thought is given to developing a durable pricing structure for EVs. ETNZ submitted that ultimately, if a large part of the vehicle fleet is powered by electricity then new arrangements would be needed to fund roading etc. ETNZ expressed a view that it would seem desirable for the government to make its long-term policy on this clear before major investments in EV charging facilities are committed.

6.209 Bryan Leyland submitted that electric vehicles exist because, in most countries, they are heavily subsidised. Mr Leyland expressed his view that in most countries they are the toys of the rich who are quite happy for the subsidies to be paid for by poorer taxpayers and that EVs will only become significant in New Zealand if we get a government crazy enough to subsidise them.

6.210 Several submitters discussed the influence of price structures on the uptake of electric vehicles.

6.211 For example, Flick submitted that as EV's tend to be charged overnight, it is hard to imagine that uptake of EV's would lead to inefficient investment in distribution networks (provided there is significant price differential between peak and off-peak pricing then there should be no need for distribution companies to increase investments for peak demand).

6.212 IPWEA stated that the same principles for economic investment efficiency apply to all new technologies – including electrical vehicle charging stations. IPWEA therefore agreed that electrical distribution pricing for electrical charging be service-based, transparent and cost-reflective

6.213 ITP stated that smart meter rollout will facilitate future EV uptake and it would be useful to signal proposed EV charging tariff structures as early as possible, so that customers can include the expected electricity charges in their calculation of cost effectiveness. ITP submitted that time-of-use tariffs could be used, but may not be as effective

6.214 ITP submitted that an important point to note is that, if tariffs are service-based (i.e. they reflect the cost to the network of providing electricity and power), the type of technology that customers connect to the grid is not relevant. ITP concluded that the need for technology-specific tariffs is an indication that the network tariffs are not service-based.

6.215 Mighty River Power submitted that the current flat distribution pricing structures do not create incentives for EV owners to use the network in the most efficient manner (i.e. off-peak) potential. Mighty River Power stated that this will result in higher than necessary network costs over time as well as sending the wrong signals for consumers to make investments that would be to the wider benefit of New Zealand (such as reducing fossil fuel consumption and emissions).

6.216 Molly Melhuish submitted that she has every expectation that vehicle charging will attract specific tariffs that give benefit to both distributors and customers and that “potential” inefficiency will not be realized.

6.217 Network Tasman submitted that EVs have the potential to add significantly to network peaks that could trigger new investment in future to expand network capacity. Network Tasman stated that the exact potential depends on uptake of EVs and consumers’ preferences and that because uptake of EVs is currently low it is difficult to know what consumer preferences will be.

6.218 Regardless, Network Tasman considered it important that signals are given, whether through time-of-use consumption prices which signal congestion periods or some other mechanism such as peak demand/capacity pricing, to give consumers good pricing signals to which they can choose to respond to according to their preferences.

6.219 Pulse holds the view that it would appear inevitable that electric vehicles will increase as a share of total vehicles. Pulse stated that the speed of this change will be dependent upon variables that dominate beyond the relative proportion of fixed and variable distribution charges. Pulse submitted that whether this leads to a coincident charging effect is difficult to assess, as is whether decisions will be affected by peak or energy charges or current day versus night energy differentials.

6.220 Solarcity stated that investors are choosing to invest in solar for a range of reasons. Solarcity submitted that suggesting that distribution pricing structures is the key reason misses the point. Solarcity stated solar is a now a cost-effective technology that will grow rapidly in New Zealand as it has done in other parts of the world as costs continue to decline.

6.221 Solarcity noted that the EA has stated publicly that it has no bias towards different forms of generation. Solarcity submitted that this question clearly seems to indicate an (unacceptable) bias against solar.

6.222 Vector recognised that there are better pricing structures than anytime-consumption prices to send the appropriate price signals to consumers but that these should not be at the expense of consumer preferences.

Question 6: What is your view of the potential for battery technology to defer or avoid investment to augment distribution networks?

6.223 Thirty-three submitters responded to this question.

6.224 MEUG stated that its views on this issue are outlined in its response to question 3.

6.225 SEANZ stated that its views on this issue are outlined in its response to question 4.

6.226 No response to this question was received from Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.227 Submitters provided a range of views of the potential for battery technology to defer or avoid investment to augment distribution networks.

Views on the potential for batteries to defer or avoid network investment

6.228 Alpine submitted that the uptake of battery technology could help to reduce long-term network costs if consumers use battery power during peak periods instead of demanding power off the grid. Alpine stated that reduced demand during peak periods will push back the need to augment the network.

6.229 Auckland Airport stated that there could be very significant value in the deferment of planned activity enabled via capacity and demand matching within local networks now that battery technology is maturing. Locating generation geographically much closer to consumption, according to Auckland Airport, also has an effect upon the supply risk profile and reduction in line losses to further improve the efficiency of the system

6.230 Auckland Airport submitted that in order to maximise outcomes (e.g. utilisation and commercial performance), the network operator with views of both supply and demand, and the current responsibility for the distribution network must be responsible for grid energy storage.

6.231 The AECT stated that there is a role for investment is batteries as low cost substitutes for conventional distribution methods. The AECT stated that if battery investment is embedded soundly, it could reduce expansion and strengthening costs of distribution.

6.232 Bryan Leyland submitted that there is no potential for battery technology to defer or avoid investment to augment distribution networks, and that there would not be for a long time. Mr Leyland observed that the consultation paper pointed out that batteries are expensive and considered it regrettable that the Authority did not take it to its logical conclusion and calculate the cost of battery storage per kilowatt-hour recovered.

6.233 Consumer NZ agreed that there is potential for battery storage to defer investment in network infrastructure by reducing consumption at times of peak demand. However, Consumer NZ stated that the market for home energy storage systems (of the type discussed in the consultation paper’s case study on residential battery technology) remains very small.

6.234 Consumer NZ expressed that view that questions remain over how the market for home energy storage will develop (analysts predict it will be tied to the uptake of electric vehicles). Consumer NZ concluded that the scenario outlined in the case study seems a few years away.

6.235 Contact stated that batteries are already economic today for some network upgrades and may have a material impact on future grid upgrades. However, Contact thought it was worth noting that deferring network investment is just one of the many services that batteries can provide.

6.236 Counties Power submitted that battery technology is in its infancy and so it is too early to be certain as to the role of batteries going forward. However, Counties Power stated that it is possible that batteries may have a similar role as the industry's historic controlled hot water supply, or may replace core network and generation investment overtime.

6.237 Counties Power also submitted that because New Zealand's electricity spot prices are relatively flat compared to international electricity energy prices (internationally prices spike because of expensive thermal peaking stations) there might be less financial benefit for the battery to avoid high electricity spot prices by the retailer. Counties Power submitted that this would leave the main industry battery benefit being to avoid distribution and transmission peaks, as well as storing distributed generation output.

6.238 Embrium stated that for distribution networks that charge purely on a capacity/demand basis, justification for battery technology will be a simple maths equation. Embrium submitted that distribution charges in urban areas are currently relatively flat and that only Transpower's coincident peak demand pricing and (limited) variable energy pricing offer incentive to use battery technology to shift load. Embrium submitted that if distributors come under pressure, they already have mechanisms at their disposal to encourage greater off-peak use.

6.239 ETNZ stated that battery technologies are emerging in parallel with new loads from EVs etc. (and in parallel with potential significant net migration gains) and stated that it is unclear whether battery deployment will lead to curtailment of distribution network investment. ETNZ stated that it expects some networks to make increased use of clustered battery options to address immediate demand growth problems, and to explore other commercial opportunities associated with battery technologies.

6.240 The ENA did not have a fixed view on the efficiency of installing batteries, although it did not agree that distribution pricing has a role in encouraging investment in batteries. The ENA stated that investment choices are more likely to be made efficiently where the relevant price structure reflects the cost structure; such that consumers pay the costs they give rise to and do not impose costs on other consumers. The ENA also submitted that the value of battery storage is likely to depend on who is coordinating the charging and discharging of the batteries. This is similar to using hot water storage for load control.

6.241 Flick stated that battery technology will have a part to play in deferring or avoiding investment in networks – obviously there would need to be a significant level of installed battery technology and given the current price point this may still be some way off. Flick recommended that with respect to battery technology the Authority should also consider the benefits this technology may bring at an individual level (particularly with respect to those customers who are medically dependent on electricity).

6.242 Genesis submitted that it has not been made clear by distributors what the impact and cost spread is for peak capacity versus network quality. Genesis believes that storage should play a significant role when it becomes financially prudent as a way to smooth out demand peak throughout the day, but submitted that storage will not help with the seasonal peaks which will continue to exist. Genesis stated that batteries, like all emerging technologies, will only be useful if it is linked to simplified pricing reflecting the cost of a consumer's use of the service at peak demand times.

6.243 Grey Power stated that battery technology is a marvellous idea, which Vector are dabbling with now. Grey Power believes it is something to encourage ahead of distributed generation.

6.244 IPWEA submitted that battery technologies are very applicable to LED public lighting and solar PV panel generators as LED lighting loads have now become well matched to these technologies. Furthermore, IPWEA stated that public lighting control and sensor systems could provide both demand side and supply side (solar PV, batteries) distributed services over the smart lighting network.

6.245 ITP stated that battery technology, whether integrated into appliances, such as computers, inverters and electric vehicles, or placed at central network locations, such as substations or power stations, could assist with load management and hence defer the need for network upgrade. ITP submitted that it is important that regulators, network businesses and retailers proactively develop new pricing structures that provide fair returns to customers for preferred use of their storage systems. The potential benefits of storage will not be realised otherwise.

6.246 John Crook submitted that battery technology obviously has potential applications for demand levelling both for distribution companies' and consumers' investments in storage battery technologies.

6.247 Meridian agreed that there is potential for battery technology to enable distribution investment to be deferred or avoided (such investment should take place on a level playing field that does not favour distributors – but that is not an issue for this paper). Meridian also agreed that battery cost trends would have an important bearing on uptake.

6.248 Molly Melhuish submitted that battery potential depends on location; in urban areas with summer max demand, Ms Melhuish submitted that it may be more cost-effective for batteries to be in substations, especially using modern lead-acid batteries (cheaper than lithium). Ms Melhuish stated that consumer-owned batteries are most likely in mesh-block locations with high income. Finally, Ms Melhuish submitted that in locations vulnerable to storm damage, consumer-owned batteries add resilience, and are likely to add more value than batteries in substations.

6.249 Mighty River Power agreed that there could be benefits for consumers from battery storage, but expressed a view that the economics of water storage in dams is currently far superior. Mighty River Power stated that it is essential that investments in storage are made transparently and that regulation does not create bias toward favouring different storage types or, in combination, reduce customer choices and sector competition. Mighty River Power asserted that it is important to note that while batteries may have cost advantages over traditional network investments they have very different assets lives. Mighty River Power submitted that their long-term suitability and reliability characteristics have yet to be established for that duty, which will depend largely on how they are operated which could be influenced by the regulation. Mighty River Power also stated that investment in batteries with shorter asset lives would likely be highly attractive for distributors in terms of managing their risk of asset stranding, particularly where there is an uncertain demand outlook. Mighty River Power submitted that a key question for regulators is whether this risk transfer to consumers is of long-term net benefit versus alternatives.

6.250 Network Tasman considered that, technically, battery technology already provides an option for deferring or avoiding investment in distribution networks. In Network Tasman's opinion, the business case for investment by distributors in battery storage does not currently stack up given present battery costs. Network Tasman submitted that if the investment case for batteries stacks up such that battery storage in residences becomes widespread, it will be important to have cost-reflective pricing signals and rules of connection to and discharge on networks. Network Tasman stated that while solar PV export (without batteries) can at least generally be predicted allowing some degree of network planning, this is not the case with batteries.

6.251 Nova submitted that while battery technology is advancing, and production costs are falling, it is difficult to see it being economic on a widespread basis given the existing infrastructure in place and pattern of electricity prices in New Zealand given the peaking capacity of hydro generation.

6.252 Orion submitted that it is how technologies affect the load profile on peak demand days that determines the impact on network investment. Orion stated that the potential of battery storage to reduce peak demand and hence investment depends on the uptake of EVs and the charging profile that eventuates. On the other hand, Orion submitted that there is some risk that battery storage displaces hot water storage in such a way that the benefits of coordination are lost.

6.253 Pioneer agreed battery storage has the potential to defer or avoid network investment – just like existing distributed generation.

6.254 Powerco submitted that the extent of any network benefits derived from the presence of batteries is heavily dependent on who controls the operation of the batteries. Powerco stated that if distributors are able to control the charging and discharging of the batteries, it agreed that there is the potential for the need for additional network investment to be deferred.

6.255 Powerco stated that if efficient time-of-use pricing by distributors results in large enough differentials between peak and off-peak charges, and the cost of batteries becomes cheap enough, this may encourage their use to arbitrage between peak and off-peak charges, which may in turn help to flatten peak demands and ultimately reduce the need for some network augmentation. Powerco stated that this outcome is contingent on whether or not retailers pass through efficient cost-reflective tariffs to end consumers.

6.256 Pulse submitted that ultimately battery, solar and electric vehicle effects (and other technology changes) will be dependent upon the combination of costs, benefits and incentives, where the costs also include opportunity costs and budget/capital constraints (of all economic agents associated with decisions) and the benefits and incentives are both priced and unpriced.

6.257 Pulse submitted that it is clear that any technology that reduces the level of actual or expected (peak) demand or improves the overall load factor, compared to an assumed BAU assumption, therefore has the potential to defer or avoid investment, just as something that increases demand has the potential to increase investment.

6.258 PwC submitted that the key benefit comes from storing energy off-peak and discharging during the peak within the home or to the local network. PwC stated that this will flatten loads and therefore network peaks and submitted that pricing that encourages this will decrease the cost of providing future capacity upgrades.

6.259 However, PwC submitted that it is not certain that batteries can be relied on as firm capacity on the network. PwC stated that distributors might need to invest in network redundancy where there is uncertainty over whether batteries can be called upon to reduce load during periods of network congestion.

6.260 SEANZ stated that as costs drop, batteries will be capable of playing a useful role in matching supply availability to demand and that this will become increasingly important as intermittent renewables become the lowest cost and cleanest new supply source.

6.261 Solarcity believes that battery technology has the potential to play a significant role in the electricity sector. Solarcity stated that the role should not be limited to just the distribution network but should also cover grid level services also. In Solarcity's opinion, batteries coupled with associated control systems and effective market rules will undoubtedly be a game changer in the coming decades.

6.262 Solarcity queried what a policy framework around local generation actually looks like, who has access to the battery and under what terms. Solarcity submitted that these are important questions and it welcomes the work by the Commerce Commission is undertaking in this area. Solarcity submitted that if a distributor is able to on the one hand put a battery in the RAB and on the other hand play that battery into the electricity market that has the potential to result in an inefficient outcome.

6.263 Unison stated that there is potential for battery technology to become more economically viable in the future and assist with deferring investment in distribution networks. However, Unison submitted that the extent and prevalence of this is unknown at present and scenario modelling would be needed to explore this further.

6.264 Vector believes benefits from avoided network augmentation can be realised with battery technology. Vector submitted that this would take the form of embedding the technology directly into the grid and through home installations with the potential for direct distributor demand management (load control) and / or pricing incentives to effect or encourage power reduction or grid injection during peak network periods.

6.265 Vector shares the Authority's expectation that the cost of battery technology will reduce significantly over time and, as the return on investment profile improves, so will the uptake of home-based batteries.

6.266 Wellington City Council considered that potential for batteries is good, as long as the pricing structures are well designed. The Council considered the relationship between network and electricity pricing to be important.

6.267 WEL submitted that it has not undertaken detailed research to substantiate the problem. WEL agreed with the Authority that distribution pricing needs to evolve to become more cost-reflective to ensure we have sustainable business models.

Question 7: What is your view of the potential for alternative distribution pricing structures to promote more efficient investment by consumers in heat pumps and / or LEDs?

6.268 Thirty-one submitters responded to this question.

6.269 John Crook referred to his response to earlier questions.

6.270 MEUG stated that its views on this issue are outlined in its response to question 3.

6.271 PwC and SEANZ stated that their views on this issue are outlined in their responses to question 4.

6.272 No response to this question was received from AECT, Blueskin Energy, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, Trustpower, and Unison.

6.273 Submitters provided a range of views of the potential for alternative distribution pricing structures to promote more efficient investment by consumers in heat pumps and / or LEDs.

6.274 Alpine considered that it if it used a demand charge and not a consumption charge to signal peak times it could accurately signal the cost to the consumer of using power at peak times and therefore the costs and benefits of using technologies at peak times. Alpine would also avoid sending signals to consumers to reduce consumption to avoid distribution charges.

6.275 Auckland Airport submitted that a distribution pricing structure that educates consumers to the impacts of their behaviour makes consumers accountable for the costs that their decisions and actions drive, and likewise returns a benefit to a consumer for any material outcomes they deliver to the network, would encourage good practice.

6.276 Bryan Leyland considered the economic incentives exist right now. Mr Leyland stated that charging for distribution as a service would probably improve the economics.

6.277 Consumer NZ submitted that cost-reflective distribution pricing structures are likely to promote investment in heat pumps more so than LEDs, as a higher proportion of heat pump use occurs during peak times so they will become more attractive relative to less efficient heating options. In addition, Consumer NZ stated that the numerous ‘smart’ control features that have become commonplace on heat pumps will make them more appealing for consumers than other heating options which lack these features, such as wood-burners.

6.278 Contact expressed the view that ultimately this depends on the structure. However, Contact stated that service-based (demand) tariffs are likely to suppress the uptake of heat pumps and promote the uptake of LED lighting and more efficient use of existing heat pumps. Contact submitted that likewise, a move to service-based pricing might drive a move to gas heating (assuming heat pumps add to a typical household in terms of heat and peak load).

6.279 Counties Power submitted that alternative distribution pricing structures are unlikely to promote more energy efficient investments because owners of heat pumps and LEDs already obtain pricing benefits from the current consumption based kWh prices that lower the overall monthly charge.

6.280 Embrium submitted that unjustified fixed charges from energy retailers have the greatest part to play in discouraging the use of heat pumps (in lieu of electric space heating) and LEDs. Embrium submitted that both retailers and distributors share a common interest in keeping kWh consumption as high as possible.

6.281 The ENA submitted that consumers are more likely to make efficient investment choices where there is some degree of alignment between the structure of prices and the structure of costs. The ENA submitted that some consumers prefer particular established technologies for reasons other than cost. For example, the ENA stated that some people prefer incandescent lights because they emit the full visible light spectrum, as opposed to compact fluorescents and the more common blue-based white-emitting LEDs. In this context, the ENA the submitted that the Authority’s role should be to identify and to the extent possible reduce or remove the regulatory risks and barriers associated with adopting a price structure that reflects the cost of providing distribution services to a consumer while accepting that some consumers have preferences that are not driven solely by cost.

6.282 ETNZ submitted that pricing structures that promote peak reductions would address the twin issues of reducing capacity growth trends and reducing energy losses. It doubted whether pricing aimed at ‘picking winners’ by specifically cross-subsidising heat pumps or LEDs would result in economically efficient outcomes.

6.283 Flick submitted that heat pumps can be programmed to be used off peak, so as above, distributors could amend their pricing and to introduce more service-based pricing (by way of transparent, fair, pass through pricing – including strong price signals), to ensure that economically efficient signals are provided to promote the use of heat pumps and LEDs.

6.284 Genesis stated that distributors should ensure DPMs cover the costs of running the networks. Genesis expressed a view that if the distribution networks are neutral to technology and distributor pricing reflects the costs of providing the network services, then all emerging technologies should be treated equally and consumers will have incentives to make energy efficient decisions. Genesis submitted that if the DPMs were simplified, pricing signals would be reflected more accurately in retailers’ tariffs.

6.285 IPWEA stated that the analysis done by Orion Networks and its pricing methodology appears to be a good model for the rest of the public lighting distribution sector to follow. IPWEA submitted that this would promote efficient investment in public lighting.

6.286 ITP submitted that conversion of lighting systems to LEDs will provide long-term reduction in both energy and peak demand and should be facilitated. ITP stated that heat pumps (such as reverse cycle A/C) for water and space heating are more efficient than simple coils or radiative heating. ITP submitted that tariff signals, whether time-of-use or demand-based may have some impact, but are likely to be ignored during severe weather conditions, which is when peak loads are likely to occur.

6.287 John Crook submitted that under his tariff proposal, many more people are likely to convert to LED lighting to reduce the cost of evening peak rate charging. Mr Crook stated that it might also stimulate the transition to heat pumps from other less efficient forms of electric heating.

6.288 Meridian expressed a view that the potential is there for distribution pricing to promote efficient investment in heat pumps and LEDs. However, Meridian submitted that in many cases distribution pricing structures are unlikely to significantly change uptake patterns (several LED lights for a residential property or other similarly small investment, for instance).

6.289 Mighty River Power agreed that more efficient distribution tariffs should result in more efficient investment decision and reduce regressive consumer impacts.

6.290 Molly Melhuish questioned why there is a focus on electricity-only solutions. Ms Melhuish stated that alternative pricing options should promote long-lived consumer investments that add diversity and resilience (attributes not priced today). Ms Melhuish submitted that pricing structures need to overcome the high-first-cost barriers to investment by low-income consumers.

6.291 Network Tasman agreed that it might be possible that alternative pricing structures could promote more efficient investment in heat pumps and/or LEDs, although consumers who face prices that are largely based on kWh would already have strong incentives to make these investments. Network Tasman submitted that the potential for distribution pricing to influence consumer behaviour and investment choices depends on the end signal given by retail pricing.

6.292 Nova submitted that demand based pricing would reinforce the benefits of LED lighting, and would help rebalance the relative economics of heat pumps and gas heating, i.e. heat pumps are typically being used to their maximum during cold spells, when electricity demand is peaking. Nova stated that if peak demand for electricity was appropriately priced, then gas fired heating would be more cost effective than heat pumps in many cases.

6.293 Orion does not think there is substantial potential for alternative distribution pricing structures to promote more efficient investment by consumers in heat pumps and / or LEDs. Orion submitted that there are significant non-price drivers to such investments. For example, Orion stated that reticulated natural gas is not available in Christchurch and there are air quality regulations that restrict the use of some forms of non-electric heating. Orion submitted that these are both examples of why local context is so important.

6.294 Pioneer stated that other major countries, such as the US, the EU and China, have banned the use of incandescent technology as part of their regulatory response to reducing greenhouse gas emissions.

6.295 Powerco submitted that there is very limited New Zealand data on lighting. Powerco submitted that, generally speaking, consumers are more likely to make efficient choices when purchasing energy-consuming products if distribution pricing is cost-reflective, with the proviso that the cost-reflective prices need to be passed on by retailers with the cost-reflective incentives intact. Powerco submitted that some consumers prefer particular established technologies for reasons other than cost.

6.296 Pulse stated that it is likely that the majority of purchasers are buying LEDs or similar on the simple assumption that they will reduce consumption and that this will save them money. Pulse submitted that with respect to heat pumps, the Authority is unlikely to be able to achieve its view of 'optimal" investment through tweaking distribution pricing, irrespective of whether this is reflected in end user pricing. Pulse stated that the reason for this is that heat pumps (and other electricity consuming items) provide benefits (perceived or real) beyond the direct cost as do many other consumption decisions.

6.297 PwC submitted that non time-of-use consumption charges are likely to encourage more consumers to invest in heat pumps and LEDs. PwC submitted that this is because consumers expect to make savings on their energy bills because of installing these appliances.

6.298 SEANZ considered that any improved distribution pricing should be time-of-use consumption based. SEANZ stated that a time-of-use consumption based charging approach which is independent of appliance choice would provide the most accurate "use of service" signals possible to enable appropriate consumer response for any new technology, including the use of heat pumps and LED lights.

6.299 Solarcity submitted that this question misses the point. Solarcity stated that the question is how to encourage consumers to move to adopt a suite of technologies that will result in a more efficient and effective electricity sector. Solarcity stated that heat pumps and LEDs are only part of the picture and that other parts include solar, batteries, electric vehicles and importantly how each of them interact with the electricity system in real time. Solarcity advised that this latter aspect is missing from the discussion paper and is a very important aspect of the future and the concept of electricity sector 2.0. Solarcity is of the view that the Authority needs to encourage innovation in the power sector as part of its mandate to bring benefits to consumers.

6.300 Vector recognised that there are better pricing structures than anytime-consumption prices to send the appropriate price signals to consumers but that these should not be at the expense of consumer preferences. Vector stated that it is important that stakeholders, including regulators, remain neutral towards particular technologies because these are likely to change over time, both in nature and affordability.

6.301 Wellington City Council stated that regarding heat pumps, it thinks that a pricing structure that encourages their uptake would be a good thing and is likely to be effective.

6.302 Wellington City Council submitted that a network charge comprising only a fixed daily fee only does not achieve this. The Council stated that a portion of the network cost being saved through reduces energy use would encourage their uptake. Wellington City Council submitted that one criticism is that LED lamps do not last as long as manufacturers claim. The Council stated that lack of faith in any energy efficient technology is likely to reduce uptake.

Question 8: What is your view of distributors' options for structuring their pricing?

6.303 Thirty-one submitters responded to this question.

6.304 No response to this question was received from Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.305 Submitters provided a range of views of distributors' options for structuring their pricing.

Tariff design options and implementation issues

6.306 Contact stated that based on international examples (as set out in Appendix 1 of its submission) a move to time-of-use pricing will still enable significant cross-subsidies to occur. Contact submitted that this would result in inefficient investment in emerging technologies, including solar PV. On this basis, Contact submitted that its preference is for distributors to move to service-based (demand) based pricing. Contact also submitted that the way that distribution prices are structured should also not discriminate against particular user groups, including new connections and DG customers.

6.307 Counties Power submitted that distributor pricing structures are constrained by the ability for the retailers to handle different pricing configurations such as demand and capacity charging. Counties Power submitted that the introduction of mass market demand and capacity charges would only be possible if the distributor were to bill the consumer directly.

6.308 Embrium submitted that it recommends the following:

(a) complete abandonment of distributor variable kWh charging

(b) limit the extent by which distributors can ramp fixed charges by arguing a net zero outcome for customers

(c) customers are assigned an assessed capacity charge, which can be disputed by the customer and revised according to actual capacity data retrieved from AMI meters

(d) demand charges are applied across the board to residential and commercial customers, regardless of connection size or type of load. However, they would vary according to geographic location and time of day, week, season.

(e) better transparency for sundry costs (metering, load control etc).

6.309 Embrium submitted that if pricing is to be applied fairly, it should be consistently applied. Embrium's view is that distributors should not able to discriminate between a kW of hot-water heating load or a kW of any other kind and that it should be the customer's choice if it wants to designate some part of their load as discretionary. Embrium submitted that the distributor's only tools for manipulating demand should be peak price signalling and a separate load-control service that the distributor charges for.

6.310 Flick submitted that it is important that distribution companies do not simply increase consumption charges in the face of flat or falling overall consumption. Flick stated that any future pricing structure should be easy for the customer to understand and enable the customer to make behavioural changes to reduce their costs. Flick submitted that the best way to facilitate this would be with time-of-use consumption pricing that is passed through to the consumer by the retailer.

6.311 Genesis submitted that pricing needs to be simplified and structured to reflect the cost of running the distributors network in a way that allows retailers' tariffs to reflect the cost of end consumers' usage.

6.312 Grey Power stated that the options for price reform are there, it just requires the foresight of the network owners to move. Grey Power endorsed The Lines Company's approach, observing that what they have done may not be perfect, but commending the fact that they have made a move.

6.313 ITP explained how the main criterion for service-based pricing (economic efficiency) could conflict with the other criterion used when designing tariffs, particularly fairness. ITP stated that strict application of the efficiency criterion results in those least responsible for the network's sunk costs paying a disproportionately high share of those costs – because these residual costs are applied equally to all customers through a daily charge.

6.314 ITP submitted that it found that in order to maximise fairness regarding historical responsibility for network costs, there is a case for allocating residual costs to a demand-based component (which would increase its size), and to a lesser extent to the usage component. ITP then discussed the need for the underlying structure of tariffs to assign responsibility for short-term network costs as accurately as possible (which relates to the timing of the demand-based component). ITP submitted that an additional complication is the need to design tariffs with customer responses in mind – so that they will wish to take them up and then respond appropriately.

6.315 ITP concluded that there is a clear need to explore different approaches to drive effective service-based tariff design. ITP stated that its response is based on work conducted at the University of New South Wales (UNSW) by ITP, and UNSW researchers and that the next stage of the UNSW work will use residential load data to assess the fairness of different tariff structures in terms of their ability to assign historical responsibility for network costs. ITP submitted that once it has identified the fairest structures, different amounts of the residual cost will be allocated to the three possible components (the service availability charge, the usage charge and the demand charge) and the impact this has on efficiency and fairness will be assessed.

6.316 MEUG generally agreed that there is no one size fits all solution and that there is a need to discuss options with end consumers.

6.317 Meridian, in principle, supported more service-based charging arrangements. Meridian stated that service-based charging will not be able to be approached in a ‘broad-brush’ way and will require adjusting generally familiar charging approaches that have been used for some time. Meridian submitted that ensuring the changes are implemented in an appropriate way and transitions are well managed will require a range of important considerations to be worked through. Meridian stated that these include:

(a) the need to avoid changes that encourage inefficient decisions to disconnect from the grid

(b) appropriate structure of maximum demand pricing.

6.318 Network Tasman considered that the key options for future distribution pricing include capacity prices; peak demand prices (of which there is a range of variants); time-of-use prices; and controlled load pricing. Network Tasman stated that controlled hot water load pricing would continue to be important because, while being a reasonably simple pricing mechanism, it provides a price signal that is coincidence with congestion periods, uses proven systems and makes use of investment that is sunk. Network Tasman also stated that a form of controlled load pricing could extend to batteries should they become widespread.

6.319 Network Tasman submitted that a price that signals network peaks through either peak demand and/or time-of-use kWh pricing seem to be an important part of future pricing. Network Tasman stated that because both of these require use of smart-meters, implementation as part of a standard tariff might take some time.

6.320 Network Tasman stated that connection charges for small-scale distributed generation would also be an important consideration, to ensure that costs that arise as a result of providing generation export services are efficiently recovered.

6.321 Pulse submitted that the Authority appears to be of the view that current pricing does not signal the marginal cost of new capacity and stated that it is not clear how dynamic the Authority thinks this type of pricing should be. Pulse submitted that there are costs associated with changing pricing where parties have made legitimate investment decisions based on the then current pricing and a reasonable expectation that such pricing would continue. Pulse submitted that these implicit assumptions of continuity are at least as valid as the Authority’s desire for “optimal” pricing and have been the source of much debate within transmission pricing.

6.322 Pulse asserted that whilst the approach of applying theoretical economic principles sits well with and is appropriate for a regulator, such as discussing marginal investment costs, common costs etc. the reality is that competitive markets produce generally simple pricing structures for value chains at least as complex as electricity. Pulse submitted that the higher the underlying cost volatility and the more “commodity like” a product is, the closer the pricing is likely to reflect prevailing demand and supply characteristics.

6.323 Pulse submitted that when suppliers and consumers are both making relatively long-term investment decisions it is difficult to assess the real costs and benefits of applying theoretical pricing to distribution services, such as those discussed by the Authority. Pulse submitted that this is particularly the case when the primary question is about allocation of a fixed revenue requirement between cost recovery components.

6.324 PwC submitted that distributors could implement a range of service-based pricing structures for residential and small commercial customers to signal efficient investment in the network. PwC stated that this could include demand, capacity, controlled load or peak period pricing structures that target congestion periods, or a combination thereof.

6.325 SEANZ submitted that distributors such as Orion Networks have undertaken detailed analysis of their business costs and where they lie. SEANZ considered that this excellent analysis is being largely misapplied and misinterpreted in the translation of costs to prices. SEANZ submitted that an increased emphasis on blanket fixed charges to address distribution costs will not result in a responsive application of new consumer technology as it introduces too many distortions. SEANZ submitted that the only way to encourage desirable consumer behaviour is to introduce dynamic pricing or consumption time-of-use based variable charging.

6.326 SEANZ and Solarcity strongly opposed to any approach that singles out a particular technology.

6.327 Solarcity submitted that a key option is moving towards dynamic pricing systems where household appliances, electric vehicles, solar, batteries etc. are all communicating with the electricity system. Solarcity submitted that the distribution system needs to move from being static to dynamic and making use of the new technologies that can respond in real time.

6.328 Unison submitted that for distributors, service-based pricing is essentially introducing a demand-based or fixed charge (based on kW not kWh). Unison stated that there are already commercial incentives for distributors to move towards this type of pricing. However, according to Solarcity, retailers are resistant to these changes at present. Solarcity stated that demand based charging is not well understood by customers and goes against the consumer preference of having flat, simple tariffs.

6.329 Vector stated that the individual circumstances of New Zealand’s electricity distributors are varied and generally agreed that there is no one ‘right’ pricing structure or set of pricing options for all distributors.

6.330 Vector submitted that providing a flexible framework for distributors to respond to the unique characteristics of their network, the individual consumer preferences on their network, and the inclination and ability of retailers operating in their network to pass through pricing signals, will better place distributors to deliver longer-term investment efficiencies.

6.331 Vector generally agreed that there will be inherent trade-offs with competing objectives. It submitted that approaching pricing structure reform would require careful consideration of the trade-off between the extent of cost-reflectivity and the practical understanding of the price signal.

6.332 WEL stated that it has commenced a transition to time-of-use pricing structures for general customers. WEL stated that it expect this will take several more years to complete. WEL submitted that the main alternative is demand type pricing which suffers from a lack of: transparency, customer acceptance and retailer systems to support it.

6.333 Wellington City Council submitted that the current options seem to fall into two types:

(a) a continuum from entirely consumption based to entirely fixed charges, and all the increments between e.g. 50/50, 70/30 etc.

(b) a system based on capacity and demand.

6.334 Wellington City Council stated that it favours the former in most circumstances where demand is reasonably steady through the year. The Council submitted that the latter may be appropriate in areas with high seasonal demand and could be an optional network tariff structure in other areas.

Addressing regulatory barriers

6.335 The AECT stated that it is possible to move tariffs but care is needed to ensure that the right signals reach consumers to avoid false actions.

6.336 Alpine stated that it is encouraged by the Authority's interpretation of the LFC Regulations in relation to variable charges, and will conduct further investigation into the feasibility of using demand charges for consumers on LFC tariffs. However, Alpine stated that this interpretation creates some interesting questions if the distributor only has demand and not consumption charges. In particular, Alpine questioned whether retailers could alone create a signal to consumers to reduce consumption, to qualify for low user status, without the need for similar distribution pricing structures if the distributor only has demand charges.

6.337 The ENA noted that the Authority does not consider distributors' price structures to be constrained by regulation from becoming service-based. The ENA submitted that its members do not have a uniform view of the level of constraint imposed by regulation. The ENA considered that this lack of certainty is itself inefficient as the perceived risk of regulatory non-compliance imposes material transaction costs on distributors in their price-setting process.

6.338 The ENA submitted that the role of the Authority is to enable distributors to respond to this commercial incentive by identifying and to the extent possible reducing or removing the regulatory risks and barriers associated with adopting a price structure that reflects the cost of providing distribution services to a consumer.

6.339 John Crook stated that he expects that competitive pressures will encourage energy retailers to pass on these benefits to their customers.

6.340 Molly Melhuish stated that revenue recovery should not be guaranteed as the lines monopolies are becoming challenged by approach to price parity for solar vs centralised supply.

6.341 Nova submitted that distributors need distortionary regulations to be removed and have available half-hourly or peak demand data if they are to structure their pricing efficiently.

6.342 Network Tasman noted with interest the Authority's view that the LFC Regulations do not prevent the use of variable charges based on a consumer's capacity. Network Tasman submitted that if capacity charges based on fuse size were considered variable under the LFC Regulations, then it would allow a relatively quick transition to a capacity pricing element for residential consumers that is substantially more cost-reflective and service-based than current pricing, providing for more efficient decision-making by consumers regarding investment in evolving technologies.

6.343 Pioneer submitted that it remains unclear about the relevance of the LFC Regulations when distributors are considering options for structuring their charges.

6.344 Powerco submitted that it believes that the Authority has a role in assisting the removal or partial removal of regulatory impediments to cost-reflective tariffs, and this includes promoting the case for changes to the LFC Regulations to MBIE.

6.345 Powerco submitted its view is that the LFC Regulations restrict the use of capacity charges, such as those based on fuse size, and probably restrict the use of per kW or per kVA demand-based charges if the time period over which the demand peak is measured is long. Powerco accept that c/kWh variable charges that vary according to time-of-use are acceptable under the regulations.

6.346 Powerco submitted that schedule 6.4 to Part 6 of the Code also restricts the ability of distributors to fully recover the costs associated with solar PV installations. However, Powerco welcomed the upcoming review of Part 6 of the Code and stated that it looks forward to amendments to Schedules 6.4 and 6.5 of Part 6 that will help to facilitate the creation of more cost-reflective tariff structures where customers have distributed generation.

6.347 Powerco submitted that tariff reform will ultimately only be effective in terms of providing the correct incentives to end consumers if retailers pass on the pricing signals contained in the new tariffs.

6.348 Pulse observed that the Authority suggests that distributors could progressively move to service-based pricing for consumers and that in the medium to long term all consumers can be moved to pricing that signals the marginal cost of new capacity and allocates common costs to minimise distortions. Pulse stated that this could be read as indicating that the Authority expects that retailers will reflect this pricing or that consumers will demand such pricing, even though the Authority acknowledges in the paper that competition will ultimately determine whether consumers really want such pricing.

6.349 Unison advised that for distributors to successfully implement service-based pricing, regulatory leadership is required to educate customers and overcome retailer resistance.

Practical barriers

6.350 Alpine is of the view that with the roll out of smart meters it could replace the consumption charge with a peak demand charge (or similar) for recovering long run costs. Alpine submitted that it currently needs a day/night consumption charge to signal peak periods when consumers do not have half hour metering.

6.351 Might River Power stated that smart meters remove the technical barriers that there were previously for establishing pricing that is demand responsive.

6.352 Orion submitted that it is concerned about the implied limitation of pricing approaches due to metering technology and the availability of real-time information.

6.353 Pulse observed that the Authority suggested that if a demand charge was used there should be information and tools for consumers that allows consumers to respond to the signals. Pulse stated that current metering technology infrastructure does not provide real time data to retailers at an ICP level. Pulse stated that this would suggest that a different approach to what is required by retailers would be necessary, and it is not clear by whom or how this investment would be achieved and who would meet the cost.

Communication and transition

6.354 Alpine submitted that it is important to gauge local reaction to the replacement of consumption charges with demand charges, before embarking on tariff reform.

6.355 Alpine advised that another factor to consider when assessing pricing options is the impact on individual consumers to a change in cost recovery. According to Alpine, it is complex to determine the impact on each consumer, and it is likely that a change in cost recovery will negatively affect some consumers more than others. Alpine stated that in some cases the impact on an individual consumer cannot be justified, which creates complexity in how pricing structures should be altered if at all.

6.356 Contact submitted that a move to service-based prices might result in winners and losers; this may need to be phased in over time. Contact stated that significant thought needs to be given to what can be done to assist those most vulnerable consumers in the event of any change.

6.357 Flick submitted that consumer engagement is critical and that distributors should obtain consumers views and communicate early and clearly about any pricing structure changes. Flick also submitted that there could be a transition phase to move to service-based pricing. Flick stated that it would be important to ensure that any transition is not unduly punitive to those consumers who have recently installed new technology and for who have made investment decisions based on existing pricing and pay back periods.

6.358 Meridian submitted that engagement with consumers and retailers would assist with working through different design options as well as timeframes required for transition. Meridian submitted that it is important the possibility of adjustments remains open to retailers, as the Authority proposes. Meridian submitted that competitive pressures would provide incentives for retailers to reflect price signals in their charges.

6.359 Mighty River Power submitted that it does not consider there are material barriers to moving toward more service-based pricing. Mighty River Power stated that the fact that it observes some distributors already doing so illustrates it is possible, although it agreed consumer education and a phased transition is critical. Mighty River Power expressed its support for the Authority taking a more hands-on approach to enable this transition through the development of a default distribution pricing methodology and further work on standardised tariffs.

6.360 Powerco referenced research (Stenner et al. (2015)) that showed that end consumers particularly dislike complex tariffs. Powerco submitted that it will therefore be important to communicate well with retailers and end consumers to ensure the reasons for tariff changes are understood, to help gain acceptance of the changes and, hopefully, achieve corresponding tariff adjustments by retailers. Powerco submitted that it is also important to ensure that changes are introduced incrementally, with only modest modifications at any one time, in order to achieve acceptance by end consumers.

6.361 Pulse noted that the Authority suggests that distribution companies should talk to consumers about pricing structures. However, Pulse stated that, as the Authority acknowledges, the contractual relationship is (generally) between the distributor, the retailer, and the consumer (in most instances). Pulse observed that the Authority has previously been critical of the mixed communication between distributors and retailers and that submitted that changes such as those indicated by the Authority would be a major challenge to communicate.

6.362 Vector generally agreed that distributors should consider consumer preferences. Vector submitted that anytime-consumption pricing is well understood by residential consumers and is within their control to influence for reducing total charges. Vector submitted that demand and capacity charges, while better reflecting network congestion, are more sophisticated units of measure, less well understood, and therefore may be considered less controllable by consumers.

6.363 Vector generally agreed that distributors need to engage with consumers, including retailers. Vector stated that a change in pricing structures will inevitably bring about transaction costs for both end consumers and retailers. Vector submitted that the best intended service-based pricing structure will fail to deliver the most optimal outcome if it not well understood by the consumer. Vector stated that the extent to which consumers will respond to the resulting financial impact would depend on individual circumstances, including their understanding of the causal impact between their usage decision and their electricity bill.

6.364 Vector generally agreed that any material change to pricing structures might need to be gradual. Vector believes the most appropriate transitional path may be achieved through the Authority's alternative example, where consumers who are newly connected to the grid are subjected to service-based pricing structures. Vector stated that new consumer connections would neither gain nor lose from the service-based pricing structure as there is no direct comparison to be made.

Incentives on distributors

6.365 Contact submitted that in order for this for service-based prices to be successful there is also a need for more prescriptive application of this pricing. Contact stated that a move to consistently apply pricing review timeframes, service-based pricing, measurement of peaks (e.g. monthly, annual) with phase-in periods and well-resourced education campaigns would help consumers.

6.366 The ENA agreed with the Authority that distributors have strong commercial incentives to restructure their prices to reflect changes in consumer behaviour and more diverse usage patterns. The ENA submitted that as a corollary to this, there is no reason for the Authority to prescribe the structure of prices.

6.367 ETNZ supported ENA's work to review pricing structures. ETNZ stated that unless significant market failures become apparent it believes that much more durable consumer-focused outcomes can be expected from a dialogue between distributors and other participants, rather than from a regulator-led exercise.

6.368 IPWEA submitted that the 11 distribution businesses that are owned by consumer trusts will value the benefits to the community more than the 17 owned by investors who are likely to be more resistant to change.

6.369 ITP submitted that while the AEMC's decision in Australia to provide non-prescriptive guidelines for the setting of service-based tariffs is understandable, it has resulted in the approval of network tariffs that are unlikely to be efficient or fair or voluntarily taken up by most customers.

6.370 Molly Melhuish submitted that as evolving technologies offer consumers the chance to compete with network services, lines companies need to consider consumer preferences first, otherwise companies are vulnerable to the consumer-driven death spiral.

6.371 Ms Melhuish also submitted that consumers should have information and tools to respond to new pricing signals consumers should have incentives and corresponding tools to choose one or more of:

(a) control kWh demand

(b) control kW demand, without or preferably with notification of critical times; the latter more valuable

(c) reduce power factor in locations where this adds significant costs

6.372 Powerco agreed that distributors have commercial incentives to reform their tariff structures to make them more cost-reflective, typically by introducing peak period time or use charges or peak demand based charges.

Question 9: What needs to occur for distributors to amend their distribution pricing structures to introduce more service-based pricing?

6.373 Thirty-one submitters responded to this question.

6.374 ETNZ stated that its views on this issue are outlined in its response to question 1.

6.375 No response to this question was received from Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ and Trustpower.

6.376 Submitters identified a number of things that need to occur for distributors to amend their pricing structures to introduce more service-based pricing.

Stakeholder engagement and communication of change

6.377 Several submitters made points relating to communication of the change to service-based pricing, and management of consumer impacts.

6.378 Alpine stated that price shock is a concern, and stated that it will need to gauge consumer reaction to this charge (from consumption to a demand only charge) and determine the impact on individual consumers before introducing a demand charge. Alpine submitted that it could not definitively say that it will move to demand charges until further investigation is carried out on the effect on individual consumers.

6.379 Auckland Airport stated that a strong and early market signal that service-based pricing is the direction the industry will move would enable a short transition period, assisting simplicity and benefitting the customer by supporting transparency and stability and minimising disruption.

6.380 Contact stated that in some cases moving to service-based pricing will mean a large change in the way residential customers think about and use energy. Contact submitted that significant consideration needs to be given to ensuring:

(a) appropriate assistance is in place for those vulnerable consumers who are impacted

(b) technology is in place to assist consumers with monitoring and controlling their electricity

(c) any change is well communicated.

6.381 MEUG submitted that the Authority needs to define what the transition path towards service-based pricing would look like and a timeline for a range of scenarios. MEUG stated that for each scenario, the Authority needs to describe the end-game service-based price structure, the time to transition to the final prices and changes in annual cost on a range of households, eg average, low and high demand households with and without gas. MEUG submitted that the Authority could develop these scenarios in conjunction with distributors, retailers and consumers.

6.382 Molly Melhuish submitted that the primary requirement for the necessary change is culture change. Ms Melhuish stated that the culture-change needed now is to recognise that the regulated former monopoly needs to cooperate with its competitors, using the evolving technologies to reduce actual costs on both sides, for the true long-term benefit of consumers.

6.383 Powerco stated that the Authority could also help to communicate to end consumers the rationale for amending tariffs. Powerco submitted that the Authority's independent status could help to assure consumers that the changes were well justified.

6.384 PwC submitted that there is also an important role for other stakeholders in the development of service-based pricing. PwC stated it is important to have:

(a) effective consultation with, and education of, consumers about pricing reform. PwC stated that the Authority could support this objective with initiatives to educate and raise public awareness in support of distributor initiatives

(b) retailer co-operation, in designing service-based pricing, passing through distribution pricing signals, and in billing

(c) appropriate access to time-of-use meter data for pricing development and billing purposes

(d) alignment of transmission pricing structures to distribution charges.

6.385 SEANZ submitted that an initiative such as this needs to be led by the Electricity Authority, and involve meaningful consumer participation as well as the traditional supply side stakeholders.

Options and approaches

6.386 Nova submitted that distributors need appropriate incentives at a corporate governance level to respond to the market needs.

6.387 Pioneer submitted that the implementation of a standard definition of all the 'services' offered by distributors is needed to help a transition to more efficient distribution tariffs. Additionally, Pioneer submitted that the establishment of a fair charge for services that provide the same outcome that may be delivered by the distributor, consumers or independent third parties would also help.

6.388 Pulse stated that as some distributors already use implied demand or capacity charges for distribution pricing it would appear that nothing needs to change. However, Pulse submitted that where this pricing is used and defined at the GXP level, it is necessary to make significant assumptions about how the pricing should be reflected to consumers.

6.389 SEANZ stated that distributors need to be able to deliver variable time-of-use signals and prices directly to individual ICPs on their network. SEANZ submitted that they need to be able to collect the revenue based on network usage and stated that:

(a) it should technically easy to do with smart metering technology

(b) they need the cooperation of retailers to pass these charges on directly, or a regulatory change

(c) they need guidelines on what is acceptable as a ratio of capacity vs energy conveyancing charges for different network regions, eg where load is static, declining or increasing and how these should be applied

(d) the LFC Regulations need to be retained to protect poorer consumers, but it would become largely irrelevant, as it would be eventually replaced by variable consumption charges.

6.390 Solarcity stated that a suite of approaches to encourage distributors to develop pricing structures that are modern, would encourage the uptake of new technology and encourage innovation.

6.391 Solarcity submitted that one method is to encourage a set of pilot approaches in different parts of the country involving companies, researchers and consumers. According to Solarcity, this this initiative could build on the work of the Smart Grid Forum and the MBIE-funded Green Grid programme. Solarcity submitted that it should draw on work in other countries where the electricity regulators are focused on how to bring new technology into the electricity sector.

6.392 Solarcity stated that the evolution of electricity distribution rates will require a combination of:

(a) The application of technology.

(b) Policy settings.

(c) Increased capacity within distributor.

6.393 Solarcity proposed an evolutionary approach:

(a) initially, time-of-use pricing. Solarcity stated that to some degree time-of-use pricing is started to be adopted in New Zealand, for example, Flick Electricity is making the wholesale price visible and meaningful to consumers. In the longer term, Solarcity advocated for a move to real-time pricing at the distribution level that consumers can respond to

(b) demand charges initially moving to attribute-based (i.e. reflecting time and location) pricing in the long term

(c) distribution hot spot credits initially. Solarcity recommended distribution locational marginal pricing in the long term.

6.394 Unison's main concerns around successful implementation of service-based pricing related to:

(a) revenue risk

(b) re-bundling of distribution prices by retailers

(c) consideration of the consumer perspective

(d) retailer billing systems and varying prevalence of AMI metering, and

(e) regulatory constraints.

6.395 In Vector's view there is no one 'right' pricing structure, distributors must be given the regulatory flexibility to able to adopt the right approach for their particular circumstances.

6.396 Wellington City Council submitted that a broad view needs to be taken and strategies implemented to bring pricing structures close together between distribution companies. The Council believes that wherever possible, network companies should have the same pricing structure.

Retailer re-bundling of distribution price structures

6.397 Counties Power stated that it would very easy to introduce service-based pricing. Counties Power submitted that the difficulty occurs in seeking retailers to adopt the pricing structure. Counties Power questioned whether the Authority would accept distributors imposing service-based pricing structures that would not be compatible with retailers billing systems or internal line charge reconciliation.

6.398 John Crook stated that energy retailers will need to be shown what distributors are doing to introduce more cost-reflective tariffs and encouraged to pass these pricing structures through to consumers.

6.399 Powerco submitted that the Authority could also work with retailers to help identify how best to encourage them to pass through cost-reflective distribution tariffs to end consumers, given the commercial incentives on retailers not to do so, since most end consumers prefer familiar flat rate tariffs even if these may result in higher charges overall.

Address regulatory risks and barriers

6.400 Embrium stated that to enable the fairest service-based pricing, it may be necessary to remove the LFC tariff option, as it is not a fair reflection of the actual impact of an individual customer on the network.

6.401 The ENA submitted that the role of the Authority is to enable distributors to respond to commercial incentives by identifying and to the extent possible reducing or removing the regulatory risks and barriers associated with adopting a price structure that reflects the cost of providing distribution services to a consumer.

6.402 Genesis submitted that a strong public statement from the Authority as to the application of the LFC Regulations is needed to aid transition to more efficient price structures.

6.403 IPWEA stated that some distribution companies are interpreting the Commerce Commission and Electricity Authority requirements to disclose public lighting pricing methodologies and statistics fully, while others are not. IPWEA submitted that stronger regulatory oversight or intervention is therefore required.

6.404 ITP stated that in essence, distributors need to be provided with the right incentives, the right guidelines. ITP submitted that if guidelines are broad and non-prescriptive they could result in network tariffs that are unlikely to be efficient or fair or voluntarily taken up by most customers.

6.405 ITP recommended that the incentives for service-based pricing be based on transparent analysis of actual data, and include the principle of fairness, not just economic efficiency.

6.406 Meridian considered further information and clearer, more detailed analysis is required on how LFC Regulations allow for service-based charging.

6.407 Molly Melhuish stated that “service-based pricing” needs to be defined and implemented in a way that protects both corporate and community resilience in a world facing increasing threats including climate change, cybersecurity, and vulnerability to investor-state disputes. Ms Melhuish asserted that technology, regulation, and even electricity laws would have to change to mitigate those threats.

6.408 Network Tasman submitted that key requirements are certainty around regulatory rules in respect of the LFC Regulations and Part 6 of the Code.

6.409 Orion submitted that distributors need certainty that they can reflect actual cost structures and therefore reduce consumption based charges so that different energy sources can compete on a level playing field.

6.410 Pioneer submitted that clarity about the application of the LFC Regulations will help distributors to introduce more efficient tariffs.

6.411 Powerco stated that the Authority could assist distributors by working with MBIE to modify or rescind the LFC Regulations. Powerco submitted that the Authority could act to amend or revoke the pricing principles in Schedule 6.4 to Part 6 of the Code and update or revoke the schedule of fees in Schedule 6.5 to Part 6 of the Code, as the fee ceilings set are often not cost-reflective. Powerco noted that the Authority is intending to undertake a full review of Part 6 of the Code.

6.412 Vector submitted that they must not be unnecessarily constrained by regulations such as the LFC Regulations.

6.413 WEL would like to see the Authority assist by reducing or eliminating any compliance or other regulatory risks.

Oversight of progress

6.414 Meridian submitted that if a voluntary implementation approach is to be adopted, we consider ongoing monitoring and regular (yearly or two-yearly) published Authority assessments of distributor pricing principle alignment will be an important part of incentivising service-based methods of charging.

6.415 MEUG submitted that Authority should monitor the transition to service-based pricing and compare with the pre-defined expected level of progress. If progress is poor then MEUG submitted that options such as mandatory approaches should be considered. MEUG stated that the initial targeted transition paths might need to be reviewed in light of actual experience.

6.416 Mighty River Power stated that distributors, as natural monopolies, should be subject to regulatory oversight and standardised pricing. Mighty River Power submitted that all distributors should have a consistent timeframe for transition to service-based pricing. Mighty River Power would support the Authority playing a facilitating role in establishing standardised pricing, transition, implementation and post-implementation reviews.

Metering technology and access to data

6.417 Alpine, Embrium, Flick, ITP, John Crook, Network Tasman, Powerco, and Pulse submitted points relating to the importance of advanced metering infrastructure, access to data, and associated system capability.

6.418 For example, Flick submitted that for distributors to be able to amend their pricing and to introduce more service-based pricing (by way of transparent, fair, pass through pricing – including strong price signals) there would need to be widespread AMI installed.

6.419 John Crook stated that it would be helpful if all energy retailers offered real-time online power usage information (as some do already) so that consumers can track their usage and associated costs and savings. Mr Crook submitted that this could be followed by encouragement to move to efficient pricing, or maybe even a requirement imposed through the Electricity Authority's pricing principles. If these measures fail, Mr Crook submitted that the Electricity Authority should use its powers under s.32(2)(b) of the Electricity Industry Act 2010 to impose such a pricing structure and to remove structures that do not promote economic efficiency.

6.420 Pulse submitted that if a peak charge was introduced at an ICP level it would require changes in data provision (and metering where no advanced or demand capable meter exists) with associated costs. In the mass market, Pulse stated that retailers are generally processing aggregate kWhs at the ICP level and are not necessarily using half-hourly data even where it could be available. Pulse submitted that the reasons for this are complexity and cost; it is not costless to use and process the significant data that is produced at the half-hourly level.

6.421 In relation to the observation made in the consultation paper that some distributors are moving and signalling moves towards time-of-use based pricing, Pulse stated that not all billing systems are likely to be capable of mass-market scale time-of-use billing. Pulse submitted that this would place retailers in the position of choosing to invest in billing systems, averaging costs or ceasing to operate on certain networks.

Question 10: Would a change to the applicable rules encourage change to pricing structures?

6.422 Twenty-nine submitters responded to this question.

6.423 IPWEA stated that its views on this issue are outlined in its cover letter.

6.424 John Crook stated that his views on this issue are outlined in his response to his previous answer.

6.425 Meridian stated that its views on this issue are outlined in its response to question 9.

6.426 No response to this question was received from AECT, Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Pulse Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.427 Submitters identified a range of changes to the applicable rules to encourage change to pricing structures.

Address regulatory risks and barriers

6.428 Alpine submitted that the LFC Regulations still cause it concern; but that it is encouraged by the Authority’s interpretation of ‘variable charges’.

6.429 Counties Power stated that changing the rules that required the retailer to pass-on the price signals to the end consumers would encourage distributors to investigate charging options that delayed future infrastructure investments. Counties Power submitted that in the long-term, this would result in increased network utilisation and lower costs to the end consumer.

6.430 ETNZ submitted that distributors would not be obliged to pass on the costs of sub-optimal investments caused by the ‘obligation to maintain supply’ to wildly uneconomic remote loads, if this rule were relaxed. Similarly, ETNZ stated that it is inefficient for the costs of imprudent transmission investments to be passed through to distributors. ETNZ submitted that thought could be given to the current relevance of the nodal pricing rules now that distributed generation is emerging as the dominant marginal investment option.

6.431 Molly Melhuish stated that the changes above would probably require a change to the LFC Regulations to promote variable capacity charges and variable demand charges to be charged as daily charges. Ms Melhuish stated that in any district these must be trialled first at a pilot level and that the detail must reflect the actual cost structure of each lines company, and must be trialled in stages before widespread use in each lines district.

6.432 Ms Melhuish submitted that a simple alternative must always be available for consumers who value convenience over bill minimising; the fairness of that must be independently assessed. Ms Melhuish submitted that the simple tariff would probably be similar to today’s LFC tariff, with the unit rate increased as necessary to recover costs incurred by that consumer (individual or aggregate consumer.)

6.433 Orion submitted that it is keen to better understand the Authority’s position on the LFC Regulations. Orion stated that there are likely to be substantial transition and setup costs in moving to a different pricing approach, so confidence that the approach is compliant is needed to avoid wasteful investment. In this regard, Orion stated that it would be useful, and materially reduce transaction costs, if the Authority, as the compliance agency, issued some more detailed guidance as to what is and is not acceptable. Orion submitted that it would also be useful if the Authority could ‘pre-approve’ specific examples put to it.

6.434 Powerco submitted that the Authority could assist distributors by working with MBIE to modify or rescind the LFC Regulations. Powerco stated that while the Authority appears not to believe that the regulations constrain distributors’ ability to amend their pricing structures it does not think this is entirely true, and the fact that many distributors believe that the regulations constrain their ability to reform aspects of their pricing itself represents an impediment to change.

6.435 Powerco also submitted that the Authority could act to amend or revoke the pricing principles in Schedule 6.4 to Part 6 of the Code and update or revoke the schedule of fees in Schedule 6.5 to Part 6 of the Code, as the fee ceilings set are often not cost-reflective. On this point, Powerco expressed appreciation that the Authority is intending to undertake a full review of Part 6 of the Code and such changes may result from this review.

6.436 PwC submitted three points relating to addressing regulatory risks and barriers:

(a) that the Authority could provide further guidance and clarification on how distributors can adopt service-based pricing that complies with the LFC Regulations, recognising the complexity and potential ambiguity in the interpretation of these regulations

(b) that the Authority could clarify whether service-based charges (i.e. a demand charge), when applied equivalently to connections with and without solar DG, are compliant with the Part 6 DG pricing principles

(c) that the Authority could work with the Commerce Commission to resolve issues that may arise under price path regulation and to align pricing methodology disclosure regulation with the Authority’s information disclosure guidelines.

6.437 Vector submitted that repealing the LFC Regulations to increase distributors’ options for adopting more service-based pricing would further encourage a change to pricing structures. Vector also submitted that changing the Default Price Path to remove the risks of breaching the price path or under-recovering revenue would further encourage a change to pricing structures.

Views on applicable rule changes

6.438 Auckland Airport stated that prescriptive changes to the rules can result in unintended consequences that do not add value to the system and could obstruct the best intentions of participants. Auckland Airport submitted that guidelines or principles that participants are strongly encouraged to remain consistent with, would enable distributors to localise their implementation accounting for each micro network’s attributes and requirements to deliver the right outcomes for the network and market overall.

6.439 Embrium stated that since many networks have relieved themselves of metering responsibility, perhaps they should also be relieved of load-control responsibility.

Embrium submitted that this would force networks to manage capacity and demand solely through pricing signals and communication with other parties.

6.440 The ENA noted the Authority's view that the regulation of distribution prices can be simplified to ensure two outcomes are achieved: (a) the level of distribution prices is consistent with what would be expected in a workably competitive market (b) the structure of distribution prices is consistent with what would be expected in a workably competitive market.

6.441 The ENA did not agree that the regulations that apply to distribution pricing are limited to these two objectives. The ENA stated that regulation by the Commerce Commission under Part 4 of the Commerce Act is focused on (a) and there are a number of deviations from (b) including the LFC Regulations, Part 6 of the Code, and the practical application of the Authority's pricing principles.

6.442 The ENA submitted that the role of the Authority in this review should be to enable distributors to respond to commercial and competitive incentives by identifying and to the extent possible reducing or removing the regulatory risks and barriers associated with adopting a price structure that reflects the cost of providing distribution services to a consumer.

6.443 Flick believes that service-based pricing should be passed in the form of time-of-use consumption pricing and that there should be a nationally consistent time-of-use pricing structure that is easy to understand by customers.

6.444 Genesis submitted that this issue needs to be discussed in Authority facilitated workshops with all participants.

6.445 Grey Power submitted that parties might need encouragement. Additionally, Grey Power stated that there needs to changes to the pricing and charges for Distributed Generation so that those generators are also paying the true costs and receiving the true value of their product. At present, Grey Power submitted that they are not paying their way and in most cases receiving returns above the true value of the product they are putting into the grid.

6.446 ITP submitted that it is important to acknowledge that, with the advent of cheaper solar PV, batteries, and of course demand side management, to some extent the functions of a network can be provided by alternatives. ITP stated that this competition means that networks are no longer pure monopolies and so should not be regulated as such. ITP considered that the emphasis should not be on ensuring the distributors' future revenue stream based on an old business model, but rather should be on regulations that increase competition in the market – hence driving down costs and increasing society-wide economic efficiency and welfare. ITP stated that these changes extend well beyond service-based tariffs to all the other aspects related to the entry of new technologies into the market and, in some cases, their connection to the network.

6.447 MEUG submitted that if distributors make no material progress to effectively transition to service-based prices with tariffs that come into effect 1st April 2017 then the Authority should consider mandatory approaches in the Code.

6.448 MEUG stated that one mandatory approach would be to set default tariff codes depending on certain market factors such as state of the local network and expected future etc. with distributors required to transition to those within a certain timeframe except where agreement was reached with local customers to have different arrangements or retain existing tariff structures.

6.449 In this case, MEUG stated that Code amendments would be gazetted after consultation during 2017/18 and implementation would affect tariffs starting 1st April 2019. MEUG observed that 1st April 2019 is also when any changes to the existing TPM are likely to be implemented.

6.450 Mighty River Power submitted that there might be a need to consider rule-changes to enforce the adoption of a default pricing methodology or standardised tariffs, depending on how much progress can be made on a facilitative approach. Mighty River Power observed that the Authority will be monitoring progress and if there is little progress in the course of the next 12 months it would support the consideration of rule change proposals.

6.451 Network Tasman considered that a change to the applicable rules, which permitted efficient pricing structures such as capacity prices and peak demand prices, would encourage changes to distributors' pricing structures.

6.452 Pioneer stated that it is unclear what the "applicable rules" are that could be changed.

6.453 PwC submitted that there needs to be an investigation into whether market related systems and Code requirements are capable of handling a mass deployment of batteries, solar PV, and service-based charges.

6.454 SEANZ submitted that this question of whether a change to the applicable rules encourage change to pricing structures needs to be explored as part of the first stage of an Authority led project on dynamic distribution pricing.

6.455 Solarcity asserted that a low percentage of distributors currently follow the information disclosure guidelines or the pricing principles. Solarcity submitted that it may be more effective to undertake demonstrations and pilots that can provide opportunities for learning.

6.456 Solarcity stated that this approach is based on a paradigm that the electricity sector is about to go through a significant change and that the current paradigm is unlikely to deliver the benefits new technology can bring. Solarcity submitted that the rules need to be developed in relation to this new paradigm.

6.457 Unison submitted that changing Code and/or regulation would not in itself address the implementation concerns, such as billing systems, the incentives for retailers to re-bundle charges that are linked to consumers' preference for simple, flat tariffs.

6.458 WEL stated that the area of most benefit might be the rules around metering and data capability. WEL noted that the Authority is scheduled to mandate Use of System Agreements and this might be an area to give effect to mechanisms to provide additional support to distributor's initiatives to change their pricing structures. WEL submitted that the traditional provision of metering services by retailers might need to be opened up to alternatives where retailers are unable or unwilling to accommodate new requirements in support of new pricing structures.

Question 11: What incentives could be introduced to encourage change?

6.459 Twenty-six submitters responded to this question.

6.460 John Crook stated that his views on this issue are outlined in his response to his previous answer.

6.461 Meridian stated that its views on this issue are outlined in its response to question 9.

6.462 Contact stated that its views on this issue are outlined in its response to question 12.

6.463 No response to this question was received from AECT, Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Grey Power, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, MEUG, Mighty River Power, Nigel Clarke, NZ Energy, Pulse Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ and Trustpower.

6.464 Submitters identified a range of incentives that could be introduced to encourage change.

Views on incentives

6.465 Auckland Airport submitted that service-based pricing design is a good practice that, if designed and implemented effectively, should drive fair and equitable funding of a network by the recipients of its benefits.

6.466 Flick does not believe that there should be subsidies to encourage change. Rather, Flick submitted that distribution (and retail) companies implementing tariffs that send real time price signals would lead to positive benefits to network companies – and consumers alike.

6.467 IPWEA stated that incentives might be complex to structure, monitor and ensure they are efficient. IPWEA stated that existing tools that both the Commerce Commission and the Authority have at their disposal would be sufficient.

6.468 ITP submitted that in addition to service-based pricing, there are a number of incentives that could be implemented and changes that could be made that would encourage change. ITP submitted that recent regulatory changes in Australia are relevant to New Zealand and that although all these reforms are certainly worth pursuing their effectiveness to date in driving alternatives to traditional networks in Australia appears to be limited. ITP submitted that these include:

(a) the requirement for a distribution annual planning report and a demand side engagement strategy

(b) the Demand Management and Embedded Generation Connection Incentive Scheme and

(c) the Regulatory Investment Test – Distribution

6.469 ITP asserted that it is likely that by encouraging third party entry into distributed generation and DSM, effective ‘service-based’ pricing could encourage NSPs to also enter this market for fear of losing market share. ITP stated that solar power purchase agreements (PPAs) provide an interesting corollary. ITP stated that the submissions by electricity retailers to the Australian Energy Regulator's review into alternative energy sellers make it clear that they see solar PPAs as a threat to their business models. ITP stated that Origin Energy, AGL and EnergyAustralia have now launched solar PPAs with battery storage themselves.

6.470 Network Tasman agreed that there are already strong incentives. Other than efficient price structures, Network Tasman did not consider there to be a need for any other incentives need to be introduced.

6.471 Nova submitted that it prefers to see high-level incentives rather than prescriptive regulation, it stated that it is difficult to get distributors to respond positively to market signals. Nova stated that in some cases that is simply a result of lack of scale and limited resources, but also reflects conservative approaches to risk and rate shocks when charging structures are changed.

6.472 Molly Melhuish stated that incentives for all NZ society to encourage efficient adoption of new technologies could be used, including:

(a) Independent research to better understand customer viewpoints on both pricing and new technologies.

(b) Funding of development of innovative information systems, such as use of smart phones to replace the costly and inflexible Home Area Networks.

(c) Funding of pre-commercial development of advanced gasifier burners with heat storage.

(d) Together with rooftop solar and batteries, efficient wood burning offers the greatest potential to create resilience and climate change mitigation, while satisfying the wish of many consumers to be more independent of centralised electricity or gas supply, or to enjoy a focused radiant heat source.

6.473 Orion thought that the Authority is correct when it stated that distributors have strong incentives to improve the cost reflectivity of pricing. Orion could not think of any additional incentives available to the Authority that could usefully be applied.

6.474 PwC considered that distributors already have incentives to progress pricing reform as it is in their commercial interests to respond to the opportunities and challenges arising from evolving technology change.

6.475 SEANZ submitted that influential and strong leadership by the Authority would help encourage change. SEANZ stated that conducting a project with clear public benefit objectives and the threat of tougher regulation if distributors cannot reach agreement on a consistent dynamic pricing approach would also introduce incentives for change.

6.476 SEANZ stated that this should be offset by a meaningful incentive that provides assistance for distributors to secure traction. SEANZ submitted that particularly proactive distributors could be selected to undertake pilots.

Address regulatory risks and barriers

6.477 Alpine submitted that to encourage change, the Authority could give more detail on its interpretation of 'variable charges' in the LFC Regulations. Alpine stated that clarification on whether the retailer alone can encourage consumers to reduce consumption and move into the low user group without the help of distributor consumption charges (if the distributor replaced consumption charges with demand) would be of particular use to distributors. Alpine stated that this could potentially leave the distributor out of the LFC Regulations.

6.478 Counties Power stated that a requirement under the Code for retailers to pass through the distributors' price signals to consumers would provide the appropriate incentives. Counties Powers submitted that this would enable consumer owned distributors an immediate incentive because the network infrastructure savings would be passed on to their customer base through the avoidance of future price escalations. However, Counties Power stated that for the non-consumer owned distributors changes to the Commerce Commission price path models may be required to enable the distributors to retain all, or some of, the increased profit from the longer-term improvement in network utilisation would likely be the best incentive.

6.479 Embrium questioned whether the Authority could permit network companies to cease offering an LFC option if they move to a pure capacity/demand pricing arrangement.

6.480 The ENA submitted that the Authority should focus on identifying and removing regulatory risks and barriers to adopting service-based or cost-reflective price structures.

6.481 ETNZ stated that more flexibility in the Commerce Commission's price control arrangements aimed at removing the uncertainties caused by trialling then applying new pricing structures would be useful.

6.482 Molly Melhuish stated that a change to the LFC Regulation to enable variable capacity and demand charges as an option (but not imposed) would provide distributors with incentives to change.

6.483 Orion submitted that clarification of the LFC Regulations would introduce incentives to change.

6.484 Powerco submitted that encouraging retailers to pass through cost-reflective distribution tariffs would encourage change.

6.485 Vector submitted that it is confident that following the repeal of the LFC Regulations and changes to the Default Price Path, commercial incentives driven by changing consumer preferences and emerging technologies will be sufficient to encourage distributors to adopt service-based pricing structures. Vector is not confident that retailers will pass price signals on to consumers. Vector submitted that intervention such as mandatory itemising of distribution prices on consumer bills might be required.

6.486 WEL submitted that the Authority could advocate for an update to the parameters within the LFC Regulations to lessen or redress their increasing capture as average consumption volumes have fallen.

6.487 Wellington City Council submitted that the monopoly arrangements in place do not encourage distributors to encourage consumers to manage their demand and keep their infrastructure cost to a minimum. The Council wondered if research has been done into ways of achieving this either in other parts of the world or by developing a way to achieve it in New Zealand. The Council submitted that network companies are not the only influences of consumer behaviour and that viewing the network companies in isolation will probably therefore not be the whole answer. The Council proposed a few options. These included:

(a) Electricity pricing to encourage outside peak demand, such and a time-of-use tariff for residential and small business

(b) Reliability and affordability of energy efficient and load shifting technology

(c) Carbon charges, if they become significant could influence consumer decision making.

Other suggestions

6.488 Genesis submitted that the incentives on distributors should be discussed in workshops with all participants and facilitated by the Authority.

6.489 Solarcity recommended that the Authority support the development of pilot initiatives and encourage a programme of information exchange both nationally and internationally.

6.490 Unison submitted that the implementation of service-based (demand) charging will require regulatory leadership to educate customers, and overcome retailer resistance (e.g. commercial interests). Unison submitted that long-term changes towards service-based pricing need to be industry-wide and not just reliant on distributors. Unison stated that retailers are crucial because they hold the relationship with consumers. Unison submitted that Regulators and policy-makers' roles are also critical to provide important communications to consumers and to ensure regulations support and enable service-based pricing.

6.491 Pioneer submitted that a more holistic approach to adopting new low carbon technologies should be implemented to ensure New Zealand achieves its international commitments to reduce greenhouse gas emissions. Pioneer stated that this would require the Authority to take into account government policy and targets.

Question 12: What other options would ensure distribution pricing structures are service-based?

6.492 Twenty-five submitters responded to this question.

6.493 Alpine stated that its views on this issue are outlined in its response to questions 10 and 11.

6.494 Meridian and Unison stated that their views on this issue are outlined in their responses to questions 9.

6.495 Powerco stated that its views on this issue are outlined in its response to questions 9 to 11.

6.496 PwC stated that its views on this issue are outlined in its response to questions 9 and 10.

6.497 No response to this question was made by AECT, Auckland Airport, Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, ETNZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, IPWEA Australasia, John Irving, LGNZ, Malcolm McQueen, MEUG, Nigel Clarke, NZ Energy, Pulse Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.498 Submitters suggested a range of options to ensure distribution pricing structures are service-based.

Specific pricing approaches

6.499 Embrium submitted that individual behaviour is remarkably responsive to the power of pricing signals. Embrium stated that rather than explicitly forbidding certain types of connections or discriminating between different types of load, distribution companies should be encouraged to attach prices to all network activities, leaving it up to the consumer to decide what to do in their interest.

6.500 Flick submitted that connection charges when for instance, solar is installed is an additional option that would ensure distribution price structures are service-based.

6.501 Grey Power submitted that demand charges, capacity charges and time-of-use pricing should be introduced now.

6.502 John Crook stated that time-of-use based consumption pricing could easily meet the objectives of efficient pricing. Mr Crook stated that a mixed system (as he interprets the meaning of the Authority's service-based concept) risks causing confusion amongst consumers and is in his opinion, not as likely to fully accomplish the desired goal of efficient pricing.

6.503 Mighty River Power welcomed a shift toward more service-based pricing. However, Mighty River Power considered a simpler approach, yet equally effective, would be to mandate that a greater proportion of network charges to be fixed rather than variable. Mighty River Power appreciated this would need to be subject to the constraints of the LFC Regulations being removed and an alternative policy measure being implemented.

6.504 Molly Melhuish submitted that the main missing tariff option is critical peak pricing. Ms Melhuish stated that the main missing consumer option is efficient wood burning. According to Ms Melhuish, both of these suggest pricing structures which reward consumers for reducing system-wide distribution costs, namely both real-time peak, and critical-peak pricing, and dry-year conservation "deals" (to replace the Official Conservation Campaigns recently foreshadowed by Transpower).

6.505 SEANZ submitted that the detailed costing of distribution infrastructure is complex and difficult to understand. SEANZ stated that it would be helpful to have a commonly agreed simplified model that illustrates the principles used to assess capacity costs against energy volume costs in a way that is understandable to policy makers and consumers alike.

6.506 SEANZ submitted that one high level way of assessing the appropriate split of distribution costs between volume and capacity, is to use the notion of network load capacity factor. In SEANZ's view, the best way to ensure that distribution pricing is service-based is to charge at individual ICP level both for energy conveyed and for the use of system capacity in an appropriate cost allocation ratio. According to SEANZ, this implies that ideally, time-of-use charging is applied to both costs.

6.507 SEANZ submitted that those who use this energy service more than others, including outside of peak hours as well as during them, should pay more. SEANZ asserted that it is therefore essential to retain a significant energy volume based charge, to reflect the overall energy consumption of customers using the network service. SEANZ stated that because coincident demand results in high capacity costs, it is also essential for service-based pricing that time-of-use of capacity is charged accordingly. SEANZ provided a worked example of how pricing could be constructed using a network load factor pricing model in its submission.

6.508 Wellington City Council stated that if a time-of-use tariff were widely available and suitably priced for electricity, this would make a service-based distribution charge regime more of a possibility for most areas. The Council submitted that if the electricity tariff is considered as entirely separate from network costs, then a system where the majority of the distribution costs met by way of a fixed daily charge is more equitable.

Regulatory changes

6.509 Contact submitted that the best option to ensure a move to service-based pricing comes from a more prescriptive approach to the principles such as incorporating the pricing principles into the Code.

6.510 Contact notes that this approach could include a requirement for distributors to submit their pricing proposals to the Authority for release on their website, with comment sought by consumers and industry participants and, following submissions, the ability of the Authority to assess and approve (or reject) the proposal for compliance with the pricing principles in the Code. Contact submitted that this would provide an open and transparent consultation process and ensure pricing structures, and future changes, are consistent with the pricing principles.

6.511 Contact stated that leaving the move to service-based pricing to distributors is likely to result in 29 different approaches, with varying degrees of "service-based" pricing being adopted. Contact submitted that this would also result in unnecessary tariff complexity, which will be difficult to communicate to customers and will take too long.

6.512 Counties Power submitted that the Authority should modify the Model Use of System Agreement so that it states that retailers should seek to adopt any distributor service-based pricing, promote the pricing to their customers, and require the retailers to reflect the pricing in their final pricing to the customer. Counties Power stated that while this would not enforce the requirements on the retailers it would ensure that distributors have a better negotiating position for ensuring the adoption of the terms in their Use of System Agreements.

6.513 The ENA submitted that the Authority should focus on identifying and removing regulatory risks and barriers to adopting service-based or cost-reflective price structures while recognising that consumer preference may militate against fully cost-reflective price structures.

6.514 Network Tasman identified regulatory constraints (and a lack of clarity around the regulations, especially the LFC Regulations) as a key reason why the more service-based pricing is available to large commercial consumers is not widely available to smaller consumers.

6.515 Nova stated that requiring distributors to establish optional demand based tariffs for all ICPs where the retailer is able to provide half hour meter data. According to Nova, such a requirement would allow the retailer and consumer to agree the basis on which they would be charged for their connection. Nova stated that over time, all being equal, most consumers could then be expected to move to this basis and that this should also provide consumers with an incentive to have AMI meters installed.

6.516 Orion submitted that Part 6 of the Code needs to be consistent with the wider regulation of distribution pricing. Orion submitted that Part 6 creates uncertainty about whether and how distributed generators can be required to contribute to common or forecast costs.

6.517 WEL submitted that it would like to see the Authority assist by reducing or eliminating any compliance or other regulatory risks, such as LFC constraints, need to be addressed before efficient price can be set.

6.518 Vector is confident that following the repeal of the LFC Regulations and changes to the Default Price Path, commercial incentives driven by changing consumer preferences and emerging technologies will be sufficient to encourage distributors to adopt service-based pricing structures. However, Vector is not confident that these pricing signals will be passed on to consumers by retailers, and suggests that mandatory itemising of distribution prices on consumer bills may be required.

Further stakeholder consultation

6.519 Genesis submitted that this question needs to be discussed in workshops with all participants and facilitated by the Authority.

6.520 ITP identified customer consultation as an option that would ensure distribution price structures are service-based.

6.521 Network Tasman submitted that industry collaboration is an important element in working toward distribution pricing structures that are service-based. Network Tasman expressed support for the Authority’s current consultation process.

6.522 Pioneer noted that clause 12A.7 of the Code requires distributors to consult with traders or consumers on a change to a tariff that materially affects one or more traders or consumers.

6.523 Solarcity submitted that some overseas jurisdictions are setting up working groups to explore new approaches at the distribution level. Solarcity submitted that New Zealand should do the same. Solarcity stated that the Smart Grid Forum and the Green Grid research programme could form the genesis of a working group to explore future directions for distribution policy in New Zealand.

Question 13: Do you have any suggested improvements to the distribution pricing principles in Appendix B? What are your views on the recommendations made by Castalia noted above and in Appendix B?

6.524 Twenty-seven submitters responded to this question.

6.525 No response to this question was made by AECT, Blueskin Energy, Bryan Leyland, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, IPWEA, John Irving, LGNZ, Malcolm McQueen, MEUG, Nigel Clarke, NZ Energy, Pulse Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, and Trustpower.

6.526 Submitters recommended a range of improvements to the distribution pricing principles and provided a range of views on the recommendations made by Castalia.

Suggested improvements to distribution pricing principles

6.527 Auckland Airport submitted that the principles are reasonable.

6.528 In Contact's view the principles appear largely fit-for-purpose so the main issue is the enforceability of the principles. Contact submitted that distributors are currently interpreting the pricing principles very differently, Contact would like to see the Authority use greater power in this space and move to a Code based approach rather than the current light handed "principles" based approach.

6.529 Contact recommended making the pricing principles more prescriptive. Contact submitted that other opportunities which could be considered include specifying that fixed charges (c/day) cannot be any higher than the actual level of operating cost in the business (for example 20% of total bill), and consumption based charges for capital recovery (e.g. $/kW) cannot be any higher than the LRMC of the network. Contact stated that this will ensure that network pricing structures reflect underlying costs, and result in a level playing field between existing networks and competition from emerging technologies.

6.530 Embrium submitted that the pricing principles do not mention the distortion created by the LFC Regulations. Introduced as a blunt instrument, Embrium submitted that it runs counter to many of the drivers behind service-based pricing.

6.531 The ENA submitted that the pricing principles themselves are not inherently unsound and that it would be concerned if the Authority gave absolute priority to cost-reflectivity over stability and certainty. The ENA agreed that cost-reflectivity is a desirable end-point, but submitted that stability and certainty are also important to consumers. The ENA stated that changes to distributors' price structures to become more cost-reflective should occur in a way that militates against significant consumer disruption and revenue risk.

6.532 The ENA submitted that the Authority should maintain an open mind about the extent to which the pricing principles are required to ensure an efficient distribution pricing structure in the face of emerging competitive pressure and the Part 4 regime (both ID and the price-quality path).

6.533 The ENA also stated that the Authority could use the pricing principles itself in its review of distribution price structures to add rigour to the discussion and improve understanding of how the Authority wishes them to be applied.

6.534 ETNZ believes that a principle could be added that the Authority would use all reasonable endeavours to ensure that distribution price reductions reach end users in full, and are fairly apportioned. ETNZ consider that this might help to avoid the all too familiar pattern of such reductions being ‘absorbed’ by retailers.

6.535 Flick believes that the distribution pricing principles are comprehensive and sound.

6.536 ITP noted that the Pricing Principles make only passing reference to the principle of fairness (in that changes to prices should have to the impact on stakeholders). ITP considers this a critical principle, especially when assigning responsibility for historical (sunk or residual) costs of the network. ITP submitted that by focussing purely on efficient allocation of the LRMC of augmenting the network inevitably results in unfair tariffs. ITP strongly recommend that fairness be formally incorporated into the Pricing Principles.

6.537 John Crook agreed in principle that the guidelines should be simplified.

6.538 Nova submitted that distributors are loathe to make changes to charging structures that lead to rate shock for some consumers, i.e. they give priority to ‘promote price stability’. Nova submitted that this is because increase in charges are obvious and lead to a reaction from the affected consumers and their retailers, while the benefits to pricing efficiency and to other consumers over time receive less attention. According to Nova, the result is that improvements in tariff structures tend to take a very long time to implement, despite the benefits that revised tariffs are expected to provide a net economic benefit to consumers as a whole.

6.539 PwC supported the voluntary nature of the principles and the flexibility to innovate. PwC would not support mandatory alignment to principles or prescriptive pricing rules that restrict distributors’ ability to address the commercial implications of emerging technologies. PwC submitted that there is potential to simplify, clarify and rationalise the pricing principles.

6.540 Powerco submitted that it would be helpful if the Authority were to discuss how its pricing reform ideas, such as the service-based pricing concept in the consultation paper, comply with the pricing principles. Powerco stated that the Authority might also like to explain how the pricing principles should be applied in an environment in which emerging technologies are likely to result in greater potential competition for distribution services. Similarly, Powerco submitted that the Authority could explain how it sees the principles relating to the increasingly complex regulatory regime established under Part 4 of the Commerce Act (both information disclosure and the price-quality paths).

6.541 Solarcity and SEANZ stated that compliance with the existing pricing principles is patchy at best, according to the 2013 study by Castalia for the Authority. Solarcity and SEANZ are of the view that changing the principles is probably not the issue. Solarcity and SEANZ submitted that assisting the distributor to lift their capacity to develop more sophisticated pricing regimes is probably an important step.

Solarcity and SEANZ considered that a study as to why the principles are not being applied and the barriers to applying these would be useful.

6.542 Unison submitted that the Authority consult separately on the principles once a clearer industry perspective on service-based pricing has been established. Unison stated that the current pricing principles support the notion of service-based pricing; so there is no urgency to consider these as another issue in the current consultation.

6.543 WEL submitted that the pricing principles are not fundamentally unsound and that the Authority should maintain an open mind about the extent to which the pricing principles are required to ensure an efficient distribution pricing structure in the face of emerging pressure and the Part 4 regime.

6.544 Wellington City Council stated that the pricing principle seems reasonable. However, the Council submitted that their non-prescriptive nature has resulted in the huge range of pricing structures and rates that now exist. The Council thought a more common approach with fewer pricing structures and tariffs should be a goal.

Views on the recommendations made by Castalia

6.545 Alpine agreed with Castalia's recommendation for clarity around the weightings of pricing principles, particularly if the principles were to become mandatory. Alpine submitted that if the principles became mandatory it would be helpful to have a discussion around efficiency / equity questions. Alpine stated that the use of the economic framework suggests that economic / dynamic efficiency considerations including Ramsey based allocations are most important if these can be negotiated. In which case, Alpine queried whether principles a to c would trump principles d and e.

6.546 Auckland Airport submitted that Castalia's suggestions as improvements would add value.

6.547 Consumer NZ strongly supported Castalia's recommendation that greater prominence should be given to distribution pricing principles that matter most. Specifically, Consumer NZ considered that pricing principle (d) should be preferred over other pricing principles.

6.548 Counties Power stated that the suggested improvements are simplistic and of little help. Counties Power submitted that the barriers to service-based pricing relate to how the retailers would react to the tariffs and how they can be billed to the end consumer. According to Counties Power, the only way to avoid this barrier now is for distributors to bill the end consumer directly, which is the approach that The Lines Company has taken.

6.549 ETNZ submitted that the independent consultant analysis seemed to almost completely overlook the economically efficient response to the emergence of competitive pressure from solar installations options, which is pressure on established generators to reduce their prices towards marginal cost. ETNZ found the analysts involved intense focus on the impacts on/responses of individual distributors, while ignoring the probable impacts/responses of the generators, remarkably narrow. ETNZ presumed that the consultants felt that the Authority's efforts to develop a competitive electricity market had been inadequate. Accordingly, ETNZ considered that its recommendations have little substance.

6.550 ETNZ submitted that it would be useful for each regulator to be required to publically audit the other's performance in applying these principles each year, and to invite public comment during this process. As well as promoting better understanding of each other's regimes, ETNZ stated that this would create greater public clarity on the effectiveness of the dialogue between the two regulators and on the issues involved.

6.551 Embrium submitted that distributor disinterest in the manner in which distribution charges are applied by some retailers highlights how obfuscated pricing and rules become difficult to police. Embrium stated that it also leads to distortions such as those raised in the paper, as distributor revenue shortfall (due to avoidance of charges by savvy customers and retailers) penalises the consumer who can least afford it.

6.552 Flick stated that it would endorse Castalia's suggestions to make sure that there is a common understanding of the way the principles should be applied. Flick submitted that reducing the number of principles and ensuring that priorities are understood.

6.553 Genesis submitted that greater consideration needs to be given to the Castalia report that the Authority commissioned, and observed that the Authority has undertaken no further work since its release.

6.554 In John Crook's view present pricing structures fall well short of meeting the existing Principles B.1 and B.2. Mr Crook submitted that attention should be focused on making this principle work and not on making further changes.

6.555 While the recommendations made by Castalia would be an improvement, it is Mighty River Power's view that these principles should be completely remodelled into a default standardised pricing methodology.

6.556 Meridian agreed with Castalia's view that the clarity of current distribution pricing principles and information disclosure guidelines could be improved. Meridian supported the principles / guidelines being adjusted in line with the recommendations made.

6.557 Orion stated that it would be useful for the Authority to provide its views on Castalia's report, and in particular, how it sees aspects of the paper in light of them. Orion submitted that the current paper appears to emphasise the efficiency aspects of the principles, but it does not explicitly say this, or acknowledge the trade-offs. When Orion consults on pricing changes, the retailer feedback is consistently against the complexity inherent in service-based pricing, and this feedback at least to some extent aligns with consumer views and research. As currently crafted, the principles do not help Orion resolve this conflict.

6.558 Pioneer submitted that Castalia's recommendations seem reasonable, although Pioneer noted that the Authority is yet to release any response to the Castalia report or consult on any of the recommendations.

6.559 Powerco agreed with Castalia that the Authority should prioritise the distribution pricing principles, given that the principles cannot always be complied with simultaneously – this would help to resolve conflicts between them.

6.560 Powerco does not agree with Castalia that distributors' pricing methodologies should disclose their capital contributions policies and the rationales supporting them, as this would simply duplicate the duplicate the requirement in clause 2.4.6 of the Commerce Commission's Electricity Distribution Information Disclosure Determination 2012 (IDD). Powerco submitted that the Authority should seek to eliminate duplication between its requirements and those of the Commission to the extent possible.

6.561 Vector agreed with Castalia that each distribution pricing principle cannot be adhered to simultaneously. Vector asked that the Authority provide a prioritisation that reflects the relative importance of each distribution pricing principle. Vector did not agree with Castalia that a fuller description of distributors' capital contribution policy is required in their pricing methodology.

Question 14: Do you have any suggested improvements to the distribution pricing information disclosure requirements in Appendix B?

6.562 Twenty-five submitters responded to this question.

6.563 Meridian, Mighty River Power and Pioneer stated that their views on this issue are outlined in their responses to questions 13.

6.564 No response to this question was made by AECT, Auckland Airport, Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Flick Energy, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, ITP, John Irving, LGNZ, Malcolm McQueen, MEUG, Nigel Clarke, NZ Energy, Pulse, Robert Gray, Shona Edgerly, The Lines Company, Transpower, and Trustpower.

6.565 Submitters suggested a range of improvements to the distribution pricing information disclosure arrangements.

6.566 Alpine submitted that it is beneficial to have a capital contribution methodology that asks for a description on how capital contributions and remaining costs are determined. Alpine stated that it would not endorse a methodology that restricted its ability to assess the risk and therefore the capital contribution an investor may pay it on a case-by-case basis.

6.567 Alpine stated that it does not have a problem with a methodology that asks it to provide in high-level terms how it recovers the remaining costs of an investment after capital contributions have been paid. However, Alpine explained that each investment in its network differs in terms of new assets required and the existing network involved which makes a granular explanation problematic.

6.568 Contact submitted that the pricing principles should be more prescription. Contact stated ideally that there would be one set of rules for all distributors, which do not discriminate by technology or circumstance (e.g. a new customer joining the network).

6.569 The ENA submitted that the Authority should seek to eliminate duplication and overlap with the Commerce Commission's information disclosure requirements, and explain how its pricing principles relate to the information disclosure requirements.

6.570 Embrium submitted that retailers have an interest in obfuscation of distribution pricing disclosure because it creates doubt in the mind of the consumer as to where their costs lie and how they can address them. Embrium advised that greater openness could be achieved by requiring the network company to bill the customer directly. Requiring distributors to bill consumers directly will give them incentives to provide a clear and concise breakdown of its pricing because if they do not their call centres will become burdened by calls from confused consumers.

6.571 ETNZ submitted that the suggestions made by Castalia relating to the information disclosure and capital contribution arrangements would, if implemented, load yet another major compliance burden on distributors, without necessarily improving outcomes for consumers or incentives for distributors to behave efficiently. ETNZ stated that it is too easy for each review of a regulatory regime to come up with additional layers of requirements of this type. In ETNZ's view, the Authority should not accept these recommendations unless a material problem has been identified and significant consumer advantages will result.

6.572 Genesis observed that the Authority has not undertaken any further work discussed in the Castalia report. Genesis is of the view that the report needs to be given greater consideration.

6.573 IPWEA submitted that templates should be developed (or current ones extended) to ensure service-based, cost-reflective distribution charges are being followed by all electricity distributors. Similarly, IPWEA stated that while manual inventories for un-metered public lighting remains, templates for inventories should be provided to all distributors to standardise inventory keeping and auditing.

6.574 Molly Melhuish stated that she had no specific comment on information disclosure requirements, other than that she understands that they these are extremely onerous and do not provide community benefit commensurate with the high cost of the disclosures.

6.575 Network Tasman submitted that they consider that the existing disclosures are sufficient. Network Tasman stated that it would caution against creating extra cost for distributors through introducing further disclosure regulations.

6.576 Nova submitted that the Authority should remove '*promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders*' from the pricing principles. Nova submitted that price stability should be a natural outcome of good long term tariff planning and design, and not an objective in itself. Nova stated that consumers should also not be exposed to price shocks resulting from shifts from a theoretical perspective on what constitutes efficient economic pricing principles.

6.577 PwC submitted that the reviews should be subject to periodic reviews to ensure there is no unnecessary overlap, or conflict with Part 4 information disclosure requirements.

6.578 SEANZ submitted that distributors need to explain their role and cost structures more clearly to consumers. They need to be able to work with consumers to develop flexible services that trade off the price - quality needs of consumers as new technology changes the levels of service that they wish to pay for.

6.579 Solarcity submitted that the Castalia review identified that few distributors are following the information disclosure guidelines in relation to cost allocation and tariff design. Solarcity stated that rather than suggesting changes to the information disclosure guidelines, a better approach might be to better understand why the distributors are struggling currently and what could be done to lift performance.

6.580 Wellington City Council stated that in certain cases, network infrastructure is installed for a specific ICP and after time is 'paid off'. In these circumstances, the Council submitted that the payback period on the initial investment should be made known. The Council stated that if, after that period, the customer no longer needs that capacity, the customer should not have to remain on a load group that is higher than they need.

6.581 Unison and Vector submitted that the Authority's pricing information disclosure requirements are not necessary at all as distributors are required to provide information disclosure under Part 4 of the Commerce Act 1986.

Question 15: What other issues with the current distribution pricing arrangements should the Authority address?

6.582 Twenty-seven submitters responded to this question.

6.583 Meridian stated that its views on this issue are outlined in its response to question 1.

6.584 No response to this question was made by AECT, Alpine, Blueskin Energy, Bryan Leyland, Consumer NZ, Counties Power Consumer Trust, Eastland, Electra, EMANZ, ERANZ, ETNZ, Francis Author, Geoff Bertram, George Jones, Greenco Solutions, Hugh Falkner, ITP, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower and Trustpower.

6.585 Submitters identified a range of issues with the current distribution pricing arrangements for the Authority to address.

Address issues with the LFC Regulations

6.586 Most submitters responding to this question raised the LFC Regulations as an issue to be addressed. Counties Power, the ENA, Flick, Powerco, Pulse, and Unison, sought greater clarification of the LFC Regulations.

6.587 Counties Power stated that it would value greater clarification of the Authority's views with respect to the degree to which demand-based and capacity-based charges may be interpreted to be variable charges under the LFC Regulations.

6.588 The ENA requested that the Authority provide a detailed explanation of the legal advice that supports its position that the LFC Regulations do not constrain distributors' ability to restructure their prices to align better with their cost structure.

6.589 Powerco also submitted that it would value clarification of the Authority's views about the LFC Regulations. It also be useful to know to what degree the Authority's interpretation of the regulations aligns with that of MBIE.

6.590 In addition to clarification of the current regulations, Powerco submitted that the Authority could work with MBIE to modify or rescind the regulations. Powerco stated that while the Authority appears not to believe that the regulations constrain distributors' ability to amend their pricing structures they do not think this is entirely true, and the fact that many distributors believe that the regulations constrain their ability to reform aspects of their pricing itself represents an impediment to change.

6.591 Pulse stated that given the conflicting advice that the Authority has received on the LFC Regulations, it would be useful if a ruling were made on the interpretation of the regulations.

6.592 WEL Networks submitted that change is required to the LFC Regulations as the industry and technology has evolved but the regulations have not.

Standardisation of pricing structures, and terms and conditions

6.593 Contact, Genesis, Mighty River Power, Pioneer and Pulse Energy all submitted in favour of greater standardisation of distribution pricing structures, and terms and conditions.

6.594 Contact submitted that there is a lack of consistency among networks, which needs to be addressed in the short term. Contact stated that it will be important to ensure consistent pricing structures are adopted by distributors, to minimise complexity for consumers and provide a stable platform from which consumers can consider and make investment choices.

6.595 Mighty River Power submitted that the Authority should first address the complexity of the current regime by promoting further standardisation of the current pricing methodology.

6.596 Pioneer submitted that the standardisation of terms and definitions could be implemented quickly, without any need for regulatory change, and would substantially reduce costs over the long term for the benefit of consumers.

Distributed generation pricing principles

6.597 Counties Power, Network Tasman and PwC stated that the Authority should review the distributed generation pricing principles.

6.598 The ENA submitted that the Authority should consider revoking the DG pricing principles in Part 6 of the Code as it is not apparent that there is a need for separate and additional measures to protect these customers.

6.599 Grey Power submitted that distributed generators need to bear the full cost of injecting their product into the grid.

6.600 Powerco submitted that the Authority could act to amend or revoke the pricing principles in Schedule 6.4 to Part 6 of the Code and update or revoke the schedule of fees in Schedule 6.5 to Part 6 of the Code. Powerco stated that schedule 6.4 currently restricts distributors' ability to introduce fully cost-reflective charges for customers with DG, especially solar PV installations, and the fee ceilings set by Schedule 6.5 id often below the true cost of providing the services concerned. Powerco expressed its appreciation that the Authority is intending to undertake a full review of Part 6 of the Code and such changes may result from this review.

Several other issues identified

6.601 Having stated that electricity infrastructure is expensive and has a long lifecycle, Auckland Airport submitted that in order to optimise design, long-term performance and thus minimise consumer unit prices the distributor should remain responsible for network operations and the delivery of reliable supply, including all instances of grid-level energy storage, e.g. batteries.

6.602 Flick and SEANZ submitted that the amount of installed AMI as an issue that the Authority should address.

6.603 The ENA considered that there is a real risk of further regulation of distribution pricing and that this risk may be exacerbated by changes to price structure, as this is likely to draw attention to the sector. The ENA submitted that any changes must allow adequate time to build consumer understanding and acceptance of the changes. The ENA is of the view that a coordinated approach from industry, consumer groups and regulators will be essential in building public support for changes, and it looks forward to working with the Authority through this transition.

6.604 Embrium submitted that energy retailers bundle distribution charges into the total energy bill. Embrium stated that it is argued that this is done to present a simplified breakdown of charges to the customer. According to Embrium, this lack of transparency has the effect of hiding the true cost of delivered services, making it harder for an informed customer to make educated decisions that affect their future energy bills (such as investment in LED lights etc.).

6.605 MEUG stated that the trade-off between quality of service and price needs to be considered in more detail.

6.606 Molly Melhuish stated that competition from evolving technologies threatens to strand some assets of most distributors. Ms Melhuish submitted that distributors could use pricing strategies, including high fixed charges, to try to slow consumers' uptake in order to recover returns, allowed by regulators, from assets that are not used and useful. Ms Melhuish submitted that, alternatively, distributors and regulators could structure prices in a manner that integrates all the capabilities of consumer-owned assets into the grid operation. Ms Melhuish submitted that the Authority should strongly promote the integrated path.

6.607 Network Tasman stated that ICP density is a key cost driver that was not discussed in the Authority's Consultation Paper.

6.608 Nova submitted that GXP based pricing should be banned because it shifts risk from the distribution company to the retailer, which then leads to higher margins being necessary to offset the risks, and subsequently increased costs for consumers.

6.609 Orion submitted that it is of the view that there are significant trade-offs between the relative complexity of service-based pricing that might manage the risk of over-investment in solar PV, and the simpler pricing that most retailers, and perhaps most customers, might prefer. Orion stated that the Authority needs to help all participants make progress in this area and that this could be achieved via the pricing principles and other tools.

6.610 SEANZ and Solarcity submitted that the Authority needs to consider all aspects of distribution pricing in relation to new technology. Both SEANZ and Solarcity said that this means ensuring appropriate sharing of the data, information, metering etc. that are critical to establishing markets for electricity systems. Both parties stated that clear longer-term vision on the electricity system of the future which can be worked through with intermediate goals and objectives is needed.

6.611 SEANZ stated that the Authority needs to broaden its horizons beyond an ad-hock short-term response and set its sights higher to lead thinking and actions on integrating more renewable local generation into the electricity system of the future. SEANZ said that pricing for variable time-of-use of distribution capacity is a necessary step in this direction.

6.612 Wellington City Council submitted that the issue of the less well-off subsidising those who can afford solar PV etc. is a significant issue. The Council questioned whether pricing structures could be developed specifically for those on low income such as government superannuants or beneficiaries.

6.613 Wellington City Council also submitted that embedded and customer networks seem to undermine the principles that residential network charges are based on, and their also reduce distributors' income. The Council stated that curbing new connections of this type would assist.

Question 16: How will New Zealand-specific circumstances influence the effects of evolving technologies in this country?

6.614 Twenty-seven submitters responded to this question. Submitters identified a range of New Zealand-specific circumstances that they considered would influence the effects of evolving technologies in New Zealand.

6.615 No comment was received from AECT, Auckland Airport, Blueskin Energy, Bryan Leyland, Counties Power Consumer Trust, Eastland Network, Electra Trust, EMANZ, ERANZ, Francis Arthur, Geoff Bertram, George Jones, Greenco Solutions, Grey Power, Hugh Falkner, John Irving, LGNZ, Malcolm McQueen, Nigel Clarke, NZ Energy, Pulse Energy, Robert Gray, Shona Edgerley, The Lines Company, Transpower NZ, Trustpower, and Unison.

6.616 Several submitters highlighted New Zealand-specific geographical factors that they consider will influence the effect of evolving technologies on the electricity industry.

6.617 Alpine advised that the remoteness of many rural connections encourages the use of demand based pricing and remote area power supplies. The distance between the predominantly urbanised population and the primary sources of generation was identified as a factor by Alpine. Alpine submitted that this causes issues in the recovery of transmission prices and encourages local generation.

6.618 Consumer NZ and Wellington City Council stated that NZ's small market size and isolation mean we are likely to experience higher costs for battery storage, solar PV and electric vehicles than other countries.

6.619 MEUG identified NZ's small size as a positive factor because there is more opportunity for diverse interests to act collaboratively to find solutions that parties will quickly support.

6.620 Molly Melhuish stated that New Zealand is unique in that it is a small isolated grid

6.621 Orion submitted that New Zealand's climatic and demographic characteristics will influence uptake of emerging technology.

6.622 Consumer NZ, Contact, Meridian, Mighty River Power, Network Tasman, Powerco, PwC and Wellington City Council all identified the absence of government subsidies as being likely to have an influence on the effect of evolving technology in New Zealand.

6.623 Consumer NZ, Flick, ITP, John Crook Consulting, Meridian Energy, Mighty River Power, Molly Melhuish, Network Tasman, Orion NZ and Pioneer identified the high proportion of renewable energy in New Zealand as a key difference with other countries.

6.624 For example, Consumer NZ submitted that New Zealand's unusually high proportion of renewable electricity generation means consumers are well placed to use emerging technologies to reduce the proportion of their income spent on energy.

6.625 ETNZ submitted that if the market behaves rationally then the very low marginal cost of generation from New Zealand's existing, predominantly hydro-powered, generation base should mean that energy price reductions discourage imprudent investments in alternative generation.

6.626 Genesis expressed uncertainty about an answer to the question but did state that it assumes that more solar equals less daytime use of hydro which equals more night-time use (i.e. storage in the form of water held in lakes) which would deliver lower pricing over time as expensive fossil fuel driven generation is reduced.

6.627 Orion NZ and Pioneer Energy submitted that the high proportion of renewable energy could allow New Zealand to support electric vehicles in a way that would materially reduce New Zealand's greenhouse gas emissions.

6.628 A number of submitters questioned the value of attempting to predict the effect of emerging technology. Contact, the ENA, Vector and WEL Networks stated that there is more value in establishing the right regulatory frameworks are in place to ensure efficient investment and operation of energy market that predicting the effects of specific technologies.

6.629 Alpine and Wellington City Council identified the high proportion of people who rent as a factor because renters will have a general reluctance to invest in household infrastructure and less influence over investments if they are made.

6.630 Contact submitted that it did not consider New Zealand's specific circumstances likely to influence the effects of evolving technologies, although it did observe the lack of government subsidies might have resulted in a slower take-up of evolving technologies in New Zealand.

6.631 The ENA submitted that it couldn't be presumed that experience in other countries will necessarily apply to New Zealand.

6.632 Solarcity submitted that it expects the New Zealand electricity system to go through similar evolution seen in other countries. Solarcity stated that these changes might be episodic because of New Zealand's small size.

6.633 Network Tasman identified the structural differences of New Zealand's electricity sector as a factor. Network Tasman stated that these differences mean it is important to understand and address the effects of evolving technology relatively earlier than in other countries.

6.634 Orion submitted that network specific differences in load are likely to contribute to the effects of evolving technology.

6.635 Similarly, Nova submitted that New Zealand also has wide availability of natural gas, LPG and wood burners for home heating and water heating. Given this, Nova stated that it is even more important that distribution pricing accurately reflects the cost of meeting peak demand.

6.636 SEANZ submitted that, as NZ consumers use the same appliances and distributed generation technology as in other jurisdictions, and the network technology is the same, the effect of evolving technology in New Zealand will be entirely dependent on policy and legislation

6.637 IPWEA considered the historic lack of focus on public lighting distribution assets to be an issue that is inhibiting the business case for the take up of more effective and efficient public lighting technologies in NZ. IPWEA submitted that Australia is vastly ahead of New Zealand in accounting, management and valuation of these public lighting assets.

6.638 Submitters also raised a number of issues that did not specifically address New Zealand-specific circumstances.

6.639 Embrium said that the AMI rollout has benefited no party except the retailers, who prompted the rollout. Embrium stated that retailers do not collect valuable network data that AMI is capable of providing. Embrium submitted that for distributors to understand their network, they need to have, or have access to, a comprehensive set of data.

6.640 Embrium submitted that despite the many differences between the New Zealand and Australian markets, there are many lessons to be learned from the challenges that Ergon Energy faces in Queensland. Embrium stated that poor planning, and conflicting price signals between local and central government had led to poorly considered pricing and disgruntled consumers.

6.641 Pioneer stated that the Authority's approach to the adoption of evolving technologies must be consistent with any government policy in this area.

Appendix A – Consultation paper questions

	Question
Q1	What are your views on the scope of the Authority's review? Please give reasons for your answer.
Q2	What other technologies do consumers invest in or use that are likely to have a material effect on investment or operation of distribution networks? Please give reasons for your answer and an estimate of when you expect the technologies will have a material effect.
Q3	What do you think about the Authority's concerns that existing distribution pricing structures do not reflect the costs of the different distribution services provided and may not be durable?
Q4	What is your view of the potential for a significant amount of inefficient investment in solar panels if distribution pricing structures continue to be based primarily on a consumption-based approach?
Q5	What is your view of the potential for inefficient investment in distribution networks if there is a high uptake of electric vehicles and distribution pricing structures continue to be based primarily on a consumption-based approach?
Q6	What is your view of the potential for battery technology to defer or avoid investment to augment distribution networks?
Q7	What is your view of the potential for alternative distribution pricing structures to promote more efficient investment by consumers in heat pumps and / or LEDs?
Q8	What is your view of distributors' options for structuring their pricing?
Q9	What needs to occur for distributors to amend their distribution pricing structures to introduce more service-based pricing?
Q10	Would a change to the applicable rules encourage change to pricing structures?
Q11	What incentives could be introduced to encourage change?
Q12	What other options would ensure distribution pricing structures are service-based?
Q13	Do you have any suggested improvements to the distribution pricing principles in Appendix B? What are your views on the recommendations made by Castalia noted above and in Appendix B?
Q14	Do you have any suggested improvements to the distribution pricing information disclosure requirements in Appendix B?
Q15	What other issues with the current distribution pricing arrangements should the Authority address?
Q16	How will New Zealand-specific circumstances influence the effects of evolving technologies in this country?