Wholesale Advisory Group

Hedge Market Development

Recommendations Paper

26 June 2015

Note: This paper has been prepared for the purpose of making recommendations to the Electricity Authority Board. Content should not be interpreted as representing the views or policy of the Electricity Authority.

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The Wholesale Advisory Group

The members of the Wholesale Advisory Group during the finalisation of this paper were:
John Hancock (Chair)
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John Carnegie
Graeme Everett
Alan Eyes
Chris Jewell
Stephen Peterson
Bruce Rogers
Richard Spearman

The membership for Bruce Rogers and Richard Spearman expired on 31 May 2015.

Authority request

In September 2013, the Electricity Authority requested the input and advice of the Wholesale Advisory Group on further developing the hedge market.

Disclaimer:

Neither the Electricity Authority nor the Wholesale Advisory Group assume any responsibility for giving financial, legal, or other professional advice and disclaims any liability arising from the use of information in this document. Hedging is one of a number of tools for managing risks arising from electricity spot prices. Electricity derivatives are financial instruments, independent of the actual supply of electricity. Trading electricity derivatives has risks, and these should be well understood before entering into such arrangements. Only a registered financial adviser can legally advise you on trading electricity derivatives. If you require financial, legal, or other advice, you should seek assistance from a professional adviser.

1 Introduction

1.1.1 The Wholesale Advisory Group (WAG), following a request from the Electricity Authority (Authority), has undertaken a thorough examination of the extent to which barriers to the continued development of the New Zealand electricity hedge market remain, how any issues might be addressed, and what opportunities exist for further development.

1.1.2 This paper presents the WAG's recommendations for further development of the hedge market, and its supporting rationale.

1.1.3 In developing these recommendations, the WAG has drawn on:

a) A survey of hedge market participants, which was commissioned by the Authority and has been performed every two years since 2007.

b) Presentations it received from 11 stakeholders (as described in 0) representing various interests.

c) Analysis into a range of metrics, which was performed by the WAG secretariat.

d) Analysis carried out by Energy Link that was commissioned by the Authority at the WAG's request.

e) Submissions received in response to the WAG Hedge Market Development discussion paper ("discussion paper"), released in November 2014. A summary of the submissions is included in Appendix A of this paper. The discussion paper sought examples and evidence from stakeholders to help inform the issues, and the value of potential development initiatives.

1.1.4 The WAG thanks all parties that contributed to its examination of the hedge market.

2 Conclusions and recommendations

2.1 The WAG has been unable to reach a full consensus

2.1.1 The WAG has been unable to reach a full consensus on the conclusions and recommendations of this paper. Members Phillip Anderson and Stephen Peterson have presented an alternative view in section 2.4.

2.2 Conclusions

2.2.1 The WAG has concluded that:

a) the hedge market has developed significantly in recent years and continues to make progress

b) some barriers to participation remain and some stakeholders continue to lack confidence in the hedge market

c) there is room for improvement in the hedge market that could see the barriers reduced and confidence improve

d) the evidence of underlying problems with the hedge market is insufficient to justify intervening by making amendments to the Electricity Industry Participation Code 2010 (Code) at this time

e) further progress is possible and likely, without resorting to intervention by the Authority in the form of amendments to the Code.

2.3 Recommendations

2.3.1 The WAG recommends the Authority:

a) continues to pursue market facilitation measures in order to address the barriers to participation and to improve confidence in the hedge market

b) establishes a more formal relationship with ASX, perhaps in the form of a memorandum of understanding, and including regular meetings, aimed at agreeing targets and timeframes, and a work plan for new product development and other initiatives

c) considers the merits of conducting a one-off review into the extent to which vertical integration supports its statutory objective

d) establishes some specific target outcomes and target timeframes for the hedge market as outlined in this paper

e) monitors the development of the hedge market against these target outcomes and target timeframes

f) develops some specific back-stop measures (including possible Code amendments) in case the market facilitation measures fail to deliver the specific target outcomes

g) considers implementing the back-stop measures (including possible Code amendments) if the market facilitation measures fail to deliver the target outcomes according to the target timeframes.

2.3.2 The market facilitation measures the Authority should pursue should aim to:

a) improve confidence in forward prices

b) improve participants' ability to manage the need for capital to provide prudential security

c) improve participants' understanding of risk management in the New Zealand electricity market

d) reduce the resource-intensive nature of managing risk through the hedge market

e) provide opportunities to manage profile or outage risks

f) allow smaller parties to more comfortably accommodate exchange traded products.

2.3.3 The market facilitation measures the Authority should pursue are as follows:

Market Facilitation Measure	See following section in this paper for more detail
1 Encourage reduction in ASX contract size to 0.1MW	Section 5.3
2 Encourage tighter bid-offer spread and greater depth in the ASX futures market making arrangements	Section 5.4
3 Encourage the development of exchange traded products that allow management of profile and outage risks	Section 5.5
4 Continue to investigate options to allow futures positions to offset prudential requirements in the wholesale market	Section 5.6
5 Develop standardised OTC and intermediating contracts	Section 5.7
6 Pursue more initiatives aimed at educating participants about managing price risks in the New Zealand electricity market	Section 5.8
7 Promoting opportunities for improving risk management	Section 5.9
8 Facilitate easier access to wholesale market information	Section 5.10

Market Facilitation Measure	See following section in this paper for more detail
9 Introduce a quarterly reporting regime designed to improve the understanding of risk management, and provide more open and accessible information on the hedge market	Section 6.3
10 Provide transparency around ASX development activity	Section 6.4

2.3.4 The Authority should monitor the progress of these initiatives against the following specific targets:

Specific target	Relevant to market facilitation measure	Time frame
More effective market making arrangements are in place that provide confidence about the durability of market making and maintaining the current level of participation	2,3	October 2015
The level of trading in ASX baseload futures is maintained such that open interest is continuously maintained at greater than 3000GWh and the volume of trading is maintained at a 17,000GWh 12 month moving average	2,3,4,6,7,8	Continuously
The ASX NZ futures contract is available in 0.1MW units	1	October 2015
The bid-offer spread for ASX baseload futures does not exceed 3.0%	2	October 2015
Exchange traded and OTC products are sufficiently available to allow participants to effectively manage profile and outage risks	3	July 2016

Specific target	Relevant to market facilitation measure	Time frame
Participation by intermediaries is trending higher with a target of 10% of ASX trades averaged over the course of one year	1,2,3,4,5,6,7,8,9	January 2017
The proportion of trading by ASX market makers is trending lower with a target of 65% averaged over the course of one year	1,2,3,4,5,6,7,8,9	January 2017
An improving trend in levels of confidence in the competitiveness of the ASX pricing process, reported via the Hedge Market Survey, with a target of 50% in 2016 (cf 36% in 2014)	1,2,3,4,5,6,7,8,9	Next Hedge Market Survey – July 2016
An improving trend in levels of confidence in hedge markets, reported via the Hedge Market Survey, with a target of 70% in 2016 (cf from 62% in 2014)	1,2,3,4,5,6,7,8,9	Next Hedge Market Survey – July 2016

2.3.5 The Authority should develop some specific interventions, in the form of additional market facilitation measures and possible amendments to the Participation Code, to cover the possibility that these target time frames are not met.

2.3.6 Any intervention should be proportional to the problems identified, and provide a positive net benefit relative to the status quo. The WAG notes that the Authority has safeguards in place that help to protect against the risk of unintended consequences from any intervention. These include the requirement to consult with stakeholders, that any intervention is consistent

with the Authority's statutory objective, and that any Code amendment provides a positive net benefit.

2.3.7 The WAG notes that market making of ASX NZ futures has been a particularly important driver of the progress in the hedge market to date, and considers that incremental improvements to market making arrangements may be one of the least distortionary interventions available to the Authority.

2.3.8 The WAG therefore recommends the Authority takes the following steps to cover the possibility that the targets are not met within the target time frames:

a) commence the process to prepare Code amendments, which mandate market making for all base load ASX NZ futures covering the front 12 quarterly and 6 monthly contracts. The WAG notes that, consistent with 2.3.6, in preparing the Code amendments, the Authority will need to demonstrate that they provide a positive net benefit. This would include consideration of:

   i) which market participants it should cover

   ii) what the specific market making obligation should be

   iii) whether an incentivised approach might provide a greater net benefit.

b) investigate whether there is a need for the further development of the exchange-traded peak product, and possible market making in that product (whether incentivised or mandated), that would allow market participants to more effectively manage profile and outage risks, and how any arrangements should best be implemented.

2.3.9 The WAG notes that, practically speaking, implementing Code Amendments as outlined in 2.3.8a) is likely to precede any initiative arising from 2.3.8b).

2.3.10 The WAG considers that implementing these recommendations will contribute towards the following two key requirements it has identified for effective risk management:

a) information on forward prices that is transparent, and that participants can be confident accurately reflects expected conditions in the market.

b) opportunities that ensure that new-entrants can enter / exit the market, and compete on a level playing field with incumbents.

2.4 Alternative view to the conclusions and recommendations

2.4.1 Members Phillip Anderson and Stephen Peterson have provided the following alternative view:

2.4.2 We are unable to fully support the conclusions and recommendations of this paper. We believe they are unbalanced because they do not go far enough in addressing the concerns of independent generators, independent retailers, and consumers.

2.4.3 Based on our observation of different markets, the New Zealand market has among the highest levels of vertical integration and lowest levels of hedge market liquidity globally. We believe these high levels of vertical integration will prevent the development of a workably competitive hedge market without a credible threat of imminent regulation from the Authority.

2.4.4 In order to introduce higher levels of innovation to the market, both in terms of business models and technology, new entrants need access to profiled forward curves at reasonable prices. Liquid peakload futures are a common feature of other electricity markets where consumers benefit from strong retail competition. We believe the largest vertically integrated utilities should be compelled to facilitate this access in New Zealand as it is their business models which prevent competition thriving on its own.

2.4.5 This paper rightly acknowledges current baseload market making has been a key driver of progress to date. We would go further in noting there has been little progress beyond the two step changes that resulted from the introduction of baseload quarterly then baseload monthly market making. After initially being opposed by some there is now widespread acceptance of the value market making brings all participants. Another step change can be expected after introducing market making on peakload products.

2.4.6 The industry should be given a final opportunity to demonstrate rapid improvements in the ability of independent parties to access liquid profiled hedging products, but the Authority should stand ready to intervene if this is not achieved.

2.4.7 We recommend the Authority move immediately to prepare Code amendments that mandate market making by the largest vertically integrated utilities on both baseload and peakload futures with maximum bid-ask spreads of no more than 3% covering the front 3 years. If the industry fails to demonstrate progress equivalent to this within 6 months the Code amendments should be implemented at the earliest opportunity.

- Phillip Anderson and Stephen Peterson

3 Approach to the project

3.1 The WAG identified that there are a number of ways to manage risk

3.1.1 The Authority requested that the WAG add the Hedge Market Development project to its work plan in September 2013. The Authority noted improvement in the hedge market in recent years, and requested the WAG's assistance for the purpose of examining:

3.1.2 "…opportunities to further develop the hedge market, in order to maintain its current forward momentum and develop its value to the wholesale and retail markets".[1]

3.1.3 The WAG considered the project brief to be broad in scope. The project brief did not identify a specific problem to be addressed, but rather, requested that the WAG identify any issues in the hedge market, and any improvements that could be made.

3.1.4 The WAG has been advised that the Authority considers there to have been good progress in the hedge market to date, and that the forward price curve is providing value to all participants.

3.1.5 The WAG defined the 'hedge market' as shown in

[1] See http://www.ea.govt.nz/dmsdocument/15720

Figure 1, capturing any form of contractual approach to managing risk. Specifically, it includes:

a) exchange-traded derivatives ("ASX NZ derivatives")

b) over-the-counter (OTC) derivatives

c) physical supply contracts, such as fixed-price variable-volume (FPVV) contracts (most consumers)

d) financial transmission rights (FTRs).

3.1.6 The WAG also draws attention to the fact that, in addition to the hedge market, there are a number of different business strategies that parties can use to manage electricity price and volume risks, including:

a) the physical management of load and/or generation

b) vertical integration – particularly through generation and retail

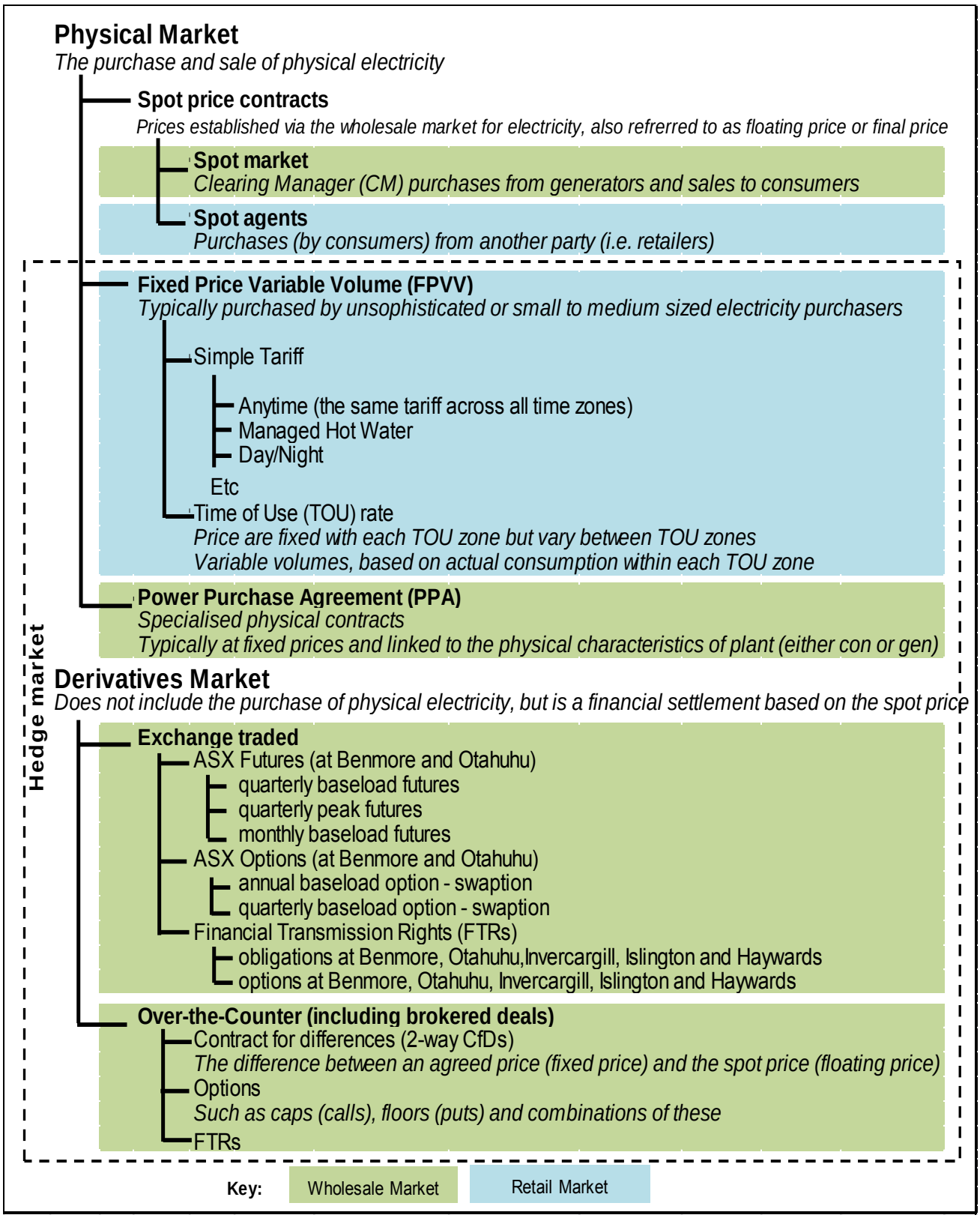
c) geographic diversification and concentration – e.g. retailers may choose to supply in one location or many locations

d) market segmentation – e.g. retailers may choose to only retail to a single segment of the market such as large commercials

e) passing through the risk – e.g. a retailer selling to consumers at spot prices.

3.1.7 Collectively the hedge market and these business strategies are part of a healthy landscape for risk management. Each participant will find that the different strategies have varying levels of efficiency and effectiveness for their business, and all will have their own approach to risk management. Furthermore, different participants will, for a variety of reasons, have a different appetite for risk.

Figure 1: Scope of the hedge market



3.1.8 In this paper the following terminology is used:

a) risk management – the act of managing electricity price and volume risk through the hedge market and various business strategies

b) hedge market – comprising fixed-price-variable volume (FPVV), Power Purchase Agreements (PPA) and derivatives market

c) derivatives market – comprising exchange-traded and over-the-counter (OTC) markets

d) exchange-traded market – ASX NZ futures, ASX NZ options and Obligation Financial Transmission Rights (FTRs)

e) OTC market – Contract-for-differences (CfDs), options and tailored FTRs.

3.1.9 The WAG notes that the different approaches to risk management are highly inter-related. When considering a particular measure, for example, to increase liquidity in the exchange-traded market, the WAG notes that the impact of the measure may not be limited to that part of the market, but could flow through into the wider derivatives market and hedge market, and affect how parties utilise different business strategies to manage risk, and that such impacts may not all be positive.

3.1.10 In this context, the WAG questioned what an effective hedge market might look like, and how success under this project could be determined.

3.2 The hedge market should support the Authority's statutory objective

3.2.1 The Authority has a statutory objective to:

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

3.2.3 The Authority has noted that it currently has a particular focus on enhancing retail competition, because it considers that retail competition:

a) is essential to build credibility regarding retail pricing, especially for residential consumers, which supports the long-term viability of the market

b) provides strong incentives for innovation and operational efficiency.

3.2.4 To support achievement of its statutory objective, the Authority has established strategic directions that underpin its approach to market development, and has stated:

3.2.5 "The Authority's focus or strategic directions for market development are to develop a workably competitive electricity market by **reducing barriers** to entry, expansion and exit of parties in electricity markets, **facilitating consumer participation**, **providing efficient price signals** and **promoting flexibility and resilience** into the market and market systems. These strategic directions mean that the Authority will prefer initiatives that provide price and non-price information to assist efficient investment decisions by the electricity industry and consumers, confirm that consumers have a greater role in the electricity market than being passive recipients of electricity services and help industry participants and consumers to respond efficiently to changing market circumstances."[2].

3.2.6 Drawing on the statutory objective and strategic directions, the WAG determined that its focus for developing the hedge market, as defined in paragraph 3.1.5, should be on ensuring that it supports wider risk management that is conducive to competition, reliability and efficiency, for the long-term benefit of consumers.

3.2.7 To this end, the WAG determined that two key requirements for effective risk management are that there:

a) is information on forward prices that is transparent, and that participants can be confident accurately reflects expected conditions in the market

b) are opportunities that ensure that new-entrants can enter / exit the market, and compete on a level playing field with incumbents.

3.2.8 To the extent that consumers can benefit directly from hedge market developments that support improved risk management, pursuing these opportunities should also support the Authority's statutory objective.

3.2.9 Against these requirements, the hedge market plays an important role in facilitating effective risk management. The trading of hedge contracts supports forward price discovery, and provides a means for incumbent and new entrant generators and retailers to enter and compete in wholesale and retail markets. Furthermore, it provides wide-ranging risk management opportunities that consumers can benefit from directly.

3.3 The ASX NZ market is an important focus

3.3.1 As demonstrated by

[2] Electricity Authority Strategic Directions for Market Development

Figure 1, the New Zealand hedge market comprises a number of parts. These parts are highly inter-related.

3.3.2 The WAG identifies that the ASX NZ electricity derivatives market (ASX NZ market) makes a particularly significant contribution to the effectiveness of risk management, and is hence an important focus for development.

3.3.3 While it is a valuable way to trade in its own right, a substantial value in the ASX NZ market is that it should provide a transparent forward price reference, based on aggregate market expectations, which can be used by all stakeholders to inform and evaluate the merits of all the other approaches to risk management.

3.3.4 While the ASX NZ market is important to stakeholders in the New Zealand electricity market, it comprises a small part of the services that ASX provides throughout New Zealand and Australia. The WAG is therefore concerned that ASX may have limited incentives to develop products, to engage with the market makers and other users, and to make improvement in a timely fashion.

3.3.5 The WAG considers that New Zealand needs a futures market operator that is highly engaged with its users and strongly motivated to advance new products and make improvements to the market.

4 Extent of problems with current arrangements

4.1 There are different levels of confidence in hedge market arrangements

4.1.1 A well-functioning hedge market provides a robust and transparent view of future electricity price expectations, and an efficient means for parties to manage risk. This complements and helps to inform other approaches that parties might take in managing pricing and volume risk in the New Zealand electricity market (see paragraph 3.1.6).

4.1.2 However, at present, stakeholders have different levels of confidence in the extent to which current hedge market arrangements contribute to these ends.

There are different levels of confidence in forward prices

4.1.3 The WAG considered evidence supplied by the Secretariat that there was an observed difference between futures prices and the underlying spot prices, when examining the history of pricing outcomes over the period since the ASX futures market was established in 2009. Several stakeholders have suggested that this difference means hedging electricity price risk by purchasing electricity futures increases costs by an amount they consider unjustified.

4.1.4 The WAG noted the backward-looking analysis of actual outcomes, but considered that a forward-looking analysis that compared futures prices with forecast spot prices, while modelling a full range of future uncertainties including hydrological inflows, would be more informative. An analysis was undertaken by Energy Link to explore this issue using the EMarket model[3] and to examine whether there was a sustained difference between futures prices and the forecast spot prices.

4.1.5 Energy Link has observed that there is, on average, a 3% positive difference for Otahuhu and 8% positive difference for Benmore, between futures prices and the forecast spot prices modelled, after including a range of uncertainties. However, Energy Link has also observed that the difference is sometimes positive, sometimes negative and can be sensitive to relatively minor changes in scenario assumptions.

[3] The EMarket model is a proprietary model owned by Energy Link, which simulates the New Zealand electricity supply system and spot market

4.1.6 Energy Link has also observed that a positive difference between futures prices and underlying spot prices may be appropriate. It may be a reflection of the uncapped, volatile, and asymmetric nature of spot prices, and the reliance on uncertain hydro generation. This may result in a greater interest in hedging spot market purchases than sales. However, a positive difference may be inappropriate if it does not reflect the underlying fundamentals – including the various risks and supply/demand balance - or is a result of some parties being able to exercise market power.

4.1.7 If the existence of a positive difference were inefficient, this would be a significant concern, as it could have implications for retail competition, and may incorrectly signal the value of risk management options, leading to inefficient investment and decision making.

4.1.8 The Energy Link analysis suggests that, compared to other markets, the returns from ASX NZ futures may not appear excessive when adjusted for risk, and may reflect the existence of a workably competitive market. However, the difference between futures prices and forecasts of underlying spot prices appears large and positive in some quarterly periods, and is affected by levels of liquidity and participation.

4.1.9 The WAG has considered both the backward-looking and forward-looking analysis, considered the commentary provided by Energy Link ,and has concluded that a positive difference between futures prices and underlying spot prices may be appropriate, and the evidence is not sufficiently robust to support a conclusion that forward prices are inefficient.

4.1.10 However the WAG notes there is some uncertainty about futures prices, and the degree to which they reflect a competitive market, and this results in divergent levels of confidence about the robustness of the forward price curve:

a) given their view of the risk and value of price-certainty, some participants will be willing and able to transact in futures with a positive difference to expected spot prices, and will view the forward price curve as efficient

b) other parties will consider that any positive price difference is a result of inefficiencies in the market, or does not reflect the risk from their perspective - they may therefore be unwilling to transact in futures, and may consider that doing so puts them at a competitive disadvantage.

4.1.11 To the extent that parties *act* as if there is an inefficiency in futures prices, this is likely to have similar implications as if there actually were an inefficiency.

There are different levels of confidence that hedge market arrangements support reasonable access to risk management opportunities

4.1.12 The WAG identifies that each stakeholder seeks different things from hedge markets, reflecting differences in their businesses and circumstances.

4.1.13 Some stakeholders feel their hedging needs are not well served by current hedge market arrangements. This may result in those parties accepting significant exposure to risk, or relying on other, potentially less efficient approaches to risk management. This may have implications for competition, reliability and efficiency.

4.1.14 Difficulty accessing appropriate hedging opportunities is largely a result of levels of liquidity in the derivatives market. Improving liquidity will likely support greater confidence in hedge market arrangements.

4.1.15 However, the WAG notes that some parties consider current levels of liquidity to be sufficient, and have a high level of confidence that current hedge market arrangements provide reasonable access to risk management opportunities. The WAG sought to identify why this disparity in views exists.

4.1.16 The WAG notes that organisations appear more likely to have confidence that current hedge market arrangements support reasonable access to risk management opportunities, and be comfortable in using exchange-traded products if they:

a) are well financed

b) have a high degree of knowledge and expertise with respect to electricity price risk management in New Zealand

c) have resources committed to managing electricity price risk through the hedge market

d) have means through which to manage profile and outage risks –including through physical means and various business strategies

e) are large enough to comfortably accommodate the 1 MW contract size on the ASX NZ market.

4.1.17 Some stakeholders will have many or all of these characteristics, and hence have high confidence that current hedge market arrangements adequately support them in managing their risks, to the extent they wish to do so. While the large generator retailers are notable in generally having all of these attributes, some speculators, consumers, and new-entrant retailers also have these attributes to varying degrees, potentially achieved through a variety of means.

4.1.18 However, many parties do not have some or all of these characteristics. Often these parties will be satisfied with purchasing fixed-price variable-volume products through a retailer to cover their full exposure, or with remaining exposed to some risks. However, where this is not practical or efficient, parties tend to have lower confidence that current hedge market arrangements support reasonable access to risk management opportunities.

4.1.19 Therefore, the WAG considers that confidence in the extent to which current hedge market arrangements support reasonable access to risk management opportunities is affected by:

a) levels of liquidity in the derivatives market

b) the different demands and capabilities of a wide array of unique participants in needing to manage multi-faceted risks in a complex market.

4.2 View of the evidence

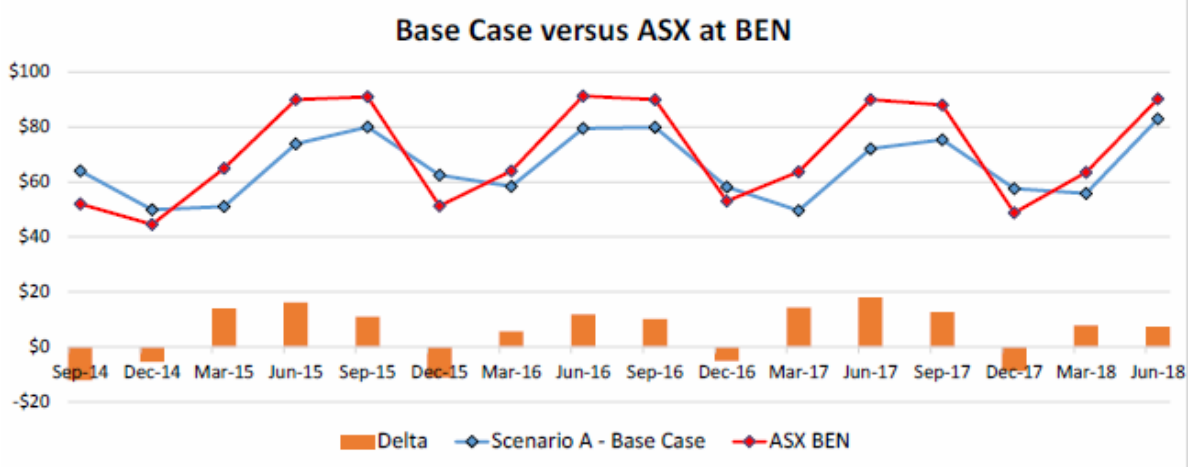
There is evidence of a difference between futures prices and spot prices

4.2.1 The analysis performed by Energy Link suggests that there is a positive difference between futures prices and forecasts of spot prices. This analysis was commissioned by the Electricity Authority at the WAG's request, and included in the WAG's November 2014 discussion paper.

4.2.2 The WAG sought analysis comparing futures prices with an independent view of potential future spot prices (as per the Energy Link analysis). It considered that such analysis would be the most informative as to the existence or otherwise of any potential inefficiency in futures prices. This is because it can capture the totality of information that informs views of future spot prices (to the extent it is publically available), and the outcome is not influenced by the benefit of hindsight. The WAG requested that Energy Link undertake the analysis because it provides independent spot price forecasts that are widely used by a variety of industry participants.

4.2.3 Energy Link compared ASX NZ futures prices with forecast spot prices, as modelled using its EMarket model. Energy Link found that futures prices tend to be above its modelled projections of spot prices on average[4]. Against its Base Case scenario, which it considered the most likely scenario, the differences over the four years ending June 2018 were calculated to vary from -19% to +29%, averaging 3% for Otahuhu, and 8% for Benmore. This is shown graphically for Benmore in Figure 2, which has been reproduced from Energy Link's second report[5].

Figure 2: Energy Link analysis of ASX price differences relative to its modelled base case for Benmore



4.2.4 Energy Link cautioned that there are limitations to its analysis, noting the subjective nature of forecast spot prices, and that the results were sensitive to the underlying assumptions. Given these limitations, Energy Link's conclusions were that, for the ASX quarterly baseload futures over the four years ending June 2018:

a) the annual difference is higher at Benmore than at Otahuhu, which is consistent with a higher level of risk at Benmore

b) there are positive differences in quarter 2 and quarter 3 at both nodes over a wide range of forecast scenarios, which is consistent with a high level of risk in these quarters

c) the differences in quarter 1 and quarter 4 are at odds with the forecast outcomes, with the quarter 1 difference more positive than would be

[4] Note that Energy Link referred to the difference between futures prices and spot prices as a "delta", while this paper uses the word "difference".

[5] See Appendix K, http://www.ea.govt.nz/dmsdocument/18694

expected, and quarter 4 difference more negative than would be expected.

4.2.5 Some submitters expressed concerns about the suitability of using the EMarket model for this analysis. The Major Electricity Users' Group (MEUG) suggested that:

a) "The Energy Link models, because they are not replicable and peer reviewed such as SDDP models, are not suitable to support major policy decisions on whether there are material inefficiencies or excessive and detrimental oligopolistic market power with the large vertically integrated suppliers."

4.2.6 Norske Skog also expressed the view that:

a) "Whilst this is a noble attempt we would caution the WAG from reading too much into these results. The EMarket model is proprietary to Energy Link, and as far as we are aware has not been peer reviewed nor benchmarked against any of the more widely available electricity price models."

4.2.7 While the WAG agrees that there are limitations to any analysis into the efficiency of future price expectations using electricity pricing models, it considers that the approach taken by Energy Link is likely to be informative as to the existence or otherwise of a difference between futures prices and a forward view of spot prices, and it has been able to gain some useful insights from the analysis.

4.2.8 Further, the WAG notes that analysis comparing historic futures and spot prices also identifies the existence of a difference between futures prices and spot prices, which is positive on average (but falls to zero in the lead up to final settlement, as would be expected). [6]

4.2.9 However, the WAG notes that the Energy Link analysis represents one party's views and, as Energy Link observed, the outcomes are sensitive to a wide range of assumptions, and different stakeholders will take different views on many of those assumptions. Given the limitations in any approach and the complexity of the issue, the WAG does not consider it possible to *definitively* determine the size of any difference between futures prices and spot prices, and whether it is positive or negative.

[6] The WAG considered such analysis during its investigation. However, it identified significant shortcomings in analysis using historic data, and noted that it relied on a very short data series.

4.2.10 However, notwithstanding whether a positive difference is appropriate, the WAG considers that the available evidence suggests there probably is a positive difference on average. Such a conclusion was generally accepted by most submitters.

It may not be possible to determine if the difference between futures prices and underlying spot prices is inefficient

4.2.11 Electricity price risk in New Zealand can be significant, arises from a number of factors, and exists over a variety of time frames. As the WAG identified in its discussion paper, spot price risk arises in New Zealand because:

a) The market is geographically isolated, so is entirely self-reliant. This is also true for the gas market. This means that any periods of resource abundance or scarcity will be reflected in spot prices.

b) The size of the market relative to the size of some of the plant on the system means that individual outages can have a significant effect on prices, and can create a risk of short-term price spikes associated with capacity scarcity at times of peak demand.

c) The market is organised as an energy-only market. Prices can be volatile, as generators seek to recover capital costs in whatever trading periods they can. Furthermore, firm capacity is not specifically rewarded, so there is uncertainty about its availability, and the timing of investment and retirement of assets, creating price risk on a medium-long term basis.

d) The electricity transmission system is 'long and stringy', has a number of single-points-of-failure, and prices that are established at over 250 nodes. Outages and constraints can result in price differences between locations.

e) Demand varies through-out the day and across the seasons, peaking nationally in the evening on cold winter days.

f) There is a high reliance on weather-dependent generation, which is not necessarily well correlated with demand, and storage capacity is low. This means that the market is beholden to changes in the weather, which are virtually impossible to predict on any long-term basis. Dry year risk is particularly significant, with the potential for prices to remain high for extended periods.

g) The spot market is uncapped, so there is theoretically no upper limit on what prices could be, and for how long they could be sustained.

4.2.12 Given the many and varied risks inherent in spot prices, it may be that a positive difference between futures prices and spot prices could be justified by the risks.

4.2.13 In its analysis, Energy Link sought to determine whether the differences that it identified between futures prices and its projected spot prices could be explained in terms of being a risk premium or otherwise.

4.2.14 Energy Link noted that it is *"difficult, if not impossible, to calculate a theoretical delta in futures prices that should apply"*. It took a number of approaches to assessing the validity of its observed differences - to the extent that it could - and went on to conclude that they:

a) are not necessarily inconsistent with other markets, and do not stand out as providing excess returns once the return is adjusted for risk

b) are consistent with a workably competitive market, and that "the volatility of electricity prices probably leads to higher deltas than might be expected in other commodity markets".

4.2.15 However, Energy Link further postulated that the range of deltas:

a) likely reflected levels of liquidity in the futures market, stating: "the relatively wide bid-ask spread indicates that liquidity remains an issue for the futures market: an increase in liquidity across the forward curve would probably lead to a reduction in deltas"

b) may reflect that "futures traders are still adjusting to an environment of lower overall volatility in prices" given there is "low demand growth, a relative surplus of new generation and a stronger grid than was the case as late as late [2013]".[7]

4.2.16 While submitters generally found the Energy Link analysis valuable, they had divergent views about whether a positive price difference could or should be considered efficient.

4.2.17 Reinforcing perceptions that the forward price is inefficient are concerns such as those expressed by Pulse Energy that:

[7] See Appendix J and Appendix K, http://www.ea.govt.nz/dmsdocument/18694

a) "There is a lack of liquidity...There are limited participants...Vertical integration creates the potential for adverse behaviour...The industry due to its structure is best described as an oligopoly...The oligopolistic structure creates the potential for adverse behaviour"

4.2.18 Submissions also suggest that some stakeholders lack confidence in the ASX forward price curve, suggesting that it is sometimes positioned above the price of CfDs and FPVV contracts. For example, EMH Trade notes that, in its view the:

a) "...competitive FPVV market is an indication of inefficiency in that derivative and FPVV markets are not aligned. This suggests that either there is still an internal disconnect in the pricing of these contracts within some of the major organisations or that futures are deliberately priced above FPVV to stifle competition..."

4.2.19 The WAG is aware that similar observations have been made by other participants. However, the WAG is not aware of any analysis that suggests the possible under-pricing of FPVV contracts is a systemic issue that points to some pricing inefficiency. Nevertheless, to the extent that some participants observe FPVV prices below futures prices, it can understandably influence the confidence those participants have in the robustness of the forward price curve.

4.2.20 Ultimately, the WAG has concluded that making a determination about the efficiency of forward prices would require further information and analysis. Given the complex range of factors being incorporated into futures prices, determining whether price differences efficiently reflect the underlying fundamentals would be a substantial under-taking. Furthermore:

a) It is doubtful whether any analysis to investigate the issue would ever come to a robust conclusion, particularly noting the subjective nature of risk. As stated by EMH Trade in its submission:

b) "We see it as futile to try to assess whether this premium is appropriate or not for the circumstances. A better question would be to ask whether or not there is an efficient market for risk in NZ electricity prices. HHI, entry and exit of participants etc. could be used to inform this analysis. If the risk market is efficient, it follows that the risk premium will be efficient."

c) Such analysis may not in itself provide significant value, and is unlikely to change the actions that might be taken to ensure price efficiency. As stated by Pulse Energy in its submission:

4.2.21 "The key take away for the WAG is that analysis and comparison is not a substitute for true liquidity. Identifying that deltas etc. are broadly consistent with other markets does not create liquidity nor address why such concerns exist. The reality is that the electricity market is relatively small, but that the level of trading is even lower. Analysis illustrating something is similar to an analogue from a different market is no substitute for actually producing a better outcome in the actual market being considered."

4.2.22 The WAG therefore considers that it has done what is practical and necessary to determine the efficiency of futures prices. It is likely that there would be diminishing returns from any further work aimed at providing a more conclusive answer. The WAG considers that it has gained sufficient insight from the analysis undertaken, and the submissions on that analysis, to determine an appropriate way forward.

There is evidence to suggest that some participants will find managing risk under current hedge market arrangements to be challenging

4.2.23 During the course of the project, the WAG heard presentations from a number of parties that reported a lack of confidence in the extent to which current hedge market arrangements support them in managing their risk. The Hedge Market Survey also identified a number of participant concerns.

4.2.24 Where possible, the WAG sought to substantiate the issues raised through metrics and analysis. However, the WAG noted that opinions were often conflicting, and the analysis often ambiguous. It sought more information and evidence from participants in the November 2014 discussion paper to help form a view of the materiality of the issues.

4.2.25 Submissions it received in response contained divergent views. Therefore, to help put the analysis and opinions in context, the WAG developed profiles of archetypal participants – existing and prospective. These profiles are described in Appendix B and summarised in the following table:

Archetypal market Participant	Description

Archetypal market Participant	Description
A prospective and entering retailer	Could include independent generators entering retail, or new entrants that may have little background in the electricity sector
A retailer undergoing early expansion and growth	An existing independent retailer looking to expand its customer base and manage the risks associated with a growing portfolio
A retailer reaching scale	An independent retailer that has been operating for some time, has established a reasonable scale with associated back office, and is exploring various means of managing purchasing risk
A well-established retailer	A vertically integrated generator-retailer business with relatively sophisticated systems and risk management strategies
A consumer	A relatively large consumer that takes a strong interest in managing electricity purchasing costs and risks
A generator	A relatively small generator without retail interests
A speculator	A bank, hedge fund, or individual interested in taking speculative positions on New Zealand electricity derivatives, possibly as part of a diversified portfolio of financial assets

Archetypal market Participant	Description
An intermediary	A bank or other party with relatively large financial resources, interested in trading ASX NZ derivative products in order to provide simpler products to some consumers over-the-counter

4.2.26 The WAG considers that this work highlights that every participant will want different things from the hedge market, and that these things will not necessarily be consistent across stakeholder categories.

4.2.27 Rather, a participant's hedging requirements will depend on a wide variety of factors, including their size, location(s), the nature of their business, the nature of their load and/or generation profile and assets, how well capitalised they are, their appetite for risk, and the other risk management opportunities that are available to them.

4.2.28 The WAG considers that some characteristics appear to be associated with a greater likelihood of being confident that current hedge market arrangements support reasonable access to risk management opportunities. These particular characteristics are described in detail in Appendix B and summarised briefly in the following table:

Characteristic	Description
Financing arrangements	Well-financed participants with ready access to capital to meet collateral requirements are well-placed to participate in hedge markets, and are more likely to invest in other risk management opportunities
Knowledge and expertise	Participants with a high degree of knowledge and expertise have staff and systems in place to assess the risks, and trade in a combination of exchange-traded and other hedging products
Resourcing	Well-resourced participants have trading teams and personnel committed to electricity volume and price risk management
Ability to manage profile and outage risks	Some participants are relatively well- equipped to manage profile and outage risk because they are able to access demand-response, flexible generation, or utilise fixed-price-variable-volume products
Ability to accommodate 1MW contract size	Some participants have relatively large trading portfolios that can readily accommodate 1MW ASX futures contracts

4.2.29 The WAG considers these five characteristics to be the most apparent factors associated with confidence that current hedge market arrangements support reasonable access to risk management opportunities. While there are likely others, in many cases, the WAG considers them to be a result of these five characteristics. For example, some parties lack confidence in market arrangements because they struggle to manage location price risks. However, this is likely to be because they are limited in the resource they can commit to managing these risks, or in their awareness or understanding of Financial Transmission Rights products (or both).

4.3 Vertical integration

4.3.1 There remain a number of participants in the industry that are unconvinced that the vertically integrated structure of the electricity market presents an efficient outcome that is in the long-term benefit of consumers. Some parties continue to advocate for a less vertically integrated market structure.

4.3.2 In its discussion paper, the WAG outlined its view that, while vertical integration has wider benefits for the market, it can reduce liquidity in hedge markets, and make it difficult for independent generators and retailers to compete. The WAG continues to hold this view.

4.3.3 Submitters tended to agree with this broad statement, but have divergent views about the extent to which it needs to be addressed. Some submitters suggested that the efficiency of vertical integration for the industry should be reviewed. For example, in its submission, Pulse Energy stated:

4.3.4 “The separation of generation and retail should also be seriously investigated as it is clear that both retail and generation entry is limited by the current industry structure and vertical integration.”

4.3.5 The WAG members have different views about whether vertical integration is likely to be in the long-term benefit of consumers. The WAG identified many of the costs and benefits of vertical integration in its discussion paper. The WAG further notes that:

a) Under a separated structure, generators and retailers may enter long-term contracts that approximate the same effect as vertical integration.

b) It is not only the major generator retailers that utilise vertical integration as a risk management strategy. A number of smaller independent generators are engaged in retailing to some degree, and there are new-entrants for whom vertical integration forms part of their long-term risk

management strategy. This is particularly relevant as small-scale distributed generation becomes more ubiquitous, which opens the door for parties to become vertically integrated from a much smaller size.

c) It is likely that new entrants would still find it challenging to manage risks through hedge markets if the electricity market remained dominated by a handful of large, well-funded participants. Specifically, divergent levels of confidence would likely remain on the basis that:

   i) Credit risk concerns and the ability to finance activities would still be challenging – indeed, they could become more challenging. The key difference would be that these challenges could be experienced by more parties, since major retailers may no longer be supported by firm assets, and major generators may have a less certain stream of capital.

   ii) Those with a reasonably high level of understanding about risk management and the New Zealand electricity market would still have an advantage over others, given the complexity involved in managing risk.

   iii) Those that were able to commit resources toward risk management, which can more easily be accommodated at greater scale, would still have an advantage over those that were less able to do so.

4.3.6 However, vertical integration has implications for hedge market liquidity. It reduces the incentives for some parties to trade with others and to manage different aspects of risk through hedge markets, and also plays into perceptions of market power. This issue is compounded by the concentration in ownership of generation assets, which means there can be a limited number of trading counterparties.

4.3.7 The WAG considers that it is undesirable to have one of the key features of the market structure doubted by participants, as it limits the extent to which the industry can engage collaboratively and constructively on market development in a number of contexts.

4.3.8 The WAG therefore recommends that the Authority consider the merit of conducting a one-off review into the extent to which vertical integration supports its statutory objective. The Authority's spot market review is useful in advancing the conversation about a number of wholesale market issues often raised by participants, including zonal pricing and capacity markets. A similar sort of analysis into vertical integration may prove valuable.

4.4 Market making arrangements may be fragile

4.4.1 Confidence in hedge market arrangements relies on the large generator retailers to support liquidity in those markets. Much of the recent improvements in hedge market conditions, which is largely tied to the development of trading on the ASX NZ market, is a result of the large generator retailers agreeing to act as market makers to support liquidity. While other parties also bring liquidity to the ASX NZ market through their participation, their trading activity generally relies on the availability of trading opportunities, and hence a 'base' level of liquidity.

4.4.2 To date, the market makers have each realised some benefits from the liquidity that results from their combined activity. However, market making has associated costs and risks. Some potential developments may see the market makers face additional costs and risks, but the benefits may be largely realised by other participants.

4.4.3 The market makers may therefore see diminishing returns from further developments in hedge markets. Potential developments that provide additional benefits to wider stakeholders, but little benefit to the existing market makers, may not be supported.

4.4.4 Therefore, there is a risk of stasis, whereby the market makers choose to pull back from their current activities, or choose not to support further developments. Such an outcome would not be conducive to forward momentum in the hedge market. Nor would it be in the long-term benefit of consumers.

4.4.5 The WAG notes that there are some signs that suggest that the market making arrangements may be fragile, evidenced by:

a) Some of the market makers suggesting that there is a risk they will pull back from their activity, due to concerns about 'free riding' behaviour. This was most evident in the submission from Contact Energy, which stated:

b) "Contact believes that the risk of voluntary market makers pulling out due to free-riding is one of the most substantial risks to the future of the hedge market."

c) Some large generator retailers expressing a high degree of confidence in current hedge market arrangements, and suggesting little need for further development. This may suggest that those large generator

retailers expect that additional developments may be of limited benefit to themselves. For example, Mighty River Power suggested:

d) "Mighty River Power supports the hedge market and in our view it should be left to its own devices to grow organically…

e) We consider the market will deliver new products on commercial terms as it continues to mature."

f) Observations of some market makers not fully complying with their market making agreements in some periods.

4.4.6 The WAG notes that the market makers have some incentives to encourage greater participation in the ASX NZ market. The greater the role of speculators and other traders, the lower the reliance on the market makers to provide liquidity.

4.4.7 However, it may be that some potential developments will only be in their interests if they prevent a less desirable outcome.

4.5 The WAG favours market facilitation measures

4.5.1 A hedge market is an essential part of an efficient and competitive electricity market.

4.5.2 The WAG notes that there has been meaningful progress in the hedge market in recent years and this view was supported by most of the presentations made, analysis considered, and submissions received by the WAG. Indeed, some parties have reported that they are confident in current hedge market arrangements.

4.5.3 However, as discussed in section 4.1, some parties are not confident they have the appropriate tools, or that the hedge market provides sufficient opportunities, to manage risk under the current arrangements. This may result in inefficient or ineffective risk management and decision making, and have implications for retail competition.

4.5.4 The WAG considers that there are development opportunities that would support more widespread confidence in hedge market arrangements. Initiatives to improve confidence should help to maintain forward momentum, and enhance the contribution the hedge market makes towards efficient wholesale and retail markets.

4.5.5 In its discussion paper, the WAG identified several development opportunities that could be pursued using market facilitation measures.

Many were expected to be low cost and risk, while potentially having a meaningful impact on competition and confidence in the forward price curve. Not all of these relate specifically to the problems that the WAG has identified. However, the WAG considers that some of these developments, targeted in the right areas, could have a meaningful positive impact.

4.5.6 The WAG considers that adopting market facilitation measures is appropriate at this stage because:

a) Such an approach is proportional to the extent of the problems the WAG has been able to identify. While the WAG identifies that some parties lack confidence in current hedge market arrangements, and that this has the potential for inefficient outcomes, it is unable to point to evidence of such outcomes. Indeed, since trading began on the ASX NZ market:

   i) new parties have entered the market

   ii) existing parties have been expanding their retail presence.

b) With reference to paragraph 3.1.9, there are several risks of unintended consequences with a more intrusive approach. For example:

   i) The different parts of the hedge market are highly interrelated. Intervening in one part of the hedge market could have negative impacts in another, and these could be difficult to predict. For example, interventions to improve liquidity in the ASX NZ market could simply shift liquidity from the over-the-counter market, which may affect the hedging potential of parties that cannot operate on the exchange.

   ii) Some interventions may seek to address vertical integration as a means of improving liquidity in hedge markets. However, this may dis-incentivise generation investment, or impact innovation with respect to small-scale distributed generation and other novel technologies.

   iii) Some interventions may create price distortion in the market. For example, requiring that parties sell some minimum proportion of their generation to others may result in them trading at uneconomic prices.

   iv) Some interventions may create a moral hazard, whereby parties over-consume a resource because they are not the ones that face the costs and risks. For example, mandatory market making of a peak or

cap product on the ASX NZ market could expose market makers to risks, but the benefits of a more liquid peak or cap product may be predominantly realised by other parties, and they may not necessarily be physical participants in the market.

c) There needs to be a high threshold for intervention by making Code amendments. The WAG is not confident that it has been able to pinpoint whether there are fundamental, underlying problems that are resulting in issues of confidence in hedge market arrangements, sufficient to meet this threshold. In particular:

i) Any intervention via Code amendments would need to be assessed against the Authority's Code amendment principles. The WAG does not consider that there is sufficient evidence at this point in time to meet principle 2 – i.e. that it *"provides clearly identified efficiency gains or addresses market or regulatory failure"*

ii) The Authority has developed regulatory strategy principles that guide its approach to regulation. Against these, it is not clear that the Authority could

iii) "As far as possible, adopt regulatory arrangements that move the problem over time to a situation where the first-best solution can be adopted."

or

iv) "Adopt regulatory approaches that, over time, reveal more about the true nature of the problem and the true constraints on regulatory intervention so that more effective regulation can be designed as the regulatory problem and regulatory constraints are better understood over time. The aim is to address the cause, not the symptom."

4.5.7 Overall, the WAG does not consider that the underlying problems or the efficient outcome for risk management are sufficiently clear at this point in time to justify intervening in the hedge market by making Code amendments, and that intervening could have unintended consequences that could potentially make matters worse.

4.5.8 In this regard, the WAG refers to a comment from Professor William Hogan in his paper "Electricity Market Design and Efficient Pricing: Applications for

New England and Beyond" (24 June 2014)[8]. While the comment relates to capacity markets, the WAG considers it also sums up the issues with regard to intervention in hedge markets.

i) "Failure to address the fundamentals has the almost inevitable effect of compromising the benefits of efficient markets and creating new challenges. For example, efforts to increase investment by developing capacity markets, rather than fixing the pricing in real-time, raise costs for loads but the costs are socialized and do not provide effective incentives for either demand participation or reliable operation. This leads to the need for supplemental real-time performance incentives, that may help with generation operations but still do not address the opportunities for demand participation. The net effect is to move more and more towards administrative prescription and higher average costs, recreating the problems that were intended to be addressed by electricity restructuring. These indirect attempts to create the effects of efficient pricing, without the efficient prices, confront the reality that we do not know how to design regulations for efficient outcomes when the pricing incentives motivate inefficient behaviour. If we did know how to accomplish this administrative feat, there would be no need for electricity markets."

4.5.9 However, the WAG recognises that further progress is important, that setting aspirational targets can be helpful, and if less intrusive market facilitation measures fail to yield positive outcomes in the long-term interests of consumers, then a more intrusive approach in the form of possible Code amendments could be warranted.

4.5.10 The WAG therefore recommends the Authority adopt a staged approach to enhancing the contribution of the hedge market involving:

a) market facilitation measures in the first instance

b) establishing some specific target outcomes for the hedge market with specific time frames

c) monitoring of hedge market outcomes relative to those targets and time frames

[8] See http://www.hks.harvard.edu/fs/whogan/Hogan_Pricing_062414.pdf

d) preparing possible Code amendments in advance that are capable of being implemented at short notice

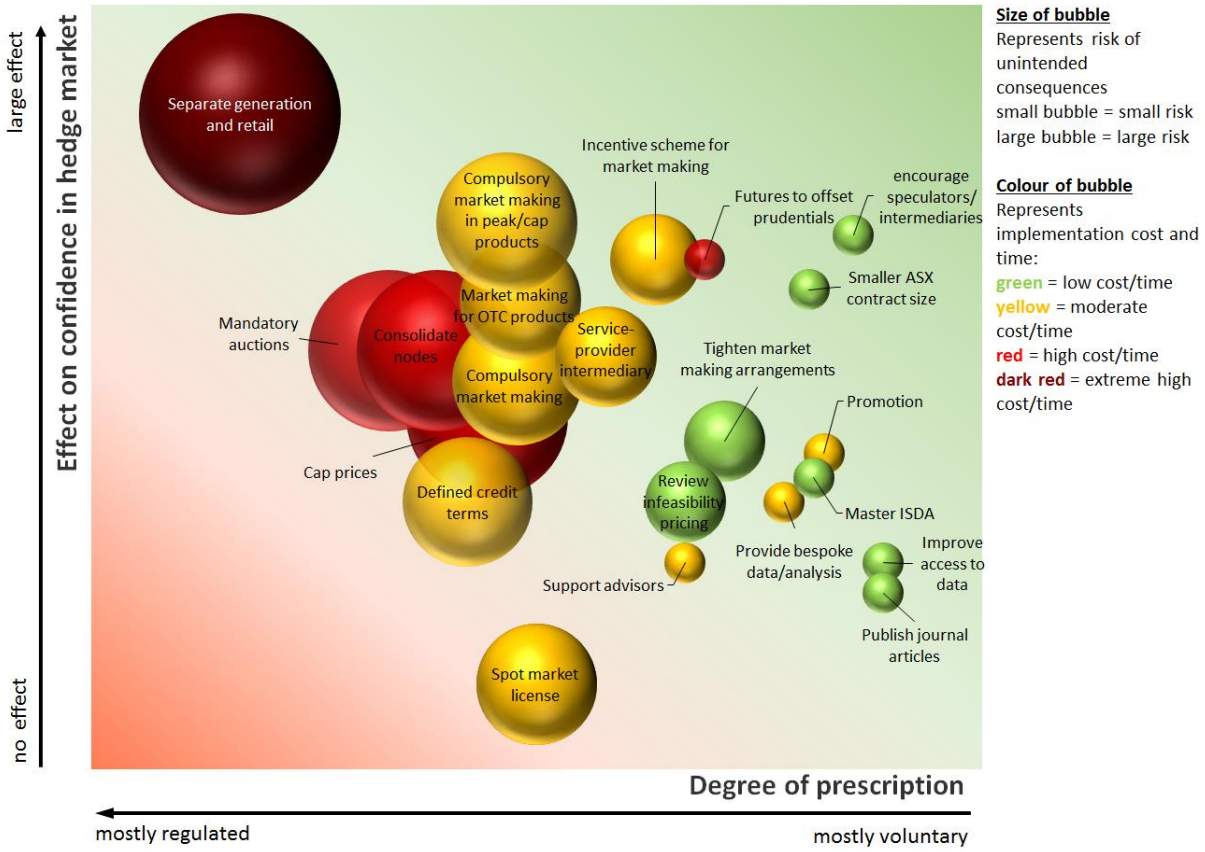
e) considering carefully whether to implement those Code amendments if the targets are not met within the specified time frames.

5 The Authority should adopt market facilitation measures in the first instance

5.1 The Authority should ensure its interventions are proportional to the issues

5.1.1 In its discussion paper, the WAG identified a range of potential developments that could be pursued to improve hedge markets. These varied in both their costs, risks and their likely effectiveness in terms of improving competition and confidence in the forward price curve. These potential developments are summarised in Figure 3.

Figure 3: Assessment of initiatives aimed at improving confidence in hedge markets



5.1.2 This diagram provides an indicative assessment of a range of potential interventions using four different dimensions describing:

a) the degree of prescription required - on the x axis

b) the effect on confidence in hedge market arrangements - on the y axis

c) the risk of unintended consequences - by the size of each 'bubble'

d) the implementation effort required - by the colour of each 'bubble'.

5.1.3 Any intervention should be proportional to the problems identified and should focus on developments such as those indicated by small green 'bubbles' in the top right-hand corner of the diagram. These measures would likely have a positive impact on confidence in hedge markets without requiring intrusive regulation or high implementation cost, and while offering a low risk of unintended consequences.

5.1.4 The initiatives that appear to be most promising in this respect are:

a) encouraging speculators/intermediaries

b) smaller ASX contract size

c) promoting participation in hedge markets

d) providing better information and easier access to data and analysis

e) providing standard contracts that could be readily adopted.

5.1.5 In the first instance, the WAG recommends that the Authority pursue market facilitation measures of this nature, with a focus on measures that will reduce barriers to participation in hedge markets. This will support forward momentum and enhance the contribution of hedge markets to wholesale and retail competition.

5.1.6 These developments should aim to target factors that are associated with confidence in hedge market arrangements. Specifically, developments should aim to:

a) improve participants' ability to manage the need for large amounts of capital

b) improve participants' understanding of risk management and the New Zealand electricity market

c) reduce the resource-intensive nature of managing risk through hedge markets

d) provide opportunities to better manage profile or outage risks

e) allow smaller parties to more comfortably accommodate exchange traded products.

5.1.7 The WAG considers that the four participant groups discussed in section 5.2 should be specifically targeted by the Authority in any development efforts

and identifies specific development suggestions in sections 5.3 to 5.10. These include that the Authority should:

a) continue to encourage the reduction in the ASX NZ derivatives contract size

b) encourage tighter bid-offer spread and greater depth in ASX futures market making

c) encourage the development of exchange traded products that allow management of profile and outage risk

d) continue to investigate options to allow futures to offset prudential requirements

e) provide for standardised over-the-counter and intermediating contracts

f) pursue educational developments

g) promoting opportunities to improve risk management

h) facilitate easier access to wholesale market information.

5.1.8 A high-level assessment of these suggested developments against the development aims is provided in Table 1.

Table 1: High-level assessment of suggested developments

(✓✓✓ indicates a very positive contribution)

Development aim	Encourage reduction in ASX NZ derivatives contract size	Encourage tighter bid-offer spread and depth in market making	Encourage development of products to manage profile and outage risks	Investigate options to allow futures to offset prudential requirements	Provide for standardised OTC and intermediating contracts	Pursue education prospects	Promoting opportunities to improve risk management	Facilitate easier access to wholesale market information
Improve parties' ability to manage need for large amounts of capital	✓✓	✓✓	✓	✓✓✓	✓✓	✓✓	✓✓	
Improve parties' understanding of risk management and NZ electricity market			✓		✓	✓✓✓	✓✓✓	✓✓

Reduce resource-intensive nature of risk management		✓✓		✓	✓✓	✓	✓	✓✓
Provide opportunities to manage profile or outage risks	✓✓		✓✓✓		✓✓	✓✓	✓✓	
Allow smaller parties to more comfortably accommodate exchange traded products	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	

5.2 The WAG identifies four key groups as targets of potential developments

5.2.1 The WAG considers that there are four distinct groups of existing and prospective participants that should be the target of developments that will support increased confidence in hedge market arrangements. These are:

a) financial participants

b) retailers and generators

c) large vertically integrated generator retailers

d) consumers.

5.2.2 Each is discussed in turn in the following:

Financial participants

5.2.3 In its discussion paper, the WAG outlined the value that financial participants can provide to hedge markets. Specifically, the WAG noted that financial participants can:

a) Speculate on prices in futures markets, thereby supporting improved liquidity and price efficiency. It noted that participation from proprietary traders may be particularly valuable in the New Zealand electricity market because of the small number of participants and high levels of vertical integration.

b) Act as intermediaries, who can re-package exchange traded products into other offerings in the over-the-counter market.

5.2.4 Submitters tended to agree that attracting greater participation from financial participants is a valuable endeavour. For example, Meridian Energy stated:

5.2.5 “Meridian believes speculators and intermediaries play an important role in the hedge market. With the four largest generators already market-making on ASX, encouraging participation from speculators is likely to be critical to any further increase in market liquidity.”

5.2.6 The WAG further identifies that financial participants may also provide credit support for participants and consumers. They therefore play an important role in facilitating growth and investment activities.

5.2.7 The WAG considers that intermediaries could play a key role in helping some participants overcome the difficulties they face in managing risk. Intermediaries could allow participants to:

a) benefit from exchange traded and Financial Transmission Rights products, while maintaining the operational simplicity of over-the-counter trading because they can:
   i) avoid the need to understand how to trade these products confidently
   ii) access more bespoke products through product repackaging
   iii) lodge hedge settlement agreements with the clearing manager and hence reduce their prudential obligation.
b) avoid the need to trade with a competitor in the over-the-counter market
c) improve their access to credit, by improving the banks' understanding of participants' businesses and risk exposure, and forming closer relationships
d) potentially achieve benefits from some optimisation of their cash-flows and collateral requirements.

5.2.8 The WAG therefore considers that the potential benefit from financial participants having improved confidence in their ability to operate in New Zealand hedge markets is significant. There has been limited activity from financial participants in the market to date. In Appendix B, the WAG discusses how the factors influencing confidence in hedge markets relate to financial participants.

5.2.9 The WAG considers that intermediaries are somewhat of a special case. In addition to challenges that are common with other participants, an intermediary's ability to operate relies on it being able to compete with generator retailers at a wholesale level. For potential clients, the prospect of inserting a middle-man looking to make a margin can therefore make the intermediary relationship challenging.

5.2.10 The WAG therefore considers that participation by intermediaries needs to be facilitated by reducing costs and barriers to this relationship for both the client and the intermediary.

Retailers and generators

5.2.11 The WAG considers that there is substantial benefit in retailers and generators having greater confidence in hedge market arrangements. As the WAG identified in its discussion paper:

a) Any initiative that could improve the ability of independent retailers and generators to efficiently manage risk may reduce the competitive disadvantage they have compared to parties that can manage price risk through vertical integration. It may improve their ability to compete in the wholesale and retail markets.

b) Independent retailers and generators could make a useful contribution to liquidity and price efficiency on the ASX NZ market if they were more confident in trading on that platform, which could further improve confidence that hedge market arrangements support reasonable access to risk management opportunities.

5.2.12 In Appendix B, the WAG discusses how the factors influencing confidence in hedge markets relate to generators and retailers specifically. Developments should aim to address these factors.

5.2.13 The WAG further notes that, as discussed, some retailers and generators could likely benefit from the services of intermediaries. Generators and retailers may therefore be able to more efficiently manage risk by facilitating that relationship.

Large vertically integrated generator retailers

5.2.14 The WAG notes that large vertically integrated generator retailers are more likely to have confidence in existing hedge market arrangements. The WAG therefore does not consider it particularly necessary for developments to be targeted towards supporting these participants.

5.2.15 However, some parties have suggested that generator retailers 'warehouse' risk in their portfolios – that is, they hold on to risk, rather than trading it with someone with an opposing interest, or passing it on to third parties. Some vertically integrated participants may also be unable to get internal authorisation to trade certain types of hedge products.

5.2.16 The WAG understands that there have been improvements in this area, but it may be possible to encourage vertically integrated participants to more readily monetise the 'warehoused' risk by trading it with others - for example, by more proactive trading of idle capacity. There may also be opportunities to support them in being able to trade more varied hedge products.

5.2.17 This could support increased liquidity, and hence greater confidence in hedge market arrangements amongst other participants.

Consumers

5.2.18 The WAG considers that there is benefit in consumers having greater confidence in operating in derivative markets and this could have positive flow on benefits to the wider hedge market. In its discussion paper, the WAG identified that:

a) some consumers lack confidence in the efficiency of the hedge market and accept risk or manage it by other means

b) some consumers may realise a financial benefit by taking an approach to risk management other than trading fixed-price variable-volume products

c) many customers sign up to contracts linked to spot prices, and may not be aware of, or well placed to manage the risk that this can expose them to.

5.2.19 The WAG further notes that, as with retailers and generators, consumers could make a useful contribution to liquidity and price efficiency on the ASX NZ market if they were knowledgeable and confident about trading in derivatives. This would improve confidence in hedge market arrangements amongst participants more widely.

5.2.20 In Appendix B, the WAG discusses how the factors influencing confidence in hedge market arrangements relate to consumers specifically. Developments should aim to address these factors.

5.2.21 As with retailers and generators, the WAG considers that consumers may also benefit from developments to facilitate the relationship with intermediaries.

5.3 The Authority should continue to encourage the reduction in the ASX contract size

5.3.1 The WAG understands that a reduction in the size of ASX contracts from 1 MW to 0.1 MW is being progressed. The WAG considers this to be a valuable development, as it would allow more participants to utilise ASX NZ products as part of their risk management strategy, better manage seasonal profiles, and help diversify risk management portfolios.

5.3.2 Submitters expressed widespread support for a reduction in the ASX contract size. However, one submitter, Mighty River Power, expressed

concern about suggestions it was to go ahead in 2015, despite still being the subject of WAG and ASX User Group consideration.

5.3.3 The WAG considers that a reduction in the contract size should be achievable by a participant-led exercise via the ASX User Group. However it notes that progress has been slow and it recommends that the Authority takes active steps to encourage progress if further delays appear likely.

5.4 Improved market making in ASX baseload futures

5.4.1 The WAG understands that the Authority is investigating the possibility of encouraging the existing market makers to modify their agreements with ASX to provide for a reduced maximum spread between bids and offers.

5.4.2 The WAG agrees that a reduced spread is likely to increase liquidity, improve the confidence in forward prices, and potentially attract more participants to trading in ASX NZ futures.

5.4.3 The WAG considers that a reduction in the maximum bid-offer spread to 3% should be achievable through a participant-led exercise via the ASX User Group. To facilitate this process the WAG recommends that the Authority takes active steps to encourage the ASX and the existing market makers to progress such an initiative.

5.5 Improved management of profile and outage risk

5.5.1 The WAG understands that the Authority is investigating the possibility of encouraging the existing market makers to agree to make a market in the existing peak futures product and encouraging the possibility of introducing a cap product.

5.5.2 The WAG agrees that the availability of liquid peak and cap products are likely to enhance the ability of participants to manage profile and outage risks, improve the confidence in forward prices, and potentially attract more participants to trading in ASX NZ futures.

5.5.3 The WAG recommends that the Authority takes active steps to encourage the ASX and the existing markets makers to progress initiatives in this area.

5.6 The Authority should continue to investigate options to allow futures to offset prudential requirements

5.6.1 The WAG understands that the Authority is investigating arrangements that would allow a futures position to offset the prudential security required by the clearing manager. The Authority has indicated to the WAG that

developing such an arrangement is likely to be complex, and may be limited in its delivered benefits. However, the WAG notes that prudential requirements are a significant burden on market purchasers, and considers that any opportunities to reduce this burden are worthwhile pursuing. The WAG therefore recommends that the Authority continue its investigation.

5.6.2 The WAG notes that facilitating relationships with intermediaries may also help to address these same concerns.

5.7 The Authority should provide for standardised over-the-counter and intermediating contracts

5.7.1 The WAG considers that there would be considerable advantages from having intermediaries actively participating in the exchange-traded market, not only to assist with liquidity and price discovery, but also to potentially assist participants in managing their need for capital. To support this, the Authority should look to develop a standardised model contract for intermediating services. A standardised model contract could facilitate financial participants and prospective clients agreeing to terms, by simplifying the contract negotiation process and reducing costs. It may also help provide clarity to participants about the potential role for an intermediary.

5.7.2 The Authority should also facilitate development of standardised contracts for trading over-the-counter, to improve the efficiency of trading through that market, and to reduce barriers to entry for less well-resourced parties. There may be benefit in standardised contracts for baseload and peak products. While most generator retailers will have standardised contracts already, consumers may value access to a standardised contract that is endorsed by an independent third party.

5.7.3 The WAG also considers that there may be benefit in the Authority investigating the extent to which the New Zealand Financial Markets Association can take a role in supporting the development of standardised contracts. They may also be able to play a role in providing education to participants.

5.7.4 The New Zealand Financial Markets Association[9] is an association of financial market professionals, whose aim is to promote the efficient operation of the over-the-counter financial markets, and provides relevant educational

[9] http://www.nzfma.org/

opportunities. The Australian equivalent of the New Zealand Financial Markets Association is understood to be closely involved in the markets for electricity derivatives in Australia. However, this is not the case in New Zealand.

5.8 The Authority should pursue educational initiatives

5.8.1 The WAG considers that there are a range of potential educational developments that could support more widespread confidence in hedge markets.

5.8.2 The WAG notes that the Authority does already provide some educational material. Specifically, it notes that the Authority:

a) Published a 'guide to managing electricity spot price risk'. The WAG understands that the guide was well received by participants and consumers.

b) Includes information on a range of hedge market topics on its website, including links to advisors and brokers.

5.8.3 Therefore, to some extent, the WAG's recommendations around education may simply require that the Authority make information it already has more accessible, more up-to-date, or distribute it more effectively.

The Authority should provide education about the New Zealand electricity market and associated risks

5.8.4 The WAG considers that there is value in supporting further education about the New Zealand electricity market, and the risks associated.

5.8.5 In particular, the WAG considers that there is a clear education opportunity for financial participants. The WAG identifies a number of shortcomings in some financial participants' understanding of the New Zealand electricity market.

5.8.6 For example, it has been suggested that potential and existing participants, and especially some potential financial participants, have been intimidated by infeasibility values being published as if they are prices which will be used for settlement. This practice can give the impression that prices occasionally spike to over $100,000/MWh. This suggests a misunderstanding about what the publishing of infeasibility values means, and this may give rise to concerns about the inability to limit extreme risks. These parties may have further misconceptions about the risk of extreme prices if they are not

familiar with scarcity pricing, the undesirable trading situation provisions, and the recent net pivotal provisions, which may serve to limit the risk of extreme prices at times.

5.8.7 Australian-based financial participants may be particularly susceptible to such misunderstandings, perhaps because they are anchored by their understanding of the Australian National Electricity Market.

5.8.8 The Authority has suggested a need to introduce a cap product on the ASX NZ market to overcome financial participants' concerns about limiting their risk. This may indeed be necessary. However the WAG considers it may be worthwhile seeking to improve understanding about these risks as a first step, particularly if developing a liquid cap product comes at cost and risk for other participants.

5.8.9 The WAG expects that direct face-to-face meetings are likely to be best suited to supporting improved understanding of the New Zealand electricity market amongst financial participants.

5.8.10 There may also be benefit in improving the knowledge base of consumers about the risks that are faced in the New Zealand electricity market. Many consumers have a poor understanding of the market and risks they can face. However, these stakeholders are likely to be time-limited, and may not be interested in forming an in-depth understanding, particularly if electricity costs are a small component of their overall costs.

5.8.11 The Authority should therefore consider simple ways to provide key pieces of information in an easily accessible manner. The WAG identifies that the short animations that the system operator has available on its website regarding aspects of system operations are successful in explaining complex concepts in an accessible way. The Authority could adopt a similar approach to help explain risks associated with the electricity market.

5.8.12 Participants that are new to the industry may also benefit from this information.

The Authority should facilitate education about risk management for electricity

5.8.13 The WAG considers that there is value in supporting increased knowledge and expertise about how to effectively manage electricity-related risks, and the markets through which that can be done in New Zealand. As well as generally being informative, education can demonstrate how to manage

electricity related-risks effectively, and is generally associated with better planning and improved long-term outcomes[10].

5.8.14 While there will be benefit from educational material targeted to some specific outcomes, the WAG considers that there is also benefit in providing materials that will generally support 'up-skilling' by all stakeholders over time. This can support greater sophistication and confidence, and more effective risk management.

5.8.15 Education opportunities could include:

a) Material targeted to members of company Boards or management teams, to encourage:

i) A greater appreciation for the value that can be gained from pro-active risk management and monetising risk (for example, by trading idle capacity). This may potentially facilitate the allocation of greater resources to risk management opportunities, and encourage Boards to authorise their risk management teams to utilise a wider variety of risk management products.

ii) The marrying of procurement functions with treasury, accounting, and management functions within their organisations, to support a more integrated approach to electricity risk management.

b) Material targeted at less sophisticated participants, to ensure they understand the different risk management tools and strategies, and what constitutes 'effective' risk management. It may be appropriate to include some educational or risk management planning material into the reconciliation approval process.

c) Material to support consumers and participants that are considering trading over-the-counter. The New Zealand Financial Markets Association holds training courses about transacting over-the-counter in financial markets. Its Australian counterpart does likewise, and also produces a web-based guide. These act as low-cost alternatives to seeking legal advice about over-the-counter contracts. The Authority could facilitate similar developments for the New Zealand electricity market.

[10] http://www.oecd.org/daf/fin/financial-education/TrustFund2013_OECDImproving_Fin_Ed_effectiveness_through_Behavioural_Economics.pdf

d) The publication of guidance about mark-to-market standards for electricity derivatives. Some consumers have suggested that they are unable to trade some forms of hedge contract because their governance rules and accounting departments are unsure about how to include such contracts in their accounts, and/or the impact it will have on their operating results and balance sheet. Guidance on this may hence be valued by some consumers.

e) Publication of 'case studies about participants that have taken an effective or novel approach to risk management. The Energy Efficiency and Conservation Authority (EECA) has used case studies to good effect in demonstrating how parties have tackled energy efficiency issues[11]. These case studies describe a party's situation, the opportunity available, action taken and the benefits that were achieved. The Authority could take inspiration from EECA's approach.

f) Material supporting a greater understanding of the different risk management products, and various trading strategies that could be employed to utilise them.

5.8.16 The WAG notes that some parties already provide training and education opportunities about electricity price risk management and operating in the hedge market on a commercial basis. While the Authority should avoid 'crowding out' commercial activity in this area, it should identify the gaps in training and education and consider how they are best filled. The WAG considers that:

a) As per paragraph 5.8.15b), it would be appropriate for the Authority to provide information that ensures a minimum level of understanding, and encourages uptake of more advanced educational opportunities.

b) The Authority should facilitate the development of materials that may not currently be provided on a commercial basis. It should consider approaching the New Zealand Financial Markets Association, who may be well placed to support some of the developments identified above, by providing an electricity-market spin on some of their existing services.

c) The Authority could also consider whether there are practical opportunities to facilitate 'shared learning' amongst participants.

[11] See http://www.eeca.govt.nz/resource-centre/listing/58/48%2045%2050%2049%2051%2046%2047%2078%2077%2076%2052%2014%2038%2025

d) As per paragraph 5.8.15e), the Authority should consider developing case studies. There may also be other opportunities for the Authority to incentivise parties to pursue education opportunities, and improve awareness of the opportunities available. For example, socio-normative messaging, and messages highlighting the potential savings from a particular risk management approach could be effective at encouraging participants to advance their skills.

5.9 The Authority should promote opportunities to improve risk management

5.9.1 The WAG recommends that the Authority consider developments that encourage parties to make favourable decisions, by emphasising the opportunities available.

5.9.2 For example, the Authority should consider analysing and highlighting the opportunity available for speculation in the New Zealand electricity market.

5.9.3 Financial participants may be biased against entering the New Zealand electricity market by their expectation that the opportunity is small because the market itself is small. However, the analysis by Energy Link suggests there may be the potential for quite sizeable returns from ASX NZ futures if the risk can be borne.

5.9.4 In this regard, parallels can be drawn with petroleum exploration in New Zealand, which has been typically viewed as an expensive and high-risk exercise. However, the rewards have the potential to be significant.

5.9.5 New Zealand Petroleum and Minerals (NZPAM) has been able to increase interest in New Zealand petroleum exploration by making information available, and advertising the opportunities at international industry events. The Authority may be able to draw some inspiration from NZPAM's approach.

5.9.6 There may also be value in the Authority doing work to encourage interest amongst stakeholders in intermediating services, perhaps by highlighting the potential value that operating through an intermediary could provide an independent generator, retailer or consumer. The Authority could then potentially put some scope around the services that are of most interest to stakeholders, and make the resulting opportunity more apparent for financial participants.

5.9.7 The WAG considers that there may also be opportunities to emphasise the opportunities for consumers. For example, the Authority could:

a) Develop decision aids that help consumers narrow in on risk management approaches that might suit their business, given their electricity volumes, load profile, financial arrangements, appetite for risk etc. This could help overcome the difficulties in choosing between a number of complex options.

b) Highlight the potential savings consumers might see by taking a different approach to risk management – similar to the ethos behind 'What's My Number'. Some participants have indicated that the primary driver for them in developing a more sophisticated approach to risk management has been the opportunity to make savings.

c) Providing target consumers with socio-normative messaging. For example, consumers may be encouraged to engage in more pro-active risk management if made aware that their peers are doing likewise. As well as being educational, developing case studies like those published by EECA could be effective in this regard.

5.9.8 The Authority's retail data project may support more bespoke data being made available to support such developments.

5.10 The Authority should facilitate easier access to wholesale market information

5.10.1 The WAG recommends that the Authority consider whether it can practically implement developments that would reduce the time and effort involved in accumulating data. Participants require data to operate in the market and form a view of forward prices (i.e. hydro and inflows data and forecasts, price data etc.), and it may be possible to make this easier to access. For example, the Authority could accumulate data into a single database, or produce a visible website that links directly to the data provided by others.

5.10.2 The WAG notes that some stakeholders have difficulty accessing and interpreting exchange-traded data. The Authority should consider whether it could play a useful role, on behalf of stakeholders, in accessing and interpreting this data and making it more widely available.

5.10.3 The WAG suggests that the Authority should largely restrict itself to making data more readily available, and leave participants and other commercial parties to analyse and present the data. However, if there are identified gaps in wholesale market information, the Authority should consider how they are best filled.

6 The Authority should monitor progress in hedge markets to inform the need for further intervention

6.1 Introduction

6.1.1 The WAG has identified divergent levels of confidence in current hedge market arrangements.

6.1.2 The WAG expects the hedge market to continue to evolve naturally, as it matures, and as participants develop ways to overcome any challenges they face. The WAG has also made several recommendations for market facilitation measures that should assist the evolution of the hedge market. The WAG suggests that all market participants should benefit from dynamic hedge markets that allow for effective risk management, and should hence be willing to support developments that help to achieve this.

6.1.3 However, should the market facilitation measures fall short, and/or the hedge market fail to evolve in the manner expected, it may be necessary to intervene in other ways. The WAG therefore recommends the Authority monitors the hedge market and publishes regular reports that will allow stakeholders to be well-informed about progress.

6.1.4 The WAG has also developed some specific target outcomes and specific target dates that should be achieved if the hedge market is progressing satisfactorily. These target outcomes and dates should be used as markers to inform the need for further intervention. These are discussed in section 6.6.

6.1.5 The WAG recommends that the Authority should monitor the development of the hedge market against the specific targets and dates.

6.2 The Authority should measure success in the context of wider risk management

The Authority should monitor the extent to which risk management arrangements are conducive to competition and efficiency

6.2.1 The Authority's information paper entitled 'Industry and market monitoring: competition', published 31 August 2011, sets out the Authority's intention to adopt the well-accepted "structure-conduct-performance" (SCP) framework to organise its analysis of competitiveness. The simple premise is that the structure of the market determines the conduct of its participants. This conduct drives outcomes. The more competitive the structure, the more competitive the conduct of participants and the more efficient their

performance. The approach includes constructing standardised metrics of competition across each dimension of the SCP framework and applying these to a range of market segments.

6.2.2 The WAG considers that regular monitoring of this form could usefully be adopted here, targeted towards observing the market's development, and the efficiency of outcomes. It should also allow the Authority to identify whether there may be more fundamental underlying problems resulting in issues with confidence in hedge markets.

6.2.3 The WAG refers to the comment from EMH Trade in its submission:

6.2.4 "We see it as futile to try to assess whether this premium is appropriate or not for the circumstances. A better question would be to ask whether or not there is an efficient market for risk in NZ electricity prices. HHI, entry and exit of participants etc. could be used to inform this analysis. If the risk market is efficient, it follows that the risk premium will be efficient."

The Authority should assess hedge markets as part of a balanced scorecard

6.2.5 The WAG reiterates its view that the hedge market is one of a number of ways to manage risk, all of which can make up a healthy landscape for risk management, and that the effectiveness and efficiency of different approaches to risk management will vary for different parties.

6.2.6 To date the Authority has largely focussed on metrics relating to the ASX NZ market for assessing the performance of the hedge market. The WAG considers this to have been appropriate for assessing the performance of the ASX NZ market specifically, particularly during the early growth stages of that market.

6.2.7 The WAG considers that metrics about the ASX NZ market, in context, can still *contribute* to an overall picture of hedge market performance, particularly given the importance of the forward price curve to the wider hedge market and other approaches to risk management.

6.2.8 However, the WAG considers that ASX NZ market metrics may not give a complete and accurate picture about the efficiency of risk management. This is because:

a) An improvement in metrics relating to one approach to risk management may simply measure a shift in risk management from one approach to

another, rather than an improvement in the efficiency of risk management more generally.

b) It can be expensive to build a hedge profile through the ASX NZ market due to the need to meet initial and variation margins for all contracts held. These costs do not arise for over-the-counter contracts, which are functionally simpler, and may have much lower cash requirements depending on counter-party credit worthiness. Therefore, there will be limits on the extent to which trading on the ASX NZ market is efficient for participants. Metrics about that market might give a limited view of the efficiency of risk management.

c) It is not informative about the extent to which a party can effectively manage risk. This is increasingly important, as disruptive technology makes the risk management opportunities more varied and allows for innovation that may not be observable by focussing on a single market.

6.2.9 The WAG therefore recommends that the Authority assess hedge market efficiency in terms of a 'balanced scorecard', and – to the extent that it practically can - measure levels of activity across all of the different approaches to risk management. Effective monitoring against all approaches to risk management should inform the extent to which the hedge market is conducive to efficient and competitive outcomes in the longer term.

6.2.10 To achieve this, monitoring should, to the extent practicable, capture:

a) each of the different aspects of the hedge market, including the market for Financial Transmission Rights

b) the use of generation and load management for risk management

c) other business strategies for limiting or managing exposure to different risks.

6.2.11 The WAG expects that the Authority will need to update the hedge market section of the website to ensure it has the necessary optics around activity in the over-the-counter market, and that the data is accurate, reliable, and disclosed in a timely manner. The Authority should also consider whether it needs to develop better arrangements for capturing other relevant information to support its monitoring. It may be possible to utilise publically available sources (such as media statements) to provide sufficient information about activity in regards to 6.2.10b) and 6.2.10c).

The Authority should determine the appropriate metrics for assessing efficiency

6.2.12 The most appropriate metrics for assessing efficiency will differ between the different approaches to risk management, and the WAG considers that the Authority should determine the metrics that will be most appropriate for the different circumstances. However, some informative metrics are likely to include:

a) Herfindahl–Hirschman Index (HHI), and the four-firm concentration ratio (CR4) relating to the market makers

b) entry and exit of participants

c) measures of the range of risk management products available and innovation in these products

d) measures of confidence in forward prices – perhaps via the Hedge Market Survey.

6.2.13 Some level of disaggregation of this information by location and time or contract period would be appropriate where relevant and practical.

6.3 The Authority should publish quarterly reports about risk management activity

6.3.1 The WAG considers that the Authority should develop a regular publication that focuses on risk management activity.

6.3.2 The aim of this report should be to provide regular updates about the *performance* of markets that support effective risk management so as to:

a) improve understanding of, and confidence in the dynamics of those markets, and their ongoing development

b) draw attention to issues and activities to encourage efficient behaviour.

6.3.3 The reports should augment, but not be a substitute for, participants' own analysis to inform their day-to-day business operating decisions.

6.3.4 The WAG notes that the Authority already publishes some information about hedge markets, including in its:

a) weekly 'NZ Electricity Hedge Contracts' report, which captures trading statistics for the ASX NZ market

b) annual 'Year in Review', which includes high-level statistics about hedge market performance.

6.3.5 The WAG considers there is a place for another report that provides a discursive assessment of activity across all markets related to risk management (including the spot market, the FPVV market and the derivatives market) and by putting developments and behaviours in greater context.

6.3.6 The WAG considers that the analysis published as part of its Hedge Market Development project[12] has helped advance participant's understanding about the dynamics of risk management. The WAG considers there is value in continuing to publish similar analysis.

6.3.7 This new report should assess performance at a high level, drawing on progress against some specific targets included in section 6.6. However, it should put context around these assessments by also reporting on activity at a more detailed level.

6.3.8 The Authority could, if practical, draw on:

a) analysis such as that used by the WAG during its project, perhaps including analysis of:
   i) traded volumes in different markets and products
   ii) how futures prices respond to the size or frequency of trades
   iii) bid-offer spreads, and/or price making activity
   iv) the number of hedge settlement agreements lodged with the clearing manager
   v) tracking the correlation between peak and anytime prices over time.

b) analysis of volumes of demand response, the monthly pay-outs of Financial Transmission Rights products, and performance against market making agreements

c) Hedge Market Survey results, particularly with regard to questions relating to confidence in the forward price curve and in the ability to implement risk management opportunities.

6.3.9 The WAG also considers that the Authority should draw on qualitative information in monitoring the development of risk management and in

[12] http://www.ea.govt.nz/development/work-programme/wholesale/hedge-market-development/

preparing these reports. The WAG considers that some risk management activity is not fully captured through numbers and graphs.

6.3.10 This is particularly true with regard to stakeholders' perspectives about the market's performance, and with regard to participant behaviour. Parties have reported concerns about the exercise of market power in hedge markets. If market power were being exercised it would be difficult to identify this through quantitative information alone. Innovation in risk management will also be difficult to capture quantitatively. An assessment of these sorts of issues would necessarily rely on qualitative information, and in taking an overall view of parties' actions and incentives.

6.3.11 The WAG considers that it would be appropriate for the quarterly risk management report to:

a) Focus on backward-looking information, rather than form a view about the future.

b) Be published on a quarterly basis, as this should ensure that a focus is maintained on risk management activity, conduct and performance on a regular basis.

c) Provide commentary that is easy for stakeholders to access and understand.

d) Be targeted towards existing and prospective participants involved in electricity price and volume risk management, including financial participants, as well as market commentators.

e) Include some standardised material in each edition, but potentially also consider 'special topics' captured more periodically, perhaps depending on the availability of information. For example, the Hedge Market Survey is performed biennially. The report could pull out some specific topics from the Hedge Market Survey in each quarter, and discuss alongside other related analysis.

6.3.12 The Authority should raise awareness about the report once it has first been developed and released.

6.3.13 The WAG also recommends that the Authority consider repeating analysis into the efficiency of futures prices (such as that undertaken by Energy Link as an input to the WAG project) on a periodic basis (perhaps annually) - to inform whether and how well futures prices correlate with forecast spot prices.

6.3.14 There are some factors the Authority should be careful of in developing regular reporting on the hedge market. These are to ensure that the reports do not:

a) Include analysis that other parties are likely to provide on a commercial basis, unless the benefits of making this analysis widely available more than offset the cost of crowding out commercial activity.

b) Include information that would adversely affects a party's efforts to improve their competitive position, for example, by highlighting innovative behaviour at an early stage.

c) Include information that might facilitate collusion, or that is commercially sensitive

d) Come at significant cost. The Authority should not seek to attain new data on risk management approaches if there is unlikely to be a net benefit in doing so. It should also seek to minimise costs in developing the report by publishing it online only, and standardising associated systems and processes as far as possible.

6.4 The Authority should provide transparency around ASX development activity

6.4.1 As discussed in section 3.3, the WAG considers that New Zealand needs a futures market operator that is highly engaged with its users and strongly motivated to advance new products and make improvements to the market.

6.4.2 The WAG considers that there is a need to build confidence amongst participants that ASX is engaged and contributing constructively to the futures market's development.

6.4.3 The WAG suggests that the Authority consider establishing a more formalised relationship with ASX - perhaps via a memorandum of understanding - and engaging on a more official basis - perhaps via regular meetings, with minutes from those meetings published on the Authority website, and a work plan for new product development and other initiatives.

6.4.4 This could support improved transparency around:

a) how the Authority and ASX can collaborate toward futures market performance objectives

b) futures market development activities and timelines, and adherence to those timelines.

6.5 Regular reporting will support more efficient markets

6.5.1 The WAG considers that publishing information about risk management activity should be beneficial for supporting improved confidence in hedge market arrangementss.

6.5.2 The WAG considered the costs and benefits of enhanced information provision in its discussion paper regarding Wholesale market Information, published on 23 March 2012[13]. While that paper related primarily to data provision, the WAG considers that the same arguments apply here. In particular, improved information provision through the proposed quarterly reports would support improved confidence in the ability to manage risk, through:

a) Reducing risk and uncertainty - parties are more likely to operate and invest in a market if they are able to understand its dynamics, and are more readily able to understand the potential risks to, and value of their participation.

b) Facilitation of market monitoring - market monitoring, including by third parties, can assist in uncovering problematic short run behaviours. Furthermore, transparency alone can be effective for discouraging participants who might otherwise engage in strategic behaviour that would reduce competition.

c) Providing assurances to stakeholders about the efficiency of the hedge market– publishing information and analysis about the hedge market's performance can directly support this.

d) Reducing information asymmetries – participants that do not have the ability to observe or analyse outcomes themselves may have greater confidence in markets if that information is made available on an equal basis.

6.6 The Authority should monitor against some specific outcomes

6.6.1 There are some specific target outcomes for the hedge market that the WAG would expect to be achieved as a result of natural market development, supported by the recommended market facilitation measures described in section 5. These outcomes, if achieved, would demonstrate that the hedge

[13] See http://www.ea.govt.nz/development/work-programme/wholesale/wholesale-market-information/consultations/

market was evolving in a way that is consistent with the Authority's statutory objective.

6.6.2 Failure to meet these specific targets would signal:

a) the existence of more substantive issues than those the WAG has been able to identify given the information available

b) that the market facilitation measures recommended in section 5 had been insufficient.

6.6.3 The specific targets the WAG proposes, and the timeframes in which it suggests they should be achieved, are outlined in Table 2.

6.6.4 While the targets are designed to be specific and as measurable as possible, the WAG notes there is a measure of judgement in setting targets that needs to be recognised, and failing to meet a particular target should not automatically trigger a stronger form of intervention, particularly if good progress is being made towards a target.

Table 2: Developments that would indicate satisfactory evolution of hedge markets for competition, reliability and efficiency

Development	Why it should occur	When
Effective market making arrangements that provide confidence about the durability of market making and maintaining participation	The WAG is aware that market making arrangements have been called into question, from time to time, suggesting that the mutual assurance provided by the current arrangements may be fragile. Continued market making is fundamental to the performance of the hedge market and the Authority would need to take prompt action if the arrangements appeared unsustainable.	No later than October 2015
Maintain the level of trading in ASX baseload futures such that open interest is maintained at greater than 3,000 GWh and the volume of trading is maintained at 17,000 GWh per annum on a rolling monthly basis	Maintaining liquidity in the trading of ASX futures is one of the keys to a robust forward price curve and providing opportunities for participants to readily manage price risks.	Continuously

Development	Why it should occur	When
A reduction in the size of the ASX NZ market contract size, from 1 MW to 0.1 MW	This development is understood to be in progress, is supported by ASX, and is widely supported by parties that provided a submission in response to the WAG discussion paper. This development would be valuable in supporting smaller participants manage risk, and hence improving confidence in hedge markets. The WAG therefore does not see any justifiable barriers to this development.	No later than October 2015
A reduction in the bid-offer spread for baseload products on the ASX NZ market, from a maximum of 5% to a maximum of 3%	Current bid-offer spreads are likely contributing towards observed differences between futures prices and spot prices and may be deterring participants from trading on the exchange. A reduction in the bid-offer spread would directly contribute to price certainty, and improve the efficiency of prices, improve the ability for participants to take on and back out of a risk position, and potentially reduce the size of initial margins required by ASX.	By October 2015

Development	Why it should occur	When
Exchange-traded and OTC products are sufficiently available to allow participants to effectively manage profile and outage risks	Confidence in hedge markets would be boosted by an enhanced ability to manage profile and outage risks. Currently, the available options for managing these risks are through flexible generation, demand response, or over-the-counter hedge products (contracts-for-differences or fixed-price variable-volume). While some parties have confidence in their ability to trade over-the-counter contracts that specifically protect against these risks, others have suggested it is challenging to access these products. Exchange traded products (such as caps or peaks) with associated market-making arrangements would enhance the ability to manage profile and outage risks.	By July 2016
Participation by intermediaries is trending higher with a target of 10% of ASX trades averaged over the course of a year	Intermediaries could play a key role in helping some participants overcome many of the difficulties they face in managing risk. However, there are barriers to this relationship for both the intermediary and prospective clients.	By January 2017

Development	Why it should occur	When
The proportion of trading by market makers is trending lower with a target of 65%, averaged over the course of one year	Market makers currently comprise around 80% of all traded volumes on the ASX NZ market. Some parties lack confidence in forward prices because of this. The high proportion of trading by market makers indicates a relatively low level of participation by speculators, who are valuable for improving liquidity and price efficiency. If this development did not occur, it would indicate that there were ongoing barriers to participation by financial participants that may require further investigation and consideration by the Authority.	By January 2017
An improving trend in levels of confidence in the competitiveness of the ASX pricing process, reported via the Hedge Market Survey, with a target of 50% in 2016 (cf 36% in 2014)	The WAG has identified developments that aim to improve confidence in forward prices, specifically, through increased participation from financial participants, and greater transparency around hedge market performance. If these developments are successful, this should be directly observable through responses to the Hedge Market Survey, which includes the question: “How confident are you that the process for establishing ASX electricity derivative prices is competitive?” Respondents are asked to rate their confidence on a scale of 1-10, with a score of 7 or above indicating that the respondent considers the process to be competitive.	Next Hedge Market Survey – due around July 2016

Development	Why it should occur	When
An improving trend in levels of confidence in hedge markets, reported via the Hedge Market Survey, with a target of 70% in 2016 (cf 62% in 2014)	The WAG has identified developments that aim to improve confidence in hedge markets. If these developments are successful, this should be directly observable through responses to the Hedge Market Survey, which includes the question: "Do you believe a competitive electricity contracts market (hedge market) currently exists in New Zealand?" Respondents are asked to provide a yes/no/unsure answer.	Next Hedge Market Survey – due around July 2016

7 The Authority should develop back-stop interventions

7.1 Introduction

7.1.1 In section 6.2 the WAG recommended a number of specific target outcomes and target dates that the Authority should use to monitor progress and determine if the market is developing in a way that supports the Authority's statutory objective.

7.1.2 This section discusses what should happen to cover the situation where target outcomes fail to be met by target dates.

7.2 The Authority should develop back-stop mechanisms in case market facilitation measures are insufficient

7.2.1 If the Authority does not observe reasonable progress against the specific target outcomes or evidence of development as per section 6.2, then it should consider a more intrusive approach to hedge market development.

7.2.2 Any intervention should be proportional to the problems identified, and provide a positive net benefit relative to the status quo. The WAG notes that the Authority has safeguards in place that help to protect against the risk of unintended consequences from any intervention. These include the requirement to consult with stakeholders, that any intervention is consistent with the Authority's statutory objective, and that any Code amendment provides a positive net benefit.

7.2.3 The WAG identifies two broad approaches that the Authority could take if a facilitative approach to hedge market development proves insufficient. It could:

a) amend the Participation Code to compel some participants to take particular actions

b) create incentives to encourage participants to take particular actions.

7.2.4 The WAG notes that market making of ASX NZ futures has been a particularly significant driver of the progress in the hedge market to date, and understands that the Authority is currently considering the merits of different approaches to encourage incremental improvements to market making. The WAG considers that incremental improvements to market making arrangements may be one of the least distortionary interventions available to the Authority, if the specific targets are not met in the target timeframes.

Some parties have suggested an incentivised approach

7.2.5 A possible incentivised approach to market making was raised by Contact Energy in its submission in response to the WAG discussion paper. The WAG therefore considers it appropriate to provide some high-level comments on the broad alternative approaches to intervention.

7.2.6 In principle, an incentivised approach may require less prescription than the direct compulsion approach, and may therefore achieve the targeted outcome at lower overall cost. For example, the costs of acting as a market maker are likely to vary among participants and across products. Applying a uniform compulsory obligation on a sub-set of participants would overlook such differences. In contrast, an incentivised approach could allow the lowest cost pool of market making resources to be identified and selected.

7.2.7 An incentivised approach may also be appropriate for some types of market failure. In particular, it could be argued that a transparent forward price curve is a public good, because it is difficult to exclude parties that don't pay for its provision from enjoying the benefits of its existence. This situation could give rise to a 'free-rider' problem, where forward price discovery is 'under-provided' if left to market incentives alone, because market makers will be unable to capture the full benefit of their actions.

7.2.8 While these factors may lend support to an incentivised approach, they would need to be carefully weighed against other considerations. Firstly, the WAG suggests that the Authority should be cautious in offering a payment for a service that an efficient market should be able to provide. The WAG refers again to the quote from Professor William Hogan, quoted in paragraph 4.3.8: "…These indirect attempts to create the effects of efficient pricing, without the efficient prices, confront the reality that we do not know how to design regulations for efficient outcomes when the pricing incentives motivate inefficient behaviour…"

7.2.9 In this regard, the WAG notes that even in efficient markets, participation can be affected by 'real-world' factors, such as limited resources and bounded rationality. In such instances, it may be appropriate to provide incentives to promote desired outcomes – subject to a cost benefit assessment. For example, an incentivised approach could be appropriate if:

a) It were desirable for participants or consumers to take up certain education opportunities, but there were costs or behavioural barriers

that inhibited them from doing so. In this situation, there may be a case for a 'nudge' to overcome such costs or barriers.

b) Participants found it difficult to acquire the services of intermediaries, because intermediaries did not find operating in the New Zealand market to be appealing due to lack of understanding or misapprehensions about the electricity market arrangements.

7.2.10 The WAG considers that an incentivised arrangement is likely to present some design challenges. For example, it would probably be difficult to judge the level of incentive required to achieve particular levels of market making. An auction mechanism may therefore be required, and the resulting outcomes could be volatile depending on market conditions and the detail of the obligation (such as any scope to temporarily suspend service). It may be that some auctions result in a level of incentive that exceeds the assessed level of benefit. This suggests that any procurement arrangement would need to be subject to a specific cost benefit assessment.

7.2.11 The Authority would also need to carefully consider whether an incentivised approach could create unintended adverse consequences. For example, the prospect of an incentive payment might induce 'hold out' behaviour by some parties that were otherwise willing to provide the service without additional incentives. Put another way, the Authority would need to be confident that there was a real change in outcomes, relative to the status quo.

7.2.12 Finally, there is the question of how any monetary incentive would be funded. Ideally, the cost would be allocated to the parties in proportion to the benefit that they derive from the intervention. However, this is likely to be difficult to achieve in practice.

Mandated market making

7.2.13 The main alternative to incentivised market making is an amendment to the Participation Code to compel certain participants to undertake market making in certain products, with specific maximum bid-ask spreads, and subject to minimum volumes.

7.2.14 Any mandated market making requirement would need to be consistent with the Authority's statutory objective and provide a positive net benefit.

7.3 Recommended back-stop measures

7.3.1 The WAG recommends that the Authority takes the following steps to cover the possibility that the targets are not met within the target time frames:

a) Commence the process to prepare Code amendments, which mandate market making for all base load ASX NZ futures covering the front 12 quarterly and 6 monthly contracts. The WAG notes that, consistent with paragraph 7.2.2, in preparing the Code amendments, the Authority will need to demonstrate that they provide a positive net benefit. This would include consideration of:

i) which market participants it should cover

ii) what the specific market making obligation should be

iii) whether an incentivised approach might provide a greater net benefit.

b) Investigate whether there is a need for the further development of the exchange-traded peak product, and possible market making in that product (whether incentivised or mandated), that would allow market participants to more effectively manage profile and outage risks, and how any arrangements should best be implemented.

7.3.2 The WAG notes that, practically speaking, implementing Code amendments as outlined in 7.3.1a) is likely to precede any initiative arising from 7.3.1b).

7.3.3 The WAG considers that implementing these recommendations will contribute towards the following two key requirements it has identified for effective risk management:

a) information on forward prices that is transparent, and that participants can be confident accurately reflects expected conditions in the market

b) opportunities that ensure that new-entrants can enter / exit the market, and compete on a level playing field with incumbents.

8 The Authority should consider reviewing other issues that came up during the project

8.1.1 During the course of the project the WAG received presentation and submissions on a range of issues that stakeholders considered were related to the hedge market, but are already being considered by other Authority work streams, or are outside the scope of this project.

8.1.2 These issues are summarised in this section in order to bring them to the attention of the Authority so that they can be referred to other work streams as appropriate.

8.2 Reviewing the efficiency of spot prices

8.2.1 Some stakeholders suggested that, although there are problems with the hedge market, the real underlying problem lies with the underlying spot pricing and they lack confidence in the efficiency of underlying spot prices.

8.2.2 Specific concerns raised with the WAG are that:

a) spot prices may be inefficient

b) participants may be able to exercise market power in the spot market and individual generator decisions can have a significant impact on spot prices

c) the uncapped nature of spot prices creates a large 'tail' in the price distribution curve creating the potential for spot prices to rise to very high levels and stay there – there are concerns that this limits participation in the wider electricity market and the hedge market

d) generators may manipulate outcomes in the spot market and this could have an impact on the willingness for some parties to participate in the ASX NZ market.

8.3 Improving information disclosure

8.3.1 Some stakeholders suggested that some of the problems with the hedge market relate to poor information disclosure and improvements should be made in this area.

8.3.2 Specific concerns raised with the WAG are that some participants:

a) may be able to trade in hedge markets before certain outage information becomes more widely known, creating possible inefficiencies and potentially deterring some parties from participating in the market

b) find outage data difficult to comprehend

c) may be able to trade in hedge markets with superior knowledge about thermal fuel stocks and contracts.

8.3.3 Transparency around market information is important to efficient risk management and the WAG considers that there may be opportunities to improve information disclosure with corresponding benefits to the hedge market.

8.4 Review of how prices are published when dispatch is "infeasible"

8.4.1 Some stakeholders suggested that there are concerns about price publication during infeasibilities because this happens at the times when participants most need prices to be accurate (i.e. during times of stress) prices can become less meaningful.

8.4.2 While some participants are able to determine what the infeasibility is from these apparent prices, this is likely to be a small proportion of well-resourced participants.

8.4.3 While these concerns likely impact a number of areas, they may impact the hedge market because infeasibilities can deter participants that may not understand these issues well.

8.5 Considering a day-ahead market

8.5.1 Some stakeholders suggested that the Authority should be considering the possibility of introducing a day-ahead market as a means of improving on the current combination of an ex-post spot market complemented by the current hedge market.

8.6 Reviewing the approach to locational pricing:

8.6.1 Some stakeholders suggested that the current locational pricing arrangements created unwarranted complexity for some participants and deterred participation in the retail market in particular. These stakeholders suggested that:

a) it is resource-intensive to manage the large amounts of data arising from locational prices

b) FTRs could only ever be a partial hedge against locational price risk because they were only available between 5 locations and were not shaped to accommodate profile risk.

Glossary of abbreviations and terms

ASX	Australian Securities Exchange
ASX NZ derivatives/futures	New Zealand electricity derivatives/futures that are traded on the ASX exchange
ASX NZ market	Market for trading New Zealand electricity derivatives on the ASX exchange
Authority	Electricity Authority
CfDs	Contracts-for-differences
Code	Electricity Industry Participation Code 2010
CR4	Four-firm concentration ratio
EECA	New Zealand Energy Efficiency and Conservation Authority
FPVV	Fixed-price variable-volume
FTRs	Financial Transmission Rights
GWh	Gigawatt hour
HHI	Herfindahl–Hirschman Index
MW	Megawatt
MWh	Megawatt hour
NZFMA	New Zealand Financial Markets Authority
NZPAM	New Zealand Petroleum and Minerals
OTC	Over-the-counter
PPA	Power purchase agreement
WAG	Wholesale Advisory Group

Appendix A Stakeholders who made presentations to the WAG

The stakeholders who made presentation to the WAG were:

- Pulse Energy – Gary Holden
- OMF – Daniel Crawford
- Energy Link – Greg Sise
- Pioneer Generation – Rebecca Osborne and Grant Smith
- Payless Energy - Radek Mierzejewski
- NZ Wind Farms – Chris Sadler
- Cold Storage Nelson – Alister Morison
- Contact Energy – Matthew Cleland and Louise Griffin
- Mighty River Power – Phil Gibson
- Australian Securities Exchange – Christopher Pugh
- Fonterra - Nicholas May.

Appendix B Profiles of archetypal hedge market participants

Introduction

The WAG received presentations from several participants who reported a lack of confidence that current hedge market arrangements support reasonable access to opportunities to effectively manage price risk. The Hedge Market Survey also identified some participant concerns. On the other hand, several participants express confidence that hedge market arrangements adequately support them in effectively managing price risk. Submissions in response to the November 2014 WAG Discussion paper confirmed a range of divergent views.

In order to help provide context and to reconcile these divergent views, the WAG developed profiles of archetypal participants in order to better understand what might be driving these divergent views. Eight archetypes are identified and profiled in this Appendix:

- A prospective and entering retailer
- A retailer undergoing early expansion and growth
- A retailer reaching notable scale
- A well-established retailer
- A consumer
- A generator
- A speculator
- An intermediary.

Each archetype is assessed against some key characteristics that appear to have some bearing on the degree of confidence in current hedge market arrangements. These confidence factors are:

- Financing arrangements
- Knowledge and expertise
- Resourcing
- Ability to manage profile and outage risk
- Ability to accommodate 1MW contract size.

The WAG considers these five characteristics to be the most apparent factors associated with confidence that hedge market arrangements support reasonable access to risk management opportunities. While there are likely others, in many cases, the WAG considers them to be a result of these five characteristics. For example, some parties lack confidence in the market because they struggle to manage location price risks. However, this is likely to be because they are limited in the resource they can commit to managing these risks, or in their awareness or understanding of Financial Transmission Rights products (or both).

Factors associated with confidence

Financing arrangements

Well financed parties are able to operate on the ASX NZ market as desired, and simultaneously meet their prudential requirements with minimal difficulty. They are less likely to be considered a significant credit risk by over-the-counter trading counterparties, so are more likely to receive a number of offers when seeking supply, without a significant price-adjustment to account for credit concerns.

Parties that are less well financed may find that banks do not understand their business or the market well, and are hesitant to provide credit support. Meeting their prudential security requirements alone may be a struggle. They may rely on hedge settlement agreements to reduce their prudential security obligation, but find that some counterparties choose not to offer them – limiting their over-the-counter trading options. A futures position cannot offset prudential security required by the clearing manager, so parties that struggle for financing may struggle to access sufficient capital to meet two streams of collateral simultaneously. This makes it difficult to trade on the ASX NZ market. Trading of longer-dated contracts is particularly difficult, as it can tie up limited capital for a long time. A party that struggles for finance may have their over-the-counter trading options further reduced if counterparties consider them a credit risk. This affects the number of offers and competitiveness of the prices they receive. It may also limit them to trading products that can be centrally cleared (i.e. ASX products), reducing their ability to hedge location and profile risks.

Knowledge and expertise

Operating in the spot and derivatives markets, and adopting other business strategies for managing risk requires knowledge and expertise, often at multiple levels within an organisation.

Parties with a high degree of knowledge and expertise have staff and systems in place to confidently trade in the hedge market. They will be able to analyse and interpret relevant data, and competently assess and take advantage of any risk management or monetisation opportunities available to them.

Parties that are less experienced with electricity price risk management in New Zealand may lack confidence in their understanding, or their ability to negotiate or deal with other, potentially more sophisticated participants. They may find that the costs outweigh the benefits of investing time or resources in developing their capabilities, given the contribution that electricity makes to their bottom line. Some organisations may also struggle to get internal approvals to trade various forms of hedge contract, or to allocate capital to risk management opportunities.

Resourcing

Some parties have dedicated trading teams and personnel committed to price risk management. They are able to trade on a daily basis, so are more likely to find current levels of depth and liquidity in the ASX NZ market to be sufficient. This is because they are able to build up their hedge profile gradually over time, avoid price movements by trading small volumes, and can monitor prices so as to trade when it is most opportune. These parties are also more likely to invest in proprietary data, analysis and systems to assist them in evaluating the risks and opportunities.

Other parties only have limited resources directed to electricity price risk management, prioritising resources towards functions that they consider to provide greater benefit to their business. These parties are more likely to consider depth and liquidity in the ASX NZ market to be insufficient. This is because they may only be able to trade on an as-needed basis, and hence be unable to build their profile gradually at the most opportune times. They are also more likely to incur a change in price for the volumes traded, which may make ASX trading seem expensive or inefficient. This concern may be exacerbated because initiating a trade comes at a further cost of 3-4 percent, associated with crossing the bid-offer spread. These parties are more likely to rely predominantly on publicly available data to inform their views of the risks and opportunities, and may find the cost required to access improved data or analysis is not proportional to the value they would gain.

Ability to manage profile and outage risks:

Some parties consider baseload exchange-traded products to be sufficient for their purposes. This may be because they have a largely flat load profile, or because they can utilise other risk management tools for managing within-day shape and outages,

such as fixed-price variable-volume products, demand-response, or flexible generation. They may feel confident in valuing non-baseload products and trading them in the over-the-counter market if they require.

Other parties may find that a baseload exchange-traded product leaves them with a lot of residual risk. Hedging may be their primary risk management option for managing profile and outage risk. They may find it difficult to agree to a price for non-baseload products in the over-the-counter market, and feel they would benefit from liquidity and price discovery and transparency in a wider variety of exchange-traded products.

Ability to accommodate the 1 MW contract size

Larger parties are able to integrate ASX NZ derivatives into their risk management portfolio. For these parties, each contract traded will represent a relatively small proportion of what is likely to be a diversified portfolio.

Smaller parties may not be of a size to practically utilise ASX NZ derivatives as a risk management tool. Some parties may find that trading 1 MW contracts results in significant over or under hedging at times, as they are unable to match their hedge cover to their physical position with any real accuracy. It may also mean that they hedge a large proportion of their position with each trade, so are less able to diversify their portfolio. These parties may hence prefer or rely on the over-the-counter market. They may be satisfied with the offers they receive over-the-counter. However, some may experience low interest from potential counterparties in supplying small volumes, or may find the efficiency and anonymity of trading on the exchange to be appealing.

Archetypal participant profiles

In the following pages each archetype is assessed against each of these five confidence issues using a ‘traffic light’ system as follows:

Key

	Experienced by few
	Experienced by some
	Experienced by many

Prospective and entering retailers

Who are they?
No such thing as a 'typical' new entrant. May include: • independent generators that have decided to branch into retail • independent parties launching a retail business from the ground up, with generally limited capital • independent parties launching a retail business, leveraging off another business with related interests (e.g. speculators, businesses involved in energy efficiency, networks, property etc.). Can vary considerably in terms of their experience and sophistication with regard to hedging and risk management, and in terms of their approach. May also relate to type 2 retailers that might be considering taking on spot exposure for the first time, beginning to take on an active risk management role, or exploring new risk management options.
How do they interface with different approaches to risk management?
Should be anticipating the risk management issues they will face, and developing a plan or strategy for how they'll manage them. Examples of risk management plans or strategies include: • managing risk through a relationship with a generator • passing spot price risk through to consumers • trading hedge contracts in various forms • pursuing opportunities to invest in small-scale generation

• retailing to consumers with technologies such as electric vehicles, onsite generation (including solar), and demand-response technology, which can help a retailer manage its retail load.
How do they interface with the hedge market?
Depends on approach to risk management. Some may not rely on the hedge market for managing retail risks at all, though may use it for other aspects of their business, and may value the forward price curve for wider decision making. Others could be relying on the hedge market: • as their primary risk management tool, for hedging from day one • as a complement to other risk management tools, for occasional hedging or finessing a position.

	Confidence factors	Explanation
	Forward price curve	Will vary, potentially depending on their background and previous experience.
	Financing	Will vary. Parties expanding from or leveraging off a related business are less likely to struggle for financing to support entry.
	Knowledge and expertise	Will vary widely in their understanding of the New Zealand electricity market and risk management, likely depending on their background and planned approach to business.
	Resources for risk management	Are likely to be restricted in the time, effort and resources they can commit to electricity risk management – some may not prioritise risk management in the first instance, while others may have it as primary focus.
	Managing profile/outage risks	May be anticipating reasonable exposure to profile risk depending on their target customers. Will be anticipating exposure to outage risks.
	Accommodate ASX NZ contract size	Will be unable to comfortably accommodate a 1 MW contract size.

Retailer undergoing early expansion and growth

Who are they?
Again, there is no 'typical' retailer at this stage of development. However, common features include that they may be: • retailing to a tight niche of customers • retailing in a single or select number of locations, but starting to consider expanding to other locations • retailing volumes of electricity that, while tiny relative to the size of the market, can represent a significant financial liability, in terms of both settling spot market transactions, and posting prudential security with the clearing manager • operating with limited capital, personnel and infrastructure • facing uncertain levels of growth • competing strongly for customers, and starting to become noticed by competing retailers • requiring capital to support further growth, and potentially seeking investors.
How do they interface with different approaches to risk management?
Drawing on all of their assets and capabilities to manage risk as efficiently as they can. Risk management approach may be evolving with time and experience. May be utilising a range of risk management mechanisms in the short term, in order to avoid certain risks, or manage transitional risks. For example: • retailing to a certain segment of the market, or size of consumer until they reach greater scale • retailing in restricted locations, in order to avoid locational price risk until they reach greater scale or develop improved systems

- relying on certain types of hedge contracts, until their physical position balances out, or they reach sufficient scale to allow them to utilise other forms of hedge contract or alternatives strategies

May be needing to provide evidence of prudent risk management to attract investors, or acquire bank loans for growth.

How do they interface with the hedge market?

May have some FPVV contracts, depending on their ability to manage profile risk through other means.

Likely to be very active in the OTC market:

- May be operating through a broker, running tenders through a consultant, or trading directly with counterparties. Likely to be trading with small independent generators for at least some of their load. May have difficulty trading with some major generators, as they represent relatively small volumes, and may be a competing interest.
- Likely to be drawing heavily on the ASX forward price curve to assess OTC contract prices and inform negotiations.
- Likely to be primarily trading baseload CfDs, but some may see a lot of value in shaped contracts, depending on the nature of their load profile.
- May be needing to contract regularly for small amounts as they gain customers. May have customers on fixed term contracts, and be seeking to hedge for that contract period. May alternatively be concerned about losing customers, and hedging with a shorter-term focus.
- Likely to show a preference for counterparties that allow for hedges to be lodged with the clearing manager to offset prudential requirements, as these are a significant burden on the company.

Retail volumes may start to reach a size that allows them to utilise ASX contracts. A reduction in the contract size

would mean they could more feasibly use quarterly and monthly contracts to 'finesse' their portfolio to better reflect their seasonal profile. However, their ability to trade on the ASX market is likely to be limited by their resources.

May be trading FTRs if they are very confident in their abilities.

	Confidence factors	Explanation
	Forward price curve	Likely to be utilising the forward price curve to inform their hedge negotiations. Confidence in the forward price curve will be impacted if they are unable to reconcile hedge offers they receive, or competing offers they observe being made to customers, against the forward price curve.
	Financing	May be very limited in their access to capital for any purpose, though will depend on whether they are supported by other interests or not.
	Knowledge and expertise	Will have widely varying degrees of sophistication with respect to risk management, though most will necessarily have a good grasp of most aspects of the New Zealand electricity market.
	Resources for risk management	Are likely to be restricted in the time, effort and resources they can commit to electricity risk management – which is likely to be proportional to their size and/or sophistication when it comes to risk management.
	Managing profile/outage risks	May have quite significant exposure to profile risk depending on their customers, and likely to be very exposed to outage risks.
	Accommodate ASX NZ contract size	Will be unable to comfortably accommodate a 1 MW contract size unless they have built up a large customer base, which no independents have yet

		achieved. However, some may be utilising ASX contracts, favouring the anonymity of trading on the exchange. , and finding that they represent a significant proportion of their load, and/or limiting the accuracy with which they can match their hedge and load profiles, and their ability to diversify their hedge portfolio.

Retailer reaching scale

Who are they?
Retailers that have been active for some years, and supply a sizable portion of the market. These retailers are likely to be retailing in multiple locations – at least including the main centres. They are less likely to be focussed on a single niche customer. They may be wanting to continue to grow, but face challenges in doing so.
How do they interface with different approaches to risk management?
They could hypothetically be utilising any or all risk management approaches to varying degrees, and this will be specific to individual companies.
How do they interface with the hedge market?
They will likely prefer over-the-counter contracts-for-differences with generators, where they can negotiate these at competitive prices, as it provides them with a relatively bespoke hedge that integrates well with spot market settlement and prudential security requirements. They: • may be seeking over-the-counter contracts to cover multiple locations, and within-day and seasonal shape • may have an interest in option, cap, or other more sophisticated derivative products

- are likely to be drawing heavily on the forward price curve to assess over-the-counter contract prices and inform negotiations
- are likely to be interested in hedging over longer time-frames for some portions of their load, as they may have greater certainty about 'base-level' volumes
- may be more likely to negotiate directly with other generators for supply, as they are likely to have some established relationships. However, they may also operate through a broker at times
- will likely want to be able to lodge their contracts as hedge settlement agreements to offset their prudential security requirements.

These parties will likely be active on the ASX NZ market, and use baseload futures contracts to 'finesse' their hedge profile.

They may trade Financial Transmission Rights products to help manage locational price risk.

	Confidence factors	Explanation
	Forward price curve	Confidence in the forward price curve may be impacted if they are unable to reconcile hedge offers they receive, or competing offers they observe being made to customers, against the forward price curve.
	Financing	Financing is likely to be a significant challenge. Spot market volumes are likely to represent a significant financial liability, with implications for prudential security requirements, and hence the need for credit support from a bank. Financing may be a particular challenge if they are growing beyond the extent to which they can leverage off any other assets or business interests to help

		fund growth and operational activities.
	Knowledge and expertise	Probably a strength – it is unlikely they would have achieved such scale if they weren't well versed in the market and knowledgeable about managing the associated risks.
	Resources for risk management	Likely to be operating with limited resources, and having to allocate those resources to the highest-value operations. However, they are more likely to have staff dedicated to specific tasks.
	Managing profile/outage risks	Likely to be a significant challenge if they are not supported by demand response or flexible generation assets, in which case they would be either: • relying on shaped over-the-counter deals with generators, and would hence value price transparency and high levels of liquidity for shaped products • remaining exposed to these risks.
	Accommodate ASX NZ contract size	Likely to be large enough that trading ASX NZ derivatives is practical, but may still find the inaccuracy of a 1 MW product (relative to their load profile) to be challenging to accommodate.

Well-established retailer

Who are they?
Practically speaking, the electricity retailers in New Zealand that could be considered well-established are all vertically integrated to some extent. However, they vary in terms of: • overall size - some are very large, while others are relatively small • relative size of their generation / retail portfolios – with some being net generators and others net retailers, possibly depending on the time of year, hydrological conditions, or other variables • location – some operate nationally, while others focus on retailing in particular regions • the nature of their generation assets in terms of control and flexibility – though they are all likely to have at least some within-day generation flexibility.
How do they interface with different approaches to risk management?
Vertical integration is likely to represent the primary component of their risk management strategy. They will manage their generation assets over short and long timeframes to manage different aspects of price and volume risk. They likely utilise other risk management approaches, including hedging, to varying degrees, and this will be specific to individual companies.
How do they interface with the hedge market?
They will likely be active in trading over-the-counter, both for short-term and long-term hedging. They will likely be engaged in both buying and selling, and may trade a variety of contracts – including baseload and shaped, and potentially including options and caps. They will likely respond to requests for supply that are posted by consultants, trade directly with other generators

and retailers, and will work with brokers.

The forward price curve is likely to be essential for decision making, in terms of pricing of hedges and retail contracts, as well as around the timing of generation outages, the timing of investment, and also for fuel management – particularly hydro.

These parties are likely to trade in the ASX NZ market to some extent – though their approach to doing so will vary, with some trading exclusively for hedging purposes, while others may be engaging in speculation. Four parties have a role as market makers in the ASX market. These parties make volumes available to both buy and sell each trading day, at prices within a 5% spread. These parties face costs and risks from their activity, and will experience both profits and losses at times.

Likely to be active in trading Financial Transmission Rights products.

	Confidence factors	Explanation
	Forward price curve	Likely to have reasonable confidence in the forward price curve, particularly if they are making two-way prices.
	Financing	These parties generally have strong balance sheets, are supported by firm generating assets, and operate around some balance between their generation and retail load. They have high credit scores, and are attractive customers for banks.
	Knowledge and expertise	Likely to have significant experience in the industry, across all aspects, and the ability to engage outside expertise if and when required.
	Resources for risk management	Risk management is likely to be a business-as-usual activity, with processes and systems in place to deal with all aspects of risk management, and dedicated teams that are engaged in daily trading and analysis.
	Managing profile/outage risks	Likely to have a significant ability to manage these risks through their physical assets. Will likely have established relationships, and feel confident in agreeing to terms with other generator-retailers for over-the-counter hedging of these risks where necessary.
	Accommodate ASX NZ contract size	The 1 MW size will likely be a comfortable size for many of these parties. Some may find a smaller contract size more convenient for portfolio balancing.

Consumer

Who are they?
Consumers vary considerably on a wide variety of fronts including: • size • load profile • location(s) • electricity-related assets (load-shedding, load-shifting, co-generation) • engagement • resources • financing • risk appetite. A small number of consumers will be full market participants that purchase physical electricity through the clearing manager. Others will necessarily maintain some relationship with a retailer.
How do they interface with different approaches to risk management?
The vast majority of consumers will default to purchasing fixed-price variable-volume products through a retailer, and will have little interest in engaging in any greater depth in managing electricity price and volume risks. However, some consumers – particularly larger consumers or those for whom electricity comprises a substantial proportion of their overall costs – will engage more actively. Some consumers will: • take full or partial spot exposure, and may be comfortable accepting the associated risk

- have demand-response or cogeneration assets that support them in managing their exposure to spot prices
- engage in trading of derivatives, either on the exchange or in the over-the-counter market
- limit their consumption to areas where they can manage the associated locational price risk.

How do they interface with the hedge market?

In hedging using either fixed-price variable-volume or derivative products, consumers:

- will likely seek to hedge for relatively long periods – minimum 1 year
- may use a tender process through a consultant
- may use an intermediary
- may have a relationship with a preferred retailer/generator
- may utilise the forward price curve to inform their electricity purchasing decisions.

Some consumers will trade on ASX for some or all of their hedging requirements

Consumers that purchase through the clearing manager are likely to be interested in lodging any contracts as hedge settlement agreements.

	Confidence factors	Explanation
	Forward price curve	Confidence in the forward price curve will be impacted if they are unable to reconcile hedge offers they receive against the forward price curve.
	Financing	Some may have limited access to capital. Many will likely struggle to receive approval to allocate capital to some approaches to electricity risk management.
	Knowledge and expertise	Will have varying degrees of sophistication with respect to both risk management and the New Zealand electricity market. Some consumers will have different parts of their business versed in each of these two fields. Others may have a single part of the business versed in both, but require sign-off from another part that is not well versed in either. This may affect their approach to electricity risk management, and their ability to allocate resources to the task. A few consumers will take a significant interest in the electricity market, and have invested in knowledge and expertise to effectively manage the associated risks.
	Resources for risk management	Are likely to be very restricted in the time, effort and resources they can commit to electricity risk management – only a few companies for whom electricity is a significant cost will have staff dedicated to it on a full time basis.
	Managing profile/outage risks	Most consumers will use fixed-price variable-volume products to avoid these risks entirely.

		Of those that take a different approach, some consumers will have a baseload profile and/or demand response to reduce their exposure to these risks. Others may be exposed to profile and outage risks and be managing these through shaped derivative products.
	Accommodate ASX NZ contract size	Some large consumers may be able to comfortably accommodate a 1 MW contract size. The vast majority will not be able to, but they are also less likely to be interested in exchange-traded products for other reasons.

Generator

Who are they?
Independent parties with generating assets that are likely to be small-to-modest in size. Some may be interested in growing their assets, which will likely necessitate a capital-raising processes to fund new investment. Independent generators may become increasingly common as distributed generation becomes more ubiquitous. These parties may use an agent to manage their interactions with the spot market, or sell their output directly to a retailer or distributor, and have little interest or role in risk management.
How do they interface with different approaches to risk management?
Generators with controllable and flexible assets will manage their exposure to risk through their physical output. May also engage in hedging.
How do they interface with the hedge market?
Some generators may use power purchasing agreements (fixed-price variable-volume) with a retailer or other interest, though these are not understood to be common. Most hedging is likely to be done through the over-the-counter market. They may prefer to enter into longer-term contracts, and may trade products including peaks, caps and options. They will likely draw on the forward price curve to inform their contract negotiations, and it may also support their fuel management and operating decisions. Some independent generators may trade on the ASX NZ market. They may buy and sell to balance their hedge profile against their output. However, the need to post initial margins and manage daily margins may make the ASX NZ market a less appealing hedging option than the over-the-counter market.

	Confidence factors	Explanation
	Forward price curve	Like to have a reasonable level of confidence in the forward price curve, and value it for decision making and contract negotiations.
	Financing	May have a reasonable ability to access capital because of their physical assets, but may also have significant debt to pay off. May find that their access to liquid assets is limited based on the timing of spot and hedge payments.
	Knowledge and expertise	Will have varying degrees of sophistication with respect to risk management and the New Zealand electricity market – some will have a high degree of knowledge and expertise, while some will bypass this issue by operating through an agent.
	Resources for risk management	Likely to be restricted in the time, effort and resources they can commit to electricity risk management, as they may maintain a relatively small operational staff.
	Managing profile/outage risks	May have the ability to manage profile risks using their physical assets, depending on the controllability and flexibility of their assets, and will be very exposed to outage risks. May be confident in managing these risks through the over-the-counter market.
	Accommodate ASX NZ contract size	May be able to comfortably accommodate a 1 MW contract size depending on their size – though 1 MW would represent a significant proportion of most independent generators' capacity.

Speculator

Who are they?
Speculators might be: • large banks – who may also be intermediaries • hedge funds • market participants – the market makers in particular may engage in speculating • individuals with significant expertise – e.g. industry experts.
How do they interface with different approaches to risk management?
Speculators will typically engage solely with hedge contracts, and by their nature, *take on* a risk position they would not naturally have any exposure to.
How do they interface with the hedge market?
Speculators will trade exclusively on the ASX NZ market. They will be engaged in buying and selling, of various contracts, across various future periods. Speculators engage in a lot of market analysis, and try to anticipate changes from which they can profit. If they expect prices to increase, they might buy a futures contract, and potentially sell it on again later at a profit. This frequent buying and selling activity purely on the basis of price changes, rather than to hedge risk associated with a physical position, provides hedgers with a willing trading counterparty through a range of market situations, which provides a helpful boost to liquidity.

	Confidence factors	Explanation
	Forward price curve	Likely have some significant concerns about the forward price curve, because of a view that some market participants are able to trade on superior information. Also perceive that some participants have market power and can influence outcomes in the spot market, which will affect outcomes in the futures market – e.g. by withholding capacity.
	Financing	Large banks and hedge funds will theoretically have access to significant capital, relative to other market participants. However, they are may struggle to allocate the capital they have to the ASX NZ market, as there are many prospective markets in which they could utilise it, and their access to capital for speculative purposes has reduced since the global financial crisis. Speculators will be limited by their value-at-risk in the extent to which they can take on a speculative position. Individual traders may be limited by their access to capital in the extent to which they can speculate.
	Knowledge and expertise	All speculators will generally be sophisticated parties with regard to risk management. Individual traders, market participants engaging in speculative behaviour, and large banks or hedge funds that active in the market will also have significant experience and understanding of the New Zealand electricity market. However, some prospective speculators may not be well versed in the New

		Zealand electricity market specifically, particularly with regard to recent developments such as the new settlement and prudential arrangements and net pivotal rules, and those developments the Authority is currently progressing.
	Resources for risk management	May be quite restricted in the time, effort or personnel that they can commit to participating in the New Zealand electricity market, due to other speculative opportunities, and the relative size of the ASX NZ market.
	Managing profile/outage risks	Are unlikely to be concerned about profile risks, though liquidity in a wider range of derivative products may provide more opportunities for speculation. The risk of extreme price spikes from outages is a significant concern, and speculators have identified an inability to limit their risk exposure, due to the uncapped nature of the market as a barrier to their participation.
	Accommodate ASX NZ contract size	Are unlikely to be particularly concerned about the product size if they are a large bank or hedge fund. However, independent traders taking a position in the market may be limited in the extent to which they can participate by the costs and risks of trading a larger contract.

Intermediary

Who are they?
Intermediaries will be large banks. They may provide intermediary services to their banking clients, and hence be involved in providing bank guarantees to participants in the spot market. They may also service a more general clientele. Intermediating will generally be a relatively low-risk activity, as the banks are experts at assessing and valuing counterparty credit risk. They may be involved in speculating as well as intermediating.
How do they interface with different approaches to risk management?
Intermediaries will generally only engage in hedging.
How do they interface with the hedge market?
Will trade ASX NZ market products to on-sell to participants in the over-the-counter market. They may repackage a variety of products into more bespoke over-the-counter offerings. These over-the-counter contracts will likely be lodged as hedge settlement agreements with the clearing manager.

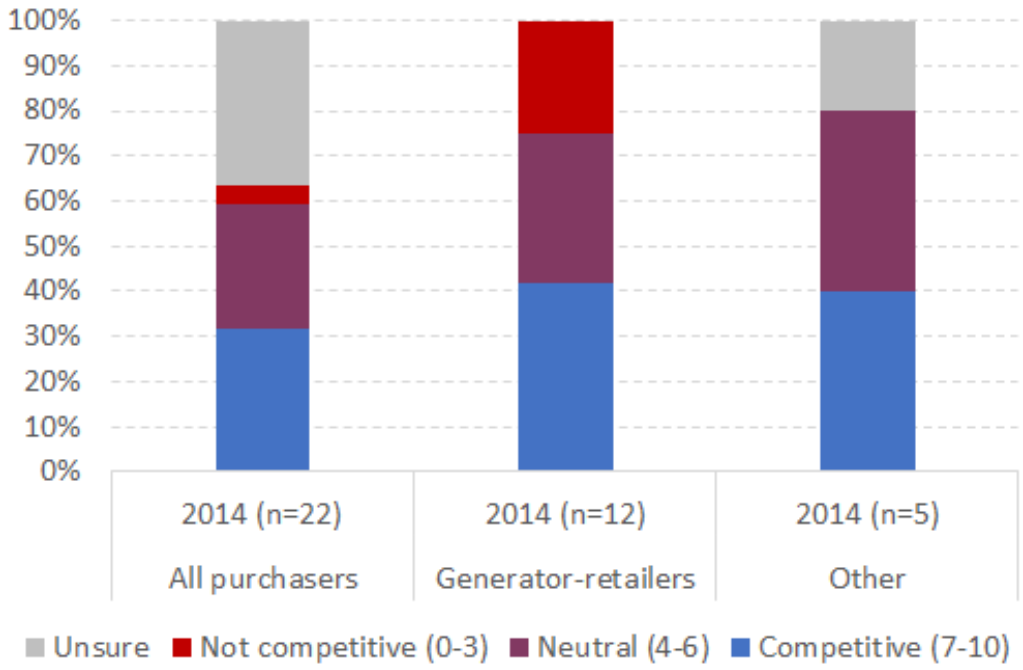
	Confidence factors	Explanation
	Forward price curve	Likely to have concerns about the forward price curve, as they may have difficulty competing with generators at a wholesale-supply level. Low margins between futures and contract-for-differences of fixed-price variable-volume contracts have been suggested to have a significant impact on the ability of intermediaries to compete in the market.
	Financing	Will generally have access to significant capital – though their ability to allocate it to the acting as an intermediary in New Zealand electricity market will depend on the value of the opportunity they see for their services.
	Knowledge and expertise	Will generally be very sophisticated parties with regard to risk management, though some may not be well versed in the New Zealand electricity market specifically, and they may find it difficult to understand the credit risk associated with some participants, and hence be reticent to provide intermediary services to those parties.
	Resources for risk management	Likely to be very restricted in the time, effort or personnel that they can commit to participating in the New Zealand electricity market, which will depend on their ability to profit from their activities.
	Managing profile/outage risks	Are unlikely to take on exposure to profile or outage risks, though liquidity in a wider range of derivative products will provide more opportunities for intermediation, and potential client base.
	Accommodate ASX NZ contract size	A smaller contract size will improve the opportunities for intermediation, and potential client base.

Appendix C Evidence for issues identified

There are varying levels of confidence in forward prices

The level of confidence in the competitiveness of the ASX pricing process varies within groups of participants (Figure C1).

Figure C1: Comparison of views on the competitiveness of the pricing process for ASX NZ products between groups of hedge market survey respondents



Traded volumes and unmatched open interest (UOI) on the ASX NZ market have greatly increased since 2011 (Figure C2). ASX now represents a significant proportion of total hedge market volumes. In 2013, around 13,500 GWh of contracted volumes were transacted through ASX. This was equivalent to around 30 percent of the physical market, and comprised about 45 percent of all hedged volumes.

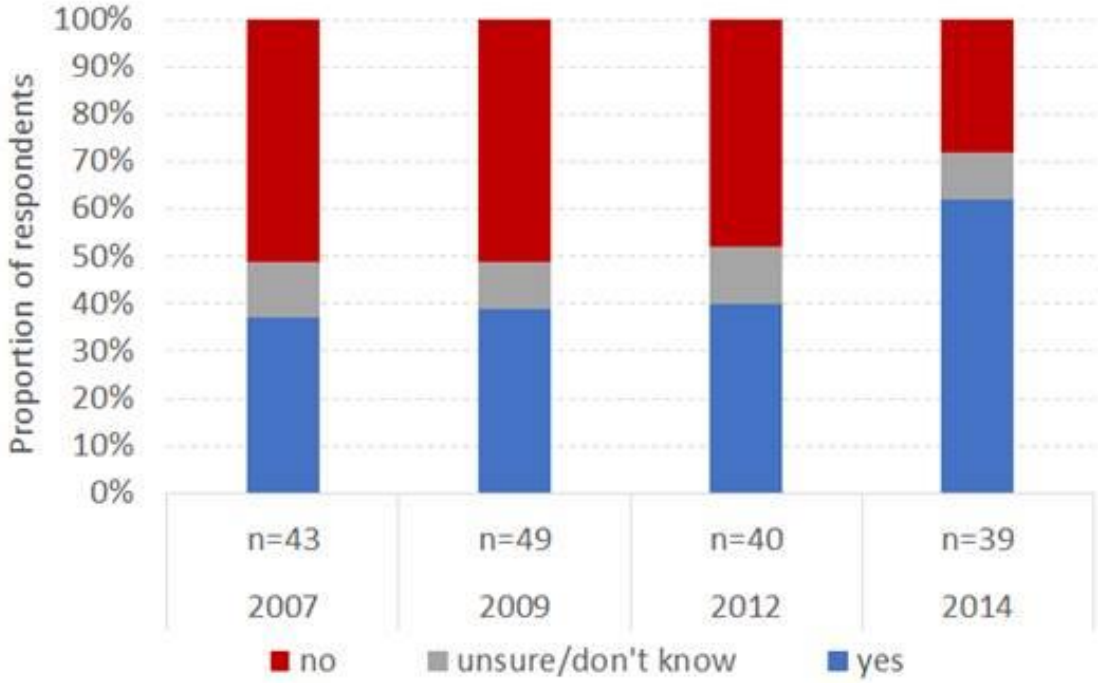
Figure C2: Growth in ASX unmatched open interest (UOI) and traded volumes

Over the same period, the level of concentration of the ASX NZ market has reduced (Figure C3).

Figure C3: Level of concentration of the ASX NZ market, in HHI terms

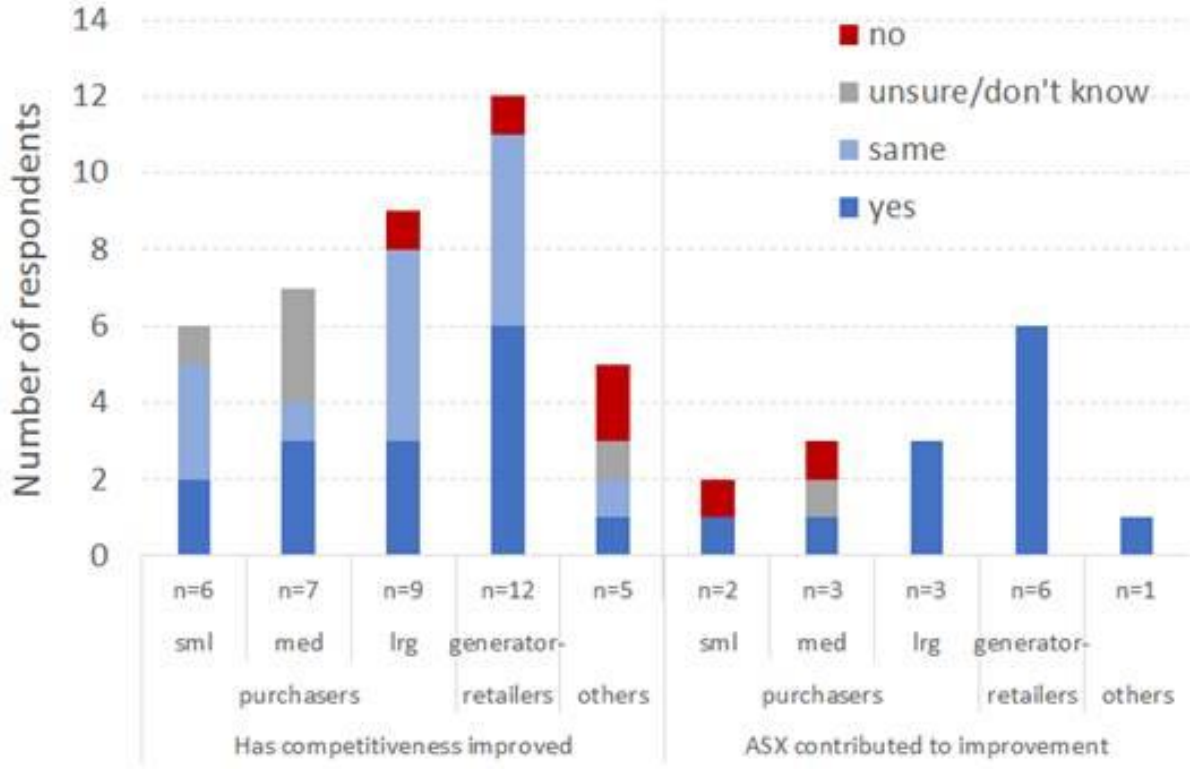
The growth of the ASX NZ market has promoted confidence in the competitiveness of the hedge market. The 2014 Hedge Market Survey shows a significant improvement in perceptions of the competitiveness of the hedge market, relative to previous surveys (Figure C4).

Figure C4: Hedge market survey respondents' aggregate views on whether a competitive hedge market currently exists in New Zealand



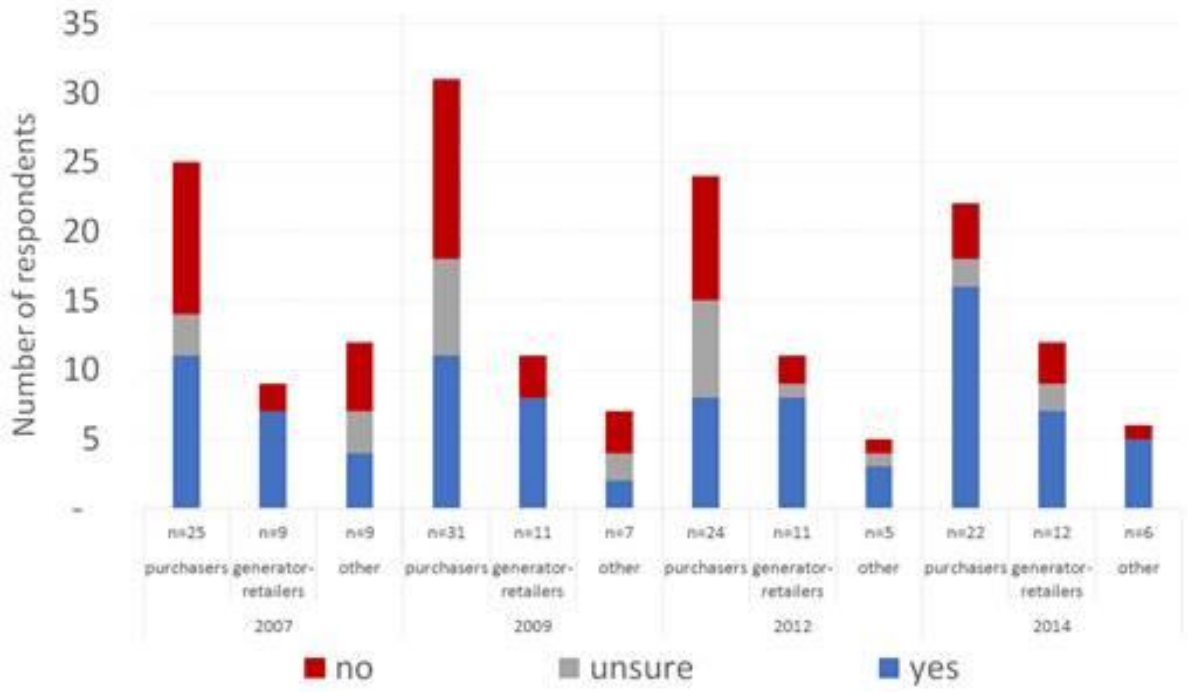
A substantial proportion of the participants that consider the competitiveness of the hedge market has improved consider that the growth of the ASX NZ market was a contributing factor (Figure C5).

Figure C5: Hedge market survey respondents' views on improvements in the hedge market over the prior 12 months



Relative to all previous surveys, respondents – particularly purchasers – were more likely to consider that there is sufficient information available to develop a view of the market price (Figure C6). However, there are still some participants who do not consider that there is sufficient information available.

Figure C6: Hedge Market Survey respondents' position on whether there is sufficient information to develop a view of market prices



Some participants have commented that prices in the hedge market are higher than average spot prices, and are hence uncompetitive. For example, Pulse Energy has expressed the view that there is a significant premium involved in the OTC market above ASX of around 10%, and in ASX above forecast spot prices of 15-20%.

The WAG discussion paper provided analysis by Energy Link of the differences between hedge prices and expected spot prices.

Submissions were divided as to whether the observed differences in price are consistent with a competitive market. For instance, on the one hand:

- Meridian commented that 'the deltas observed are consistent with a workably competitive market. … If there were a consistent and unwarranted positive delta in comparison with the level of risk, speculators could be expected to enter the market and sell contracts. We have not observed such behaviour. … WAG should use Energy Link's analysis as evidence that pricing in New Zealand's hedge market is appropriate given the level of risk.'
- Genesis commented that 'the WAG and the market should find some comfort in this analysis as there are no areas where there is a clear mis-pricing of futures contracts to the advantage of some market participants over others'

- MRP commented that 'the analysis does not support some participants' claims that there are material issues to be addressed with the observed delta between spot and the forward curve. On a risk adjusted basis this divergence is consistent with other jurisdictions'
- Trustpower commented that 'we believe that the analysis gives comfort that there is a rational relationship between New Zealand's physical and risk management markets'
- EPOC commented that '[its own analysis] adds weight to the contention that the delta values are not excessive and do not necessarily indicate barriers within the contract market'.

On the other hand:

- NZ Steel commented that 'an ASX pricing margin averaging 10% over spot is confirmed, (and other instruments tend to be more expensive). It is understood this is considerably greater than other markets. … The Energy Link conclusion seems to take the spotlight off sellers of hedges. WAG needs to investigate further the reason for a significant price premium. If there is real risk why is this? Is this a market design issue? Is there an underlying flaw with the spot market?'
- Pulse commented that *'it is clear that the ASX Futures trade at significant deltas'* and went on to reiterate its view that the hedge market is not efficient or liquid.

There are varying levels of confidence in the ability to manage risks under current hedge market arrangements

Submissions in response to WAG's discussion paper showed varying levels of confidence in the ability to manage risks under current hedge market arrangements. For instance:

- EMH Trade commented that 'improvements in the hedge market to date have enabled participants to effectively manage a substantial amount of their short to medium term base load energy price risk', but that 'there are still significant shortcomings in participant's ability to manage [some other types of] risks through the market'
- Genesis commented that 'we have a reasonable capability to manage the different facets of price risk. We consider a more developed hedging market will allow us to manage our current portfolio better. It will be similar for other market participants'

- Meridian commented that 'we consider there is an appropriate suite of products currently available to manage the different facets of price risk'
- MRP commented that 'we consider the current hedge market products are largely appropriate for managing different facets of price risk'
- NZ Steel commented that 'there is limited ability for consumers to manage price risk. (Equally important is the ability to manage volume risk.) The complexity of the market, relative to the importance of electricity cost to individual consumers, means the vast majority are unable to participate. The end result is consumers take on FPVV contracts which provides price certainty, but at a cost. For those consumers who operate outside the FPVV regime, hedges are often not an attractive option and physical means, such as reducing load, are important ways of managing pricing risk.' NZ Steel went on to say that 'without the answers [to questions about the competitiveness of the hedge market], it is doubtful the hedge market will be attractive to informed consumers. Alternative non-market means will continue to be sought to manage price risk'
- Pulse expressed dissatisfaction, commented that *'the ability to manage price and volume risk is far from perfect'* and expressed a view that radical change is needed
- Trustpower commented that 'the tools available to manage spot market risk are satisfactory'.

Various participants, at various times, have commented that the hedge market does not provide them with sufficient ability to manage risks. (For instance, Pioneer Generation has advised the WAG that it does not retail in some locations because it is unable to effectively manage the associated locational price risk.) The remainder of this Appendix sets out some specific reasons why some parties are less confident of their ability to manage risks.

Parties that are <u>less well financed</u> may be less confident of their ability to manage risks under current hedge market arrangements

Participating in the hedge market requires collateral.

Traders on the ASX NZ market must provide initial margins and variation margins.[14] The WAG discussion paper illustrated the requirement for initial margins as follows: *'For illustrative purposes, a 1 MW contract at Benmore for the nearest quarter, requires an initial margin of around 15 percent. If the future's price was $75/MWh, the initial margin would be approximately $25,000. Assuming an interest rate of 5%, around $300 of interest would be forgone by posting this initial margin.'*

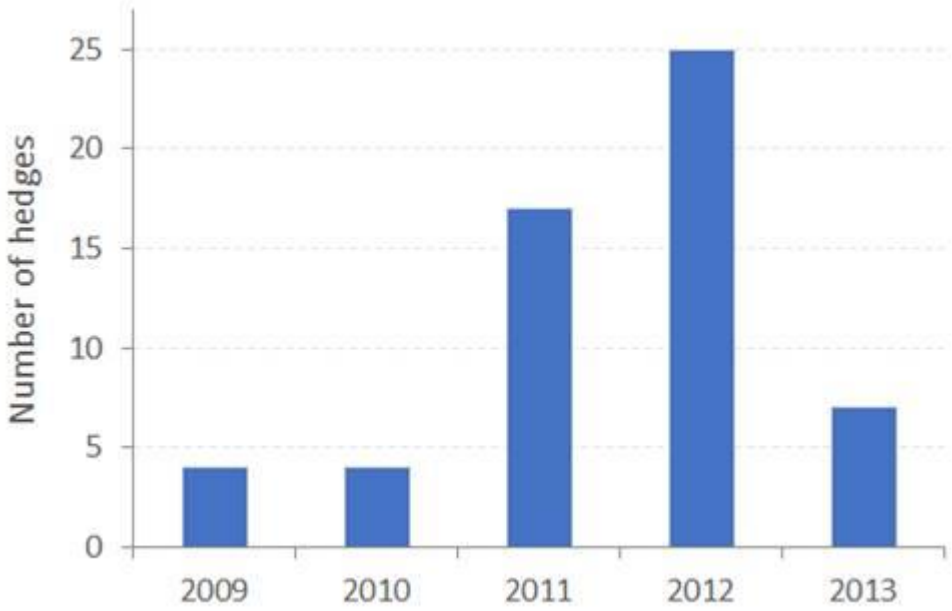
Participants in the OTC market must establish their creditworthiness, or may face difficulty in obtaining contracts. For instance, Pulse has commented that '*like most businesses in New Zealand, Pulse is a lower credit quality compared to the larger generator retailers. This significantly limits how they will trade with Pulse. There is limited appetite to trade CFDs with Pulse.'* The difficulty of establishing credit may lead some participants to use the ASX market instead, or to go unhedged.

Physical participants must also provide prudential security to the clearing manager – and a futures position cannot currently offset this prudential requirement. Many participants (such as Fonterra, Genesis Energy, Meridian Energy, MEUG, Nova Energy, Pioneer Energy, Pulse Energy and Trustpower) have expressed dissatisfaction that futures cannot be used to offset wholesale market prudentials. In Pioneer's words, enabling futures to offset wholesale market prudentials would *'make a significant difference for smaller and/or new entrant companies, facilitating more competition in the spot and hedge markets'.*

An OTC position can only be used to offset wholesale market prudentials if it has a lodged hedge settlement agreement (HSA). The use of HSAs is sporadic (Figure C7). The hedge market survey results suggest that a quarter of all purchasers had encountered problems lodging an HSA with the Clearing Manager because the counterparty had been unwilling to do so. MEUG has commented that *'there has been a long standing question on whether suppliers use their market power to veto a purchaser's ability to lodge hedge settlement agreements'.*

[14] http://www.asx.com.au/products/index-derivatives/futures-margins.htm

Figure C7: Number of HSAs entered into, by trading year



Well-financed parties, such as some major generator-retailers, find it relatively easy to provide the collateral required to participate in the hedge market. For parties that are less well financed, such as some new entrant retailers, it is a significant challenge. This is one reason why the five largest generator-retailers have a relatively high level of confidence in their ability to manage risks under current hedge market arrangements, while some new entrant retailers (such as Pulse) have a relatively low level of confidence.

Payless Energy is another example of a small retailer for which financing is a challenges. Payless commented to the WAG that '*cash flow is the key risk for a micro-retailer, in terms of quantum and the associated uncertainty of when it will be required'.*

Some major consumers may also face difficulties due to financing. Cold Storage Nelson commented to the WAG that 'many companies would find it difficult to access capital… to implement arrangements for more effective price risk management'.

Parties that are <u>less experienced with price risk management</u> may be less confident of their ability to manage risks under current hedge market arrangements

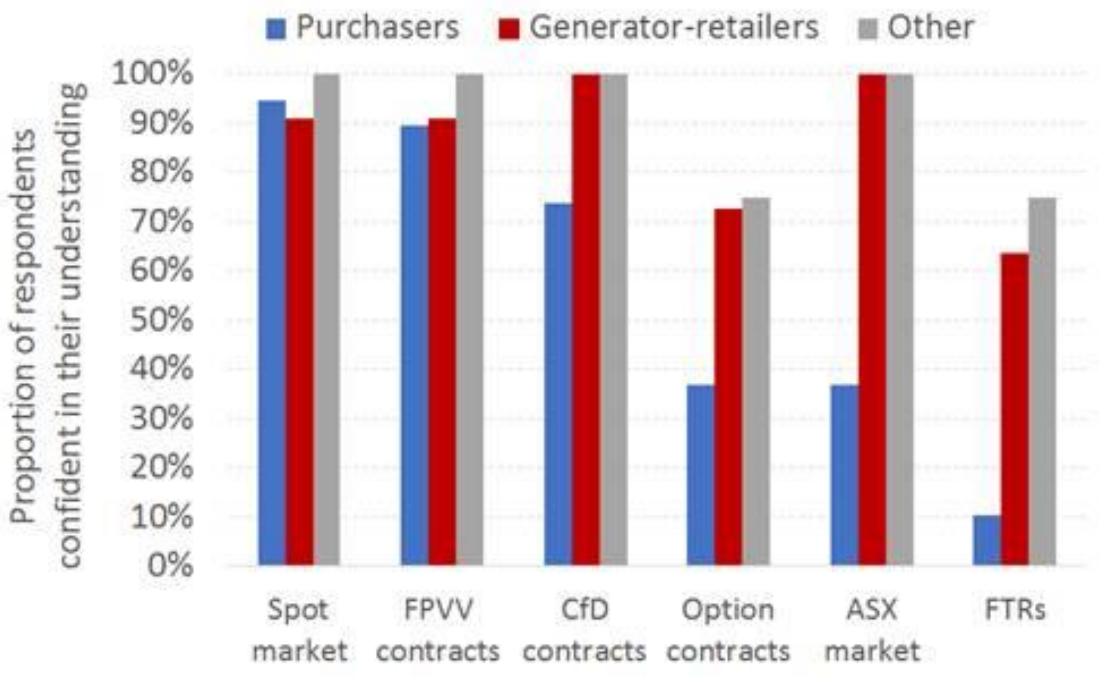
Operating in the hedge market requires knowledge and expertise, often at multiple levels within an organisation.

This is one reason why the five largest generator-retailers (all of which are highly experienced with price risk management) have a relatively high level of confidence in their ability to manage risks under current hedge market arrangements. Confidence is lower among some:

- newer entrants
- established parties (including major consumers) who have not developed experience in using a wide range of types of hedge products.

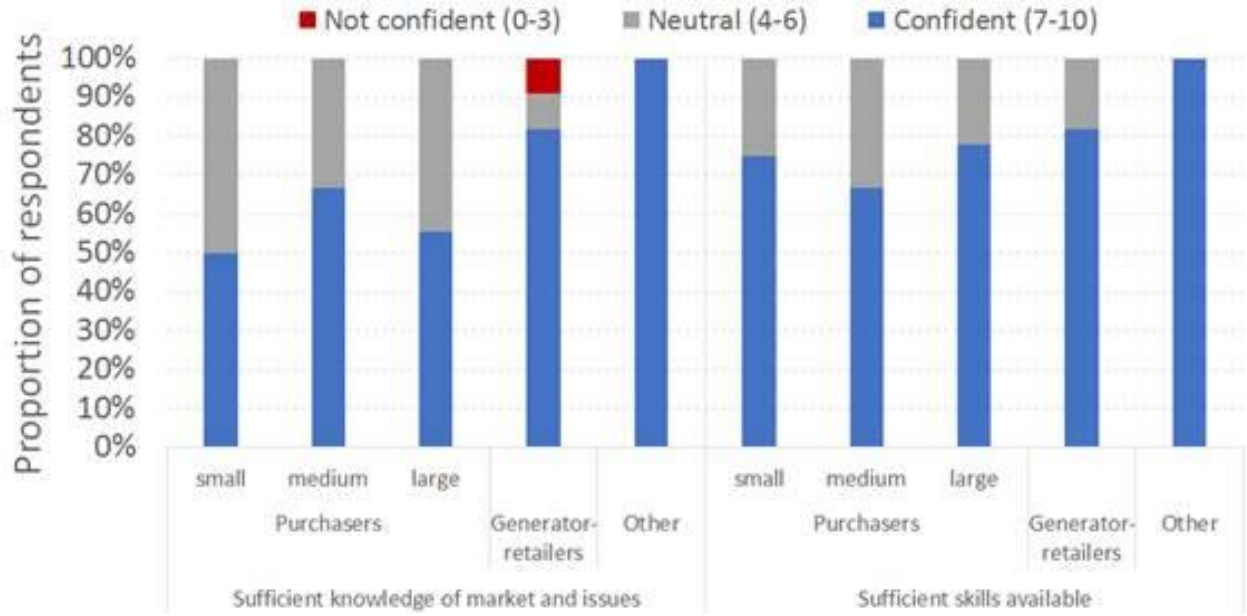
The hedge market survey highlights the knowledge barriers to hedging. Respondents were asked about their confidence in their level of understanding of various aspects of the hedge market (Figure C8). Generator-retailers were confident in their understanding of most aspects of the market, but purchasers showed a much greater range in their confidence. Purchasers had particularly low confidence in their understanding of the ASX market, options contracts, and FTRs.

Figure C8: Proportion of hedge market survey respondents that felt they were confident they understood aspects of the electricity market



Hedge market survey respondents were asked if they had sufficient knowledge and skills available to confidently make effective electricity price risk management decisions. While the majority of respondents indicated some confidence in their knowledge, there is clear room for improvement (Figure C9).

Figure C9: Confidence of hedge market survey respondents that they have sufficient knowledge of the market, and skills available, to make effective risk management decisions



The hedge market survey report noted that 'some purchasers found it difficult to sift through and find the relevant information or did not have knowledge or skills in particular areas. These purchasers tended to outsource that function and/or stick to the types of products they were familiar with. Due to their background, they also had difficulty explaining electricity price risk to senior management within the company.'

Parties that commit less resource to price risk management may be less confident of their ability to manage risks under current hedge market arrangements

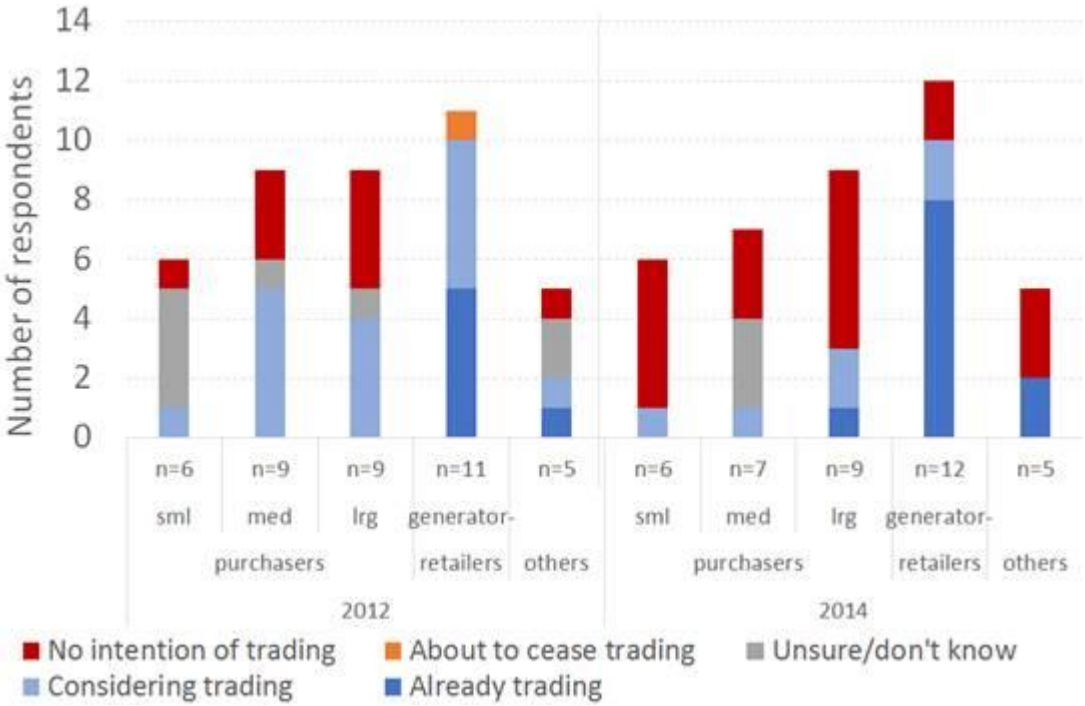
Full participation in the hedge market requires a significant amount of effort.

This is one reason why the five largest generator-retailers (all of which commit significant amounts of resources to price risk management) have a relatively high level of confidence in their ability to manage risks under current hedge market arrangements. Other parties commit significantly less resource, and in some cases this translates into a lower level of confidence.

Many parties that use the hedge market do not plan to participate in the ASX (Figure C10). In many cases this is likely to be driven by resource constraints.

In fact, the majority of hedge market participants only deal in FPVV contracts. Again, in many cases this is likely to be driven by resource constraints.

Figure C10: Breakdown of hedge market survey participants, indicating whether they are trading, or plan to trade, on the ASX



An example of a situation in which significant resource is needed is when a party that trades on the ASX NZ wishes to change its position. Because the ASX NZ has a limited level of market depth, a party that wishes to make a large change in their market position must be prepared either to change their position gradually over multiple trades, or to incur a loss on the trade.

One measure of the depth of a futures market is the level of spread. Spreads on the ASX NZ market are typically not much below the 5% specified in the market maker agreement (Figure C11).

Figure C11: Spreads on the ASX NZ market

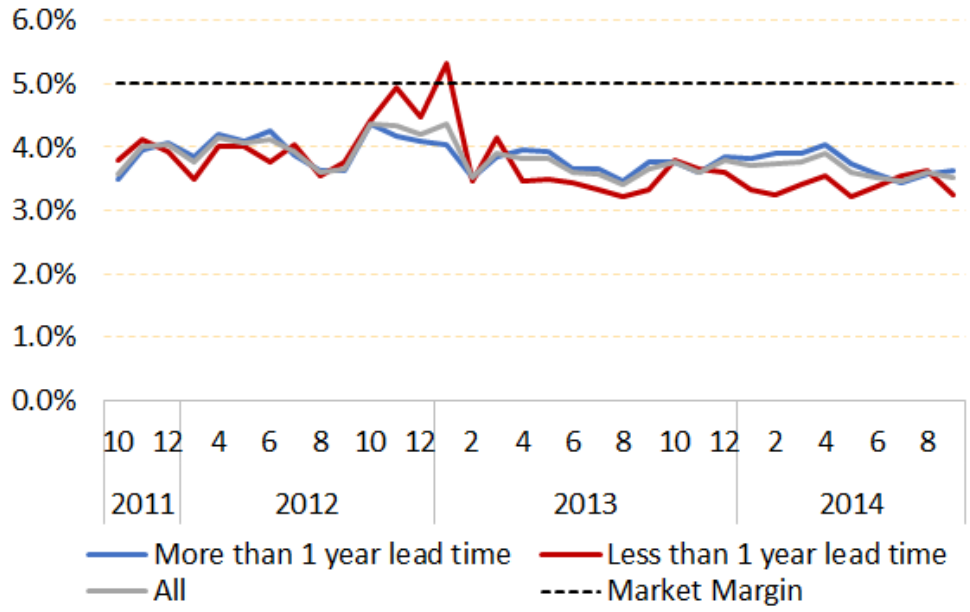
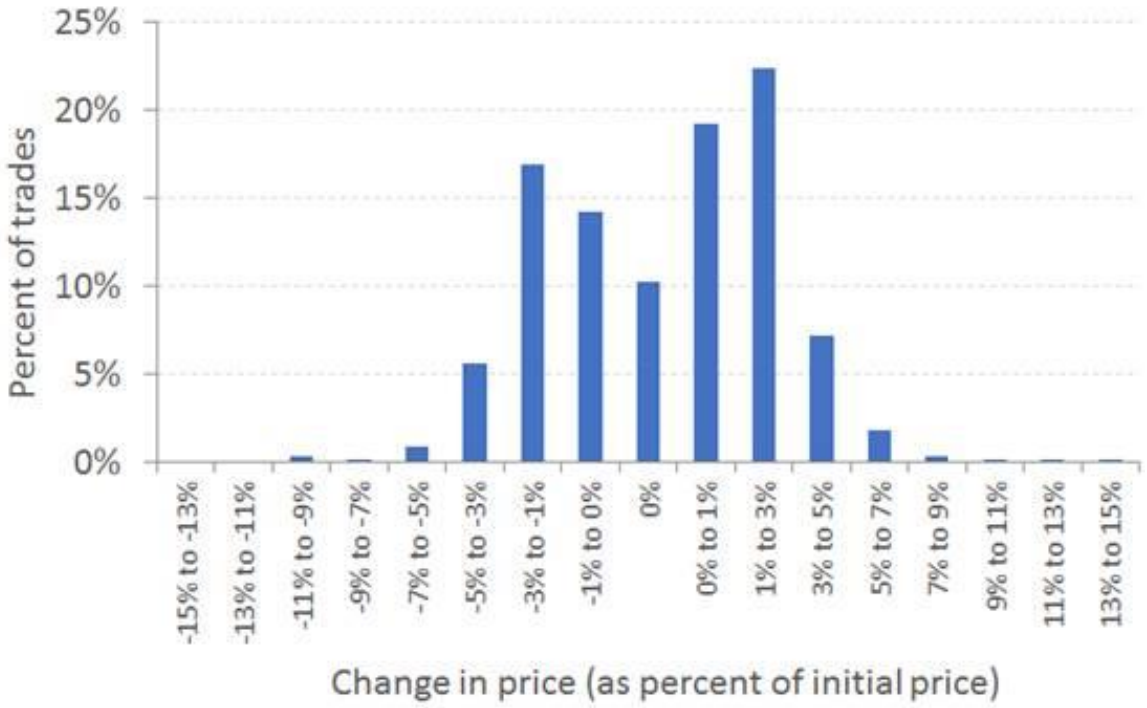


Figure C12 shows that it is more common for the price to equal or exceed the previous sell price, than for it to equal or be less than the previous buy price (42 percent compared to 29 percent). This suggests buyers are more often initiating an ASX trade (i.e. they are meeting the seller's price) than sellers, and hence having to pay the spread.

Figure C12: Prices at which ASX futures trades were transacted

Figure C13 shows how prices of ASX products change following a single trade. The graph shows the distribution of price movements between one trade in an ASX product and the next, providing both trades take place within 24 hours. The price movement is shown as a percentage of the initial price.

Figure C13: Distribution of changes in price from one ASX trade to the next, within 24 hours



Subject to caveats about data quality, this analysis shows that:

- there is a degree of volatility from trade to trade (within 24 hours)
- price movements from one trade to the next (within 24 hours) are 52 percent likely to be upwards, but just 38 percent likely to be downwards (with the balance being a nil price change)
- in 44 percent of cases, the price moves by less than 1 percent of the initial price
- around 17 percent of trades exceed 3 percent (in either direction) of the initial price
- around 4 percent of trades exceed 5 percent (in either direction) of the initial price.

The analyses therefore supports the assertion that prices can move materially following a trade, including for small volumes, although extreme movements are not the norm.

Note that the analysis does not capture the extent to which the price spread can move away in response to a bid/offer, without a trade subsequently occurring. The analysis may therefore underestimate the extent of the problem.

Various participants have expressed dissatisfaction about the depth and/or liquidity of the ASX market. For instance:

- EMH Trade commented that 'vertical integration has stifled the eco-system that is needed to support an active, liquid and dynamic hedge market'
- Pioneer commented that 'indications of a lack of liquidity' include that 'prices shift several dollars on small trading volumes, or even just on submission of a bid/offer'. Pioneer went on to say that 'Pioneer's small trades (1 – 2MW) regularly move the prices on the ASX demonstrating poor liquidity'
- Pulse has commented that '*the ability to exit a position is often prohibitively expensive – hold is the only answer'.* Pulse views liquidity as fundamentally inadequate and recommends structural change
- NZ Steel commented on the *'lack of liquidity'*
- Nova commented that 'the ASX market is useful for price estimation and trading of trading of a few MW at a time, but cannot be relied upon for hedging anything more than a few MW at a time without substantially impacting on the ASX price due to insufficient market depth. Generally if a party isn't prepared to accumulate volumes over time then they need to access larger quantities through the OTC market'. Nova seeks 'improvements in depth and liquidity of the ASX market'.

Major generator-retailers tend to have less concern about depth or liquidity, despite the larger positions they manage. MRP, for example, has commented that *'the current suite of hedge market products are highly liquid… with the equivalent of a 50MW baseload generation unit able to be readily traded through the ASX within a week'*. It is likely that generator-retailers' more positive views about depth and liquidity result, at least in part, from their ability to devote more resource to trading.

Parties that cannot otherwise manage profile and outage risks may be less confident of their ability to manage risks under current hedge market arrangements

Profile and outage risks refer to parties' exposure to spot prices when their physical quantity does not match their hedge quantity – in the case of outage risk, because a generator's plant is not available when needed.

Profile risk can be avoided by entering into a FPVV hedge. However, if a party instead uses fixed-volume hedges such as futures, then profile risk becomes a consideration.

Some parties are able to manage profile risk by having a largely flat load profile, or through demand response or flexible generation. For other parties, hedging may be their primary means of dealing with profile risk. The ASX NZ futures market currently provides them with limited ability to do so. The only liquid futures products are baseload.

This is one reason why the five largest generator-retailers (who all have access to discretionary generation) have a relatively high level of confidence in their ability to manage risks under current hedge market arrangements, while some consumers and smaller retailers have a relatively low level of confidence.

The WAG has published analysis showing that retailers can mitigate the majority of price risk through the use of baseload futures and FTRs (Figures C14 and C15 – note that the white, cyan, blue and magenta wedges, collectively showing the proportion of price risk that can be managed using baseload futures and FTRs, form a substantial proportion of total price risk).

Nevertheless, some parties seek the introduction of a peak futures product.

Further, some parties – including retailers, generators, consumers, speculators and financial intermediaries – could benefit from the introduction of a cap futures product. Speculators and financial intermediaries may lack confidence in their ability to manage risks in a theoretically uncapped market.

Figure C14: Breakdown of the price risk faced by a hypothetical retailer – at Otahuhu

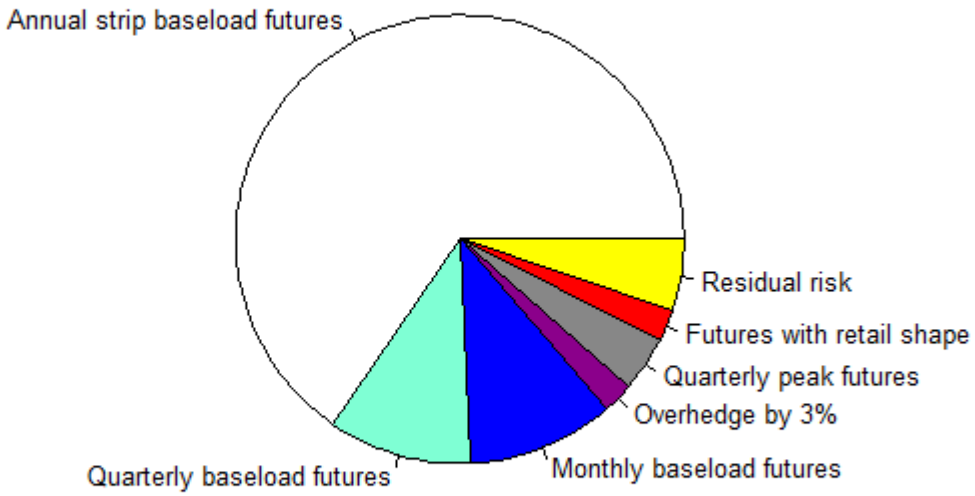
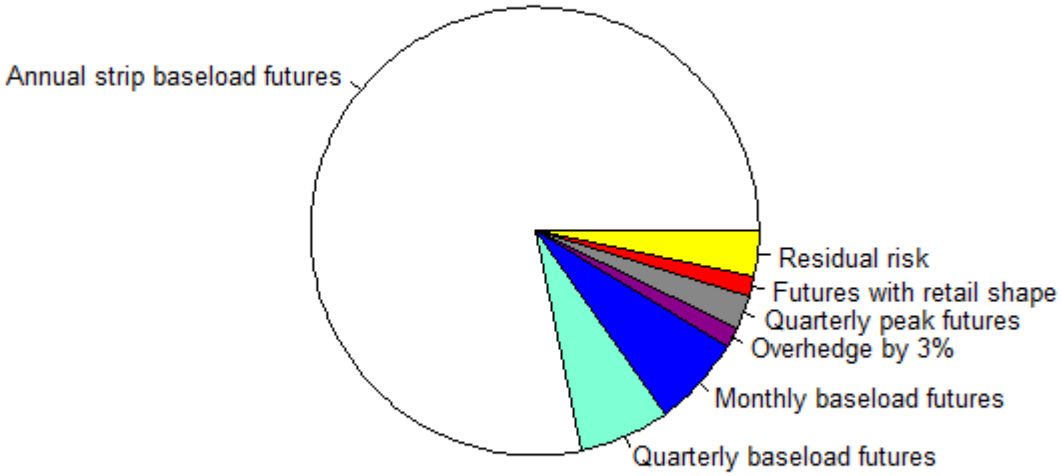


Figure C15: Breakdown of the price risk faced by a hypothetical retailer – at Benmore



Submissions in response to WAG's discussion paper included that:

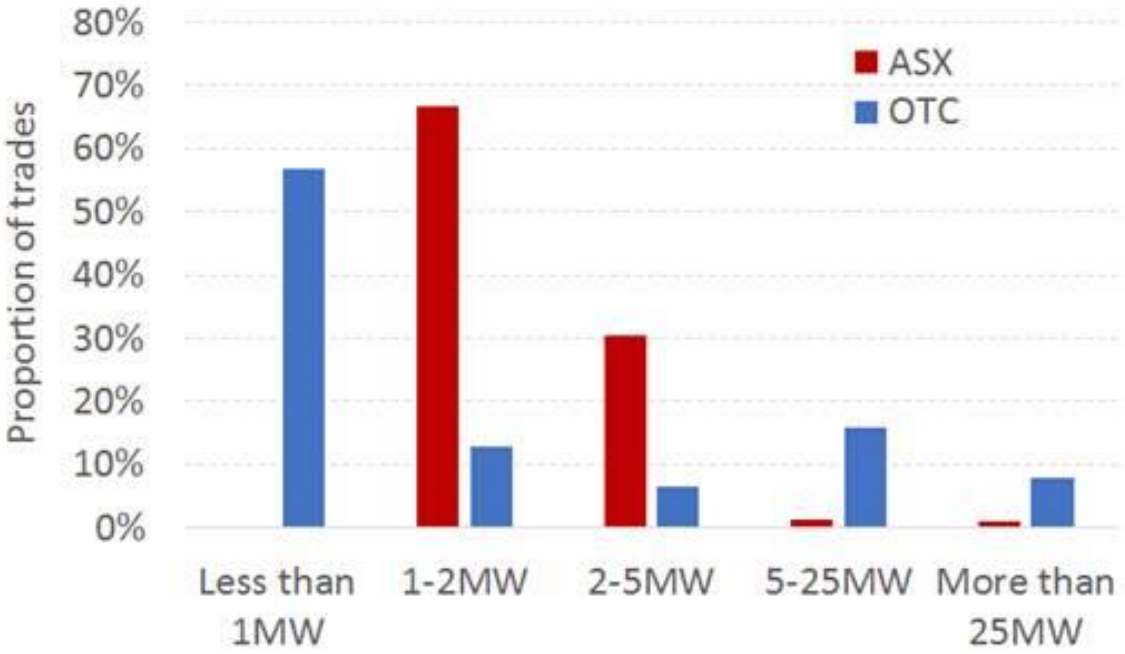
- EMH Trade commented that 'the most important improvement that can be made at this stage is compulsory market making of a cap product. Due to the uncapped nature of the spot market, the management of capacity shortfall risk is essential to any participant, whether purchaser, retailer or speculator. Currently there is no liquidity in products exposed to this risk, and therefore no efficient method of transferring it between parties. Due to vertical integration this risk is simply internalised among gentailers. … This risk transfer could be achieved at least partially through a peak future. Peak futures have been listed for a year now and it is symptomatic of the lack of engagement by the major parties that this product has not become more actively traded'
- Genesis recommended 'market making for peak products in the ASX Futures market'
- MEUG commented that 'speculators and intermediaries themselves should answer why they may not participate in the New Zealand wholesale electricity market but do in other overseas wholesale electricity markets. While a subjective view, MEUG agrees with the suggestion in the paper one reason may be a lack of risk management products for extreme spot price events. If that is the case then exchange traded cap or option products would help'
- MRP 'supports a focus on improving the liquidity of existing… peak quarterly futures products'
- Nova 'supports the investigation of initiatives to… add a cap product'
- Pulse raises the problem of 'the lack of liquidity in the peak contracts'
- Trustpower commented that 'involvement [by speculators and intermediaries] appears to be limited by the high level of risk associated with a market which has no price cap, or price capping product'.

Other submitters, however, recommended caution in introducing new futures products – e.g. because they are not needed or desired, or because they would drain liquidity from existing products, or because it would be onerous to require market making in the new products.

Parties that cannot comfortably accommodate the 1 MW ASX contract size may be less confident of their ability to manage risks under current hedge market arrangements

The ASX NZ contract size is 1 MW. Participants cannot currently execute trades in fractions of a MW on the ASX. A substantial fraction of fixed-volume trades involve quantities less than 1 MW, and these trades are carried out OTC (Figure C16).

Figure C16: Distribution of ASX and OTC CFD trade quantities



It is widely agreed that more parties would be able to use the ASX if the contract size was smaller.

Appendix D Summary of submissions

Q1: Based on your experience, are there any other challenges to managing risk through the hedge market that the WAG has not identified?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation, New Zealand Steel	Not individually addressed
EMH Trade	The WAG correctly asserts that liquidity is low, but for anything other than a base-load profile, liquidity is virtually non-existent. The paper doesn't highlight this issue enough in our view. We do not agree that the barriers to market access are significant for any well-funded market participant. We question whether it is appropriate for parties that don't have the expertise to manage risk to be taking it in the first place by exposing themselves to spot prices. It may be appropriate for direct purchasers to have to demonstrate that they have experience with managing spot risk (including the use of derivatives) before becoming certified. The EA could facilitate or approve education providers for this purpose.
Genesis	Please refer to our cover letter.
Meridian	Meridian considers limited access to thermal fuel price, contract and stockpile information hinders the ability of some parties to manage risk through the hedge market. In Meridian's experience, there are rarely requests for hedge offers that receive no response, although it may be that these offers are not taken up. We also note that a minimum of 12MW of both bids and offers for hedge cover is made available over a three year outlook every day through ASX.
MEUG	None that we are aware of.

MRP	The challenges articulated in section three of the discussion paper reflect the views of a specific set of market participants canvassed by the WAG to date. From Mighty River Power's experience the current suite of hedge market products are highly liquid and provide reliable avenues for managing risk. The main issue for resolution from our perspective is facilitating increased engagement in market making from the largest market participants for existing futures products.
Nova	Just as the size of each unit traded can be an impediment to trades, the term of each contract may also be an impediment. There is a significant volume of OTC trades conducted to cover plant outages for either thermal or geothermal power stations. These are for many tens of MW, but only for a term of a few days or weeks. The quarterly ASX blocks are not a good option for these trades.
Pulse	The WAG has identified the majority of the issues; however the WAG has immediately turned itself to a narrow problem definition, despite raising two primary issues. The two primary issues are: • The use of full nodal pricing in the spot market • The asymmetric risk and credit worthiness that occur due to vertical integration These two issues are central to a proper problem definition and are overlooked by the WAG as it predetermines that "incremental change is appropriate". In addition the market has many features of an oligopoly and this also influences behaviour and incentives. The use of a full nodal pricing system has significant benefits in the wholesale market for some participants, but creates significant costs and risks for others. The use of nodal pricing is of benefit to generation and efficient dispatch. It also clearly signals through time, areas that are already or are becoming constrained. Higher nodal price areas are undoubtedly attractive to potential generation, but this attractiveness is limited by access and fuel considerations as a minimum. However, nodal pricing for off take, combined with the use of marginal losses and constraints creates

	risks that are effectively impossible to manage or result in the addition of products such as FTRs. The addition of products such as FTRs and additional FTR nodes for example, creates products with ever decreasing liquidity, ever increasing complexity and generally additional prudential or security requirements and consequently cost. The effect of nodal pricing for off take means that contracts are sought for relatively small volumes at many nodes, although this is generally not possible. This lack of liquidity and the inherent risk for both buyers and sellers increases the risk premiums, reduces the availability and detracts from trading at more liquid points in the grid as the more highly traded nodes may be ineffective in managing nodal differences. So in addressing the question of other challenges, the WAG needs to consider the underlying pricing structure of the market. Whilst this may be an uncomfortable discussion to have, being that it opens the door to a more fundamental review of the market; an honest problem definition around the ability to manage risk must surely start from the fundamental basis of the risk creation. Consolidation of trading to a smaller number of nodes, with simplification of products can be achieved by going to regional pricing for off take. This would facilitate greater liquidity, reduced barriers to entry, the potential for the removal of untradeable products such as FTRs and a generally easier market to understand. This of itself would improve competitive outcomes and reduce costs. The second issue that goes to the core problem definition is vertical integration. The evolution of the NZ electricity market has resulted in a small number of large vertically integrated participants. The nature of these generator/retailers is that they have very strong balance sheets and operating cash flow. The underlying market characteristics are of flat to slow market growth, broadly oligopolistic competition and an expectation that the large generator/retailers are low risk yield plays. The generator/retailers consequently have a very conservative perspective on risk and are some of the most credit worthy

	corporates in New Zealand. Consequently all other electricity market participants (and most commercial entities in NZ) look from their perspective to be high credit risk/lower credit quality. The combination of vertical integration, limited credit risk appetite and a broad oligopolistic market results in limited appetite and necessity to trade for the larger generator/retailers. This has consequential adverse effects on liquidity and the potential for competitive entry. Failure to consider and address these two underlying causes will continue to limit the scope for true development of market liquidity and further realisation of the benefits of competition.
Trustpower	We believe that one of the largest risks in the market is the high degree of price uncertainty in spot pricing. It is difficult to make decisions to manage risk when there is no certainty in the level which prices may settle. We believe that ensuring real time prices are accurate will be of greater benefit to the consumer than further developments in the hedge market.

Q2: Do you agree with the assessment that the status quo is insufficient, and that some improvements are appropriate at this point in time? If so, please rank your preferred initiatives and provide your rationale for them.	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation	Not individually addressed
EMH Trade	Absolutely. It is clear from the chart that OI has been basically flat in the last 12 months, and that volume has not grown significantly since spreads were tightened in 2012. Furthermore, we note that this picture is likely to overstate the OI in the market. The pricing structures in the VAS contracts are such that a significant amount of open interest is 'unwinding' them through the exchange. Thus

	when considering these two market developments (ASX and VAS), the effects should be measured as subtractive rather than additive as is often the case when measuring the success of the ASX market developments. The most important improvement that can be made at this stage is compulsory market making of a cap product. Due to the uncapped nature of the spot market, the management of capacity shortfall risk is essential to any participant, whether purchaser, retailer or speculator. Currently there is no liquidity in products exposed to this risk, and therefore no efficient method of transferring it between parties. Due to vertical integration this risk is simply internalised among gentailers. This risk transfer could be achieved at least partially through a peak future. Peak futures have been listed for a year now and it is symptomatic of the lack of engagement by the major parties that this product has not become more actively traded. Again, vertical integration removes the need and therefore the willingness for major participants to trade these contracts. Given they are already listed, it could be a quick win to push liquidity in these products, but it is clear after 12 months that this won't happen without regulatory intervention. The paper notes that FPVV prices are very competitive and that this may hamper uptake of derivatives as a risk management alternative. Our view is that this 'competitive' FPVV market is an indication of inefficiency in that derivative and FPVV markets are not aligned. This suggests that either there is still an internal disconnect in the pricing of these contracts within some of the major organisations, or that futures are being deliberately priced above FPVV to stifle competition (we suspect the former rather than the latter).
Genesis	We consider the current market is working and allows participants to sufficiently manage their risks. However, we also recognize many of the proposed changes would be good for the market in the longer term, to the benefit of all participants. Please refer to our cover letter for further detail. In terms of prioritisation, our ranking of the preferred initiatives is:

	1. more ASX Futures market makers 2. reduce the ASX Futures product size 3. market making for peak products in the ASX Futures 4. increase the number of monthly contracts in the market making, so rolling 4 to 6 monthly contracts (matching with the front two quarters) are available 5. increase the number of lots offered under market making from 3MW to 4MW in the quarterly contracts and from 2MW to 3MW in the monthly contracts 6. better education for participants 7. cross margining to lower the working capital requirements.
Meridian	We agree the status quo is insufficient. Given strong recent progress in the development of the hedge market and indications of further development, we support the WAG's conclusion that incremental change is appropriate. We consider any regulatory changes need to be focussed in areas where the market (including potential new entrants) has clearly indicated a demand. For instance, the need for new standardised ASX products should be tested through demand for similar OTC products first. As discussed in our cover letter, Meridian's preferred initiatives are (no internal ranking): • reducing ASX contract size • reducing ASX market-maker spreads • using hedge contracts to offset spot market prudential requirements • encouraging participation by speculators and intermediaries

	and • improving availability of information, in particular information on thermal fuel prices, contracts and stockpiles.
MEUG	Yes. Suggested priorities are noted in answers to questions 5 and 11 below.
MRP	No. As above. We consider the paper has a disproportionate focus on the futures market. The evidence to date suggests that, despite strong growth in the futures market, participants currently understand and value OTC products more highly. Unquestionably it has been the transparency of the ASX forward curve which has led to more efficient pricing in the OTC market. This has driven greater competition in that market and benefits to consumers. We appreciate that over time there will be a need for new futures products, but we note the market is growing organically without intervention, with increased participation in monthly futures products as one example. We support an on-going facilitative process for market development which takes into account the needs of all users of hedging products. The current focus on new entrant retailers and retail competition should be balanced with the needs of other participants such as independent generators. We note the Electricity Authority is engaging bilaterally on market making arrangements and demand for new products. While support has been expressed for a cap and options products Mighty River Power has been explicit we would not support mandated market making for such products as this would result in a capital cross-subsidy from the balance sheets of existing market makers to foreign hedge fund and banking speculators and expose the wider market to unnecessary risk.
New Zealand Steel	As identified in the report, the futures market in NZ is relatively immature. This is borne out by the lack of liquidity and low number of participants, particularly on the demand side. While the WAG report references EA published and other material showing development of the hedge market, before proceeding to

	the next stage of work, it will be appropriate for WAG to reassess the degree of progress that has been made. Appendix E shows a market still heavily made up of market makers, and decreasing participation by purchases. Where are we at on the continuum towards a mature hedge market? Hedge market development initiatives need to focus on the end consumer. The EA is required to focus on the long-term benefit of consumers. An efficient hedge market is a key requirement for an efficient electricity market. The next stage of work by WAG needs to ensure market initiatives have end consumers in mind. It will be necessary to encourage participation by generators, retailers, and speculators, to assist in achieving this end, BUT the outcomes need to benefit consumers, not necessarily other participants.
Nova	Nova agrees that there is merit in endeavouring to improve trading on the ASX. The benefits of any initiatives must be measured in terms of the net gains to consumers overall, rather than being an objective in itself. The priorities should be: 1. Improvements in depth and liquidity of the ASX market to allow larger quantities to be traded on a day with impacting on market price. 2. Enabling the Clearing Manager to take into account, and have access to margin accounts (when positive) to offset prudential requirements. This would significantly enhance the value of the ASX market to independent retailers.
Pulse	It is not clear what initiatives the EA/WAG is seeking a ranking of. It is clear that the status quo is insufficient, but incrementalism is unlikely to produce the changes that are required.
Trustpower	As indicated by the Energy Link analysis, the New Zealand electricity market does not stand out as being inefficient compared to international markets. We believe that participants need to ensure they are aware of the risks, and the nature of a commodity market where there is no direct storage. Futures prices reflect the risks that participants face for participating in the spot market, and the expected costs

	that they could occur in an extreme event. If a participant has insufficient cover, then the value of a risk-mitigating product will tend to be higher to that participant than to a participant with sufficient cover. For this reason we do not believe that there needs to be any significant change to the risk management markets. We believe that the risk management market is sufficiently mature to ensure that future developments progress organically as the market changes.

Q3: What is your view on the ability or otherwise to manage the different facets of price risk?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation	Not individually addressed
EMH Trade	Improvements in the hedge market to date have enabled participants to effectively manage a substantial amount of their short to medium term base load energy price risk. This has been a commendable change from prior to 2010. We feel there are still significant shortcomings in participant's ability to manage the following risks through the market: • <u>Profile Risk:</u> Whilst peak contracts have historically been correlated with base-load prices, for many participants, the residual risk may still be significant and beyond what is prudent to take. Without a cap and/or peak product, there is no efficient means to manage this risk other than vertical integration or FPVV. We note that there are a number of emergent technologies and business models that have no baseload exposure. • <u>Location Risk:</u> The increase in FTR nodes and general

	improvement in the grid is likely to have reduced this risk substantially in recent years. We don't think there should be priority given to further improvements in this area until the FTR market has had a chance to mature and the impacts measured. • Transmission and Distribution Price Risk: An emergent risk that was not identified in the paper ought to be considered by the WAG. New technology such as distributed PV, automated load shifting, and electric vehicles are rapidly emerging and have the potential to add significant economic value to New Zealand. Investment decisions for these technologies rely heavily on assumptions around the cost and structure of distribution tariffs. The visible horizon for distribution pricing (structures) is currently far shorter than the investment horizon for these technologies. This uncertainty is likely to be leading to inefficient investment decisions. A requirement for distributors to fix their tariff structures for a longer period, or at least offer this option may alleviate this problem by giving the market earlier signals on the future of these price structures.
Genesis	We have a reasonable capability to manage the different facets of price risk. We consider a more developed hedging market will allow us to manage our current portfolio better. It will be similar for other market participants.
Meridian	We consider there is an appropriate suite of products currently available to manage the different facets of price risk. We note that for those parties wanting to completely insulate themselves from spot market risk, FPVV contracts are available.
MEUG	The price risks in paragraph 6.1 are reasonable.
MRP	We consider the current hedge market products are largely appropriate for managing different facets of price risk. We would support the development of a central North Island Financial

	Transmission Right over time.
New Zealand Steel	There is limited ability for consumers to manage price risk. (Equally important is the ability to manage volume risk ie derivatives create volume risk). The complexity of the market, relative to the importance of electricity cost to individual consumers, means the vast majority are unable to participate. The end result is consumers take on FPVV contracts which provides price certainty, but at a cost. For those consumers who operate outside the FPVV regime, hedges are often not an attractive option and physical means, such as reducing load, are important ways of managing pricing risk.
Nova	If there is concern over the uncapped nature of the spot market, then the expected response of the spot market to severe constraints needs to be better understood. Having the SO publishing 5 minute prices in excess of $100,000 /MWh doesn't help, albeit that it highlights a short term lack of reserves. Infeasible price model solutions would be better served through a non-financial flag. Similarly, the likely market response to extremely low hydro storage needs to be better understood by participants. There simply isn't sufficient history for analysts to rely on statistical analysis, and the market's capacity to respond to low hydro inflows has continued to evolve. Prices aren't so much 'uncapped' as 'unregulated'. The SO can, for instance, achieve a feasible dispatch by relaxing one or more constraints in extreme situations. We note that while there several elements to risk in the retail market (location, volume, and time/profile). This is not uncommon in commodity markets in general where there are various attributes to the underlying physical commodity such as product grade, point of delivery etc. In general there is a trade-off between depth and liquidity in a standardised financial market and the match to the physical product being traded. Generally, a high proportion of commodity risk is covered under the financial market but there is no "perfect hedge". There is always some risk

	remaining re location and volume. Generally volume risk can be managed by the hedge market being sufficiently liquid and deep that parties can exit or refine their positions through time. While the addition of new products should be investigated, we do not believe that should be done at the expense of depth and liquidity in the base market.
Pulse	We do not have a view on the long-term or medium-term energy price risks, as both of these relate primarily to physical supply balancing and we assume that the market is generally efficient in securing efficient dispatch and plant additions and withdrawals through time. Open access and a transparent spot market are key attributes to manage these risks. With respect to the remaining items in 6.1.1 (c to f) our opening position is that risk cannot generally be avoided only managed. However, the structure and design of the underlying market structures can have a significant impact on how easily the risks can be managed and the cost associated with risk management. The decision to use full nodal pricing for injection and off take was a philosophical one. It was assessed within a framework where the driving consideration was efficient dispatch of generation plant. For a variety of reasons it was extended to off take nodes on the basis of economics rather than practicalities. It was not assessed within the framework of comprehensive risk management, trading or the potential impact on new entry of retailers and consequential effects on the level of competition that can be achieved. As a consequence of the decision to use full nodal pricing, marginal losses and constraints, the implications for locational risk management became complicated. Years have been spent discussing the implications on transmission pricing, loss and constraint surpluses etc. As a result of the initial decisions, the market has now introduced FTRs. The FTRs are themselves a hybrid product with no tradability. They have recently been extended and so have created additional layers of complex derivative products with no liquidity, added to simpler products with limited liquidity. These steps are not ones that are likely to

	increase entry or liquidity. They do however increase the commercial barriers to entry. Short term energy price risk management is complicated by the two primary issues identified in our response to question 1. Nodal pricing limits the scope for active trading as the variety of locations means that OTC products are often preferred, as participants seek to limit locational risk, but they are of limited availability. Additionally, the majority of potential OTC suppliers are the large generator retailers. Their own credit worthiness limits the attractiveness of other participants to them. This then drives smaller parties into the ASX, where there is already an acknowledged reduced level of liquidity and leaves the smaller parties with the residual locational, profile and volume risk. Overall the ability to manage price and volume risk is far from perfect. The market is complex, the products are less liquid than is desirable, the key participants are too busy to trade for more than 30 minutes per day, the product structures can leave large residual risks, the ASX products are too big, information is asymmetric, the large generator retailers have embedded real options and don't need to trade and they view most entities as lower quality credit. These are not issues that can be addressed through incrementalism.
Trustpower	Trustpower believes the tools available to manage spot market risk are satisfactory. Introducing further products creates the risk of splitting liquidity, therefore damaging existing products. The increase in activity in the OTC market, with up to 40MW trading through the market recently, indicates that the market is willing to price to participants who cannot trade on the ASX, or need a product that is currently unavailable on the ASX.

Q4: Do you have any comments on the Energy Link analysis and its conclusions? What should the WAG take away from the Energy Link work?	
Contact, EPOC, Fonterra, FTR	Not individually addressed

Manager (EMS), Norske Skog, NZX, Pioneer Generation	
EMH Trade	ASX price level analysis: We agree that a risk premium is to be expected given the asymmetry of prices and concentration of ownership (and balance sheet) on the sell side. We see it as futile to try to assess whether this premium is appropriate or not for the circumstances. A better question would be to ask whether or not there is an efficient market for risk in NZ electricity prices. HHI, entry and exit of participants etc could be used to inform this analysis. If the risk market is efficient, it follows that the risk premium will be efficient. OTC vs ASX: We agree with the caveats around the limitations of the data available. Although we also suspect there is no clear link between ASX and FPVV pricing in a number of participant organisations, in part because of the lack of an efficient and transparent market for profile risk.
Genesis	We found the Energy Link analysis to be comprehensive and informative. The WAG and the market should find some comfort in this analysis as there are no areas where there is a clear mis-pricing of futures contracts to the advantage of some market participants over others. The Energy Link work reinforces that there a very large number of drivers of futures pricing and it is difficult to make simplistic conclusions about these products.
Meridian	Meridian strongly supports EnergyLink's conclusion that the deltas observed are consistent with a workably competitive market. In particular, we support EnergyLink taking account of the level of risk in New Zealand's spot market when considering appropriate deltas. If there were a consistent and unwarranted positive delta in comparison with the level of risk, speculators could be expected to enter the market and sell contracts. We have not observed such behaviour. We note that EnergyLink's analysis covered a wide range of future scenarios. The exact likelihood of each scenario is impossible to determine in advance, and will always be subjective. Provided

	hedge prices sit within a range of plausible scenarios, it is difficult to conclude that an inappropriate delta exists between the hedge and spot markets. WAG should use EnergyLink's analysis as evidence that pricing in New Zealand's hedge market is appropriate given the level of risk.
MEUG	The delta analysis is a top down view. It's difficult to gauge its value because we have not seen comparable analysis from other markets and neither does it have the history of measures such as the Herfindahl-Hirschman Index (HHI) that are well known and accepted approaches. The delta analysis and the Energy Link models are interesting for parties considering their own hedging strategies. How market participants may be reacting commercially is also interesting background to the WAG analysis. The Energy Link models, because they are not replicable and peer reviewed such as SDDP models, are not suitable to support major policy decisions on whether there are material inefficiencies or excessive and detrimental oligopolistic market power with the large vertically integrated suppliers. MEUG note that even SDDP type models have a limited ability to assist policy makers assess such issues because while helpful for estimating relative static efficiencies they are less useful for estimating changes in dynamic efficiencies. This is not a reason why no further work should be undertaken; rather an acknowledgement the work is not trivial.
MRP	The main conclusion is that the analysis does not support some participants claims that there are material issues to be addressed with the observed delta between spot and the forward curve. On a risk adjusted basis this divergence is consistent with other jurisdictions1. We consider improving market making participation for existing futures products would also reduce the current observed deltas.
New Zealand Steel	While the Energy Link work has not been peer reviewed, it is ground breaking, at least in NZ, and adds substantially to the hedge market discussion. NZ Steel conclusion from the Energy Link work:

	1. an ASX pricing margin averaging 10% over spot is confirmed, (and other instruments tend to be more expensive) 2. it is understood this is considerably greater than other markets 3. however, relative to risk, the Delta (insurance premium) is not out of line with Australia or other jurisdictions examined 4. given the significant insurance premium, and volume risk that goes with derivate products, hedges are not a preferred means of managing price risk for us as an end consumer. The Energy Link conclusion seems to take the spotlight off sellers of hedges. WAG needs to investigate further the reason for a significant price premium. If there is real risk why is this? Is this a market design issue? Is there an underlying flaw with the spot market? Without these answers it is doubtful the hedge market will be attractive to informed consumers and alternative non-market means will continue to be sought to manage price risk. In answering a question posed at the WAG briefing seminar, Greg Sise of Energy Link said that for industries there may be opportunities to plan production around quarters with negative deltas. This would be an alternative to hedging.
Nova	Nova is not surprised by the result. The positive delta may be reduced if more independent generators choose to hedge through base-load ASX futures rather than seeking power purchase agreements or FPVV contracts with retailers. In doing so they may incur some volume risk, but that comes back to their understanding of the potential returns available against acceptance of some risk.
Pulse	It is clear that the ASX Futures trade at significant deltas. The analysis is clouded by two factors:

	• the dataset is relatively small • the years that are covered may or may not be representative of experience over a longer dataset. The lack of longer term data makes drawing conclusions difficult. However, it is worth reflecting on why there is concern rather than whether the concerns are valid. The key reasons that there are concerns are: • there is a lack of liquidity • there are limited participants • vertical integration creates the potential for adverse behaviour • the industry due to its structure is best described as an oligopoly • the oligopolistic structure creates the potential for adverse behaviour. The consequence of this not exhaustive list is that there is a general level of distrust as to whether the hedge market is efficient. This perception is further reinforced by the designed complexity of the market structures which make understanding the overall structure and components a lifelong quest. The key take away for the WAG is that analysis and comparison is not a substitute for true liquidity. Identifying that deltas etc. are broadly consistent with other markets does not create liquidity nor address why such concerns exist. The reality is that the electricity market is relatively small, but that the level of trading is even lower. Analysis illustrating something is similar to an analogue from a different market is no substitute for actually producing a better outcome in the actual market being considered.
Trustpower	While acknowledging that the analysis undertaken by Energy Link

	is difficult, due to the many assumptions needed to be made, we believe the work they have done provides good context and is therefore of value. We believe that the analysis gives comfort that there is a rational relationship between New Zealand's physical and risk management markets.

Further comments about Energy Link analysis and/or pricing	
EMH Trade, Fonterra, FTR Manager (EMS), Genesis, MEUG, MRP, New Zealand Steel, NZX, Pioneer Generation, Pulse	No further comments about Energy Link analysis and/or pricing
EPOC	The Energylink report gives an excellent analysis of the critical factors affecting the risk premium that occurs in contract prices when compared with electricity spot prices. The analysis is thorough and thoughtful. Nevertheless, one aspect of the contracting situation has been omitted. A full understanding of the contract market is not possible without including the influence of contracts on prices in the spot market. Because the New Zealand spot market is not fully competitive, bids are not at marginal cost but instead are at different levels reflecting the market power of participants. This is not in itself necessarily inappropriate: the concept of workable competition is supposed by its supporters to allow a sufficient profitability to cover the fixed costs of generators. In the spot market a generator holding a contract for, say, 70% of its generation capacity will if acting optimally bid at below marginal cost up to its contract point and above marginal cost for higher quantities. Since generators typically have large contract cover, the overall effect of contracts is to reduce the average spot

	price in comparison with the case where generators do not hold these contracts. We thus typically find that contracts include some premium in comparison with the actual spot price. A purchaser considering a high price contract who decides against signing this contract could expect that generators then have lower contract cover, leading to higher spot prices. The contract which seemed to have an unattractively high premium would then seem to be reasonable. The result of this is that the difference between contract and spot inevitably includes a component that reflects the reduction of spot prices resulting from the contracts themselves. We thus believe that the high delta values observed are partly the result of the combination of imperfect competition and market participants maximizing their overall profit. We can also tell this story from the point of view of an investor considering buying contracts for differences. The price may look attractive in comparison with the expected spot price, but a non-market participant who writes this contract will by so doing, stand in the position of a generator, reducing overall generator contract cover, and hence increasing the spot price on average. These observations add weight to the contention that the delta values are not excessive and do not necessarily indicate barriers within the contract market. They also raise the intriguing possibility of using analytics models on New Zealand data to discriminate the effects of risk aversion and market power exercise on these delta values.
Meridian	Meridian agrees with the conclusion by EnergyLink that hedge market prices are consistent with a workably competitive market Meridian supports WAG's commissioning of analysis by EnergyLink to assess deltas between the spot market and futures market. We note some parties have been concerned that hedge market prices may have exceeded a reasonable delta relative to realised spot prices. Undertaking an analytical investigation of such deltas helps to ensure any conclusions are supported by evidence.

	As EnergyLink's analysis points out, it is critical that the underlying volatility and risk of a market is taken into account when assessing the reasonableness of any delta in the hedge market. New Zealand's spot electricity market is highly volatile, driven by its dependence on hydro, with an uncapped level of price risk. As such, the existence of positive deltas is not unexpected. Meridian supports EnergyLink's conclusions that: • New Zealand electricity futures deltas do not stand out as being excessive once adjusted for risk and • observed deltas in futures prices are consistent with a workably competitive market. Indeed, if there were a consistent and unwarranted positive delta between spot prices and hedge prices in comparison with the level of risk, speculators could be expected to enter the market and consistently sell contracts. We have not observed such behaviour. We note that EnergyLink's analysis covered a wide range of future scenarios. The exact likelihood of each scenario is impossible to determine in advance, and will always be subjective. Provided hedge prices sit within a range of plausible scenarios, Meridian considers it is difficult to conclude that an inappropriate delta exists between the hedge and spot markets. Meridian supports EnergyLink's analysis and recommends WAG take it as evidence that pricing in New Zealand's hedge market is appropriate given the level of risk.
Norske Skog	The paper provides much useful information about electricity risk management and provides facts and figures that should address much of the criticism levelled at the hedge market of late. The paper utilises the work of EnergyLink with their EMarket model, in which the margin between the futures price and the expected spot price is estimated. Whilst this is a noble attempt we would caution the WAG from reading too much into these results. The EMarket model is proprietary to EnergyLink, and as far as we are aware has not been peer-reviewed nor

	benchmarked against any of the more widely available electricity price models. As such it is not advisable to draw any conclusions from its results. Our view is that if models are used to guide policy setting then they should be readily available for individuals to use in order to replicate and reproduce the results and test assumptions for themselves. EMarket does not fall into this category. One other comment we wish to make is with regards to the view that the risk is asymmetric and therefore a margin to the suppliers is justified. Yes the market is largely uncapped and in theory very high spot prices could occur on occasion. But when assessing risk, this all boils down to distributions of prices and expected outcomes. Over time there is just as much risk of low prices as there is of high prices. The only justification we can think of for any premium would be to the buyers of hedges who provide the seller with a certain cash stream that they can use to raise capital from financial institutions. We now wish to turn the WAG's attention to another matter, which in our view is much more important than the margin between spot and futures prices. That is the efficiency of the spot prices themselves. If the spot prices are inflated by significant market power rents, then there is a bigger problem at play than whether fairly priced hedges are available or not. The work of the Commerce Commission several years ago raised many questions. Some of the underlying assumptions of this work were not well founded but that did not necessarily invalidate the whole study. There have been various studies since that also raise questions about the efficiency of the market. According to its terms of reference, the Wholesale Advisory Group has been established to provide the EA Board with independent advice on the development of the wholesale electricity market. In our opinion there is no project more important for the WAG to consider than the efficiency of the spot market.
Trustpower	Efficiency of risk management products There has been further debate that prices are held at an artificial level due to participants exercising market power. If there was a

	strong conviction that this were the case then we expect there would be more parties in the market taking advantage of any mispricing, inducing more active trading on the product until such time as the price is an accurate reflection of the risks associated with the product.

Q5: What are your views on the WAG's indicative assessment of the broad initiatives that might improve the ability to manage different facets of price risk? Which, if any, of the initiatives discussed do you think would be worth pursuing?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation	Not individually addressed
EMH Trade	• Firmer market making obligations that include products that facilitate the management of profile risk should be given priority. • As previously noted, recent improvements to the location risk market should be given a chance to mature. • Real time price improvements, price and offer caps (absolute or cumulative) should be investigated further, along with a day and week ahead market. • Given the lack of appetite for incumbents to trade new products, we don't see weather or gas markets as something that the regulator should focus on. • We don't see any benefit to disclosure of transfer pricing. However believe there is merit in reducing information asymmetry between physical and financial participants. In

	particular, more timely and detailed disclosure of short term OTC trades, and tighter rules around outage notifications would create more even playing field for speculators in the futures market.
Genesis	We consider short and medium term initiatives should be the focus. Once some of the short term considerations are addressed, long term aspects should be reviewed later. Please refer to our letter for further details.
Meridian	• We support adding further FTR nodes rather than adding further ASX nodes to manage locational price risk. Further ASX nodes may dilute trading at the current two nodes. FTRs are the appropriate tool for managing locational price risk. • With respect to introducing caps on ASX (under the grouping "tools for profile risk"), Meridian suggests appetite for such products should be tested prior to them being introduced. Such a process should involve undertaking a preliminary valuation of caps (using standard options valuation models) so that potential traders in the product are aware of the likely price at which they would trade. • We support work to improve information transparency (under the grouping "tools for medium-term risk"). In particular, we support making additional information on thermal fuel prices, contracts and stockpiles available. • We consider disclosure of transfer pricing is unlikely to provide useful information to the market – the transfer price may simply reflect the internal division of risk within a vertically integrated company, rather than an accurate market-based assessment of an appropriate hedge price.
MEUG	Some initiatives have been under review for some time such as:

	• "Improving the quality of real-time prices" in particular researching further ways to improve alignment between forecast and settlement prices (paragraph 6.5.10 b); and • "improving information transparency" in particular for outages (paragraph 6.5.12 a) ii)). The need to improve outage information is also noted as an issue in MEUG's answer to question 11 that follows. Progress has been made on the above but the work is by no means complete. MEUG urge the Electricity Authority to keep pressing the industry and to prioritise its own resources to improve those. Several of the parties that presented to WAG noted the relatively wide bid-sell spread and suggested a smaller spread would assist. That option should be considered further.
MRP	We question the added value of a voluntary day-ahead OTC market. In our experience there is little issue with obtaining short-term generation hedges that would be resolved by a formalised market. By way of evidence, since November 1 this year the market has traded 15 times for a total of 33GWh on CFDs for a duration of under one week. From our perspective, obtaining internal delegated authority to participate in a voluntary market would be a material barrier. We consider a month is the minimum period a prudent retailer should be seeking hedge cover. There should in reality be very little need for a day ahead market as New Zealand's hydrological variability means a reliance on short term hedging would expose a retailer to unnecessary costs and would therefore not be compatible with increased competitive retail offerings. In terms of providing greater transparency around outages, POCP already provides the appropriate framework but in our experience there is a currently a lack of timely and high quality information being provided to the database. We do not support measures that might require any market

	participants to have to disclose commercially sensitive information under Clause 13.2 of the Code. We also agree with the view that the current safe harbour trading arrangements provide incentives for generators to offer all capacity and therefore a ban would appear to have little value.
New Zealand Steel	Most have merit. • Incremental advances such as addressing the infeasible price situation and alignment of forecast and actual price should be progressed with urgency. • A day-ahead market has major ramifications and requires detailed work and consultation before this is advanced. • A price cap would solve a number of issues including improved hedge market participation and pricing. While it may not fit with pure economic theory, it will be a pragmatic step forward dealing with issues the market has been unable to address.
Nova	Care should be taken with initiatives that may have unintended consequences. In particular, those affecting property rights, creating commercial constraints etc., tend to inhibit innovation and may undermine long term competitive outcomes.
Pulse	As identified earlier, the full nodal pricing approach both limits liquidity, creates risk and results in complicated and illiquid products (FTRs and ASX). Compounding this is the size of the ASX contracts and the lack of liquidity in the peak contracts. Even if this was addressed, the inability to utilise the ASX contracts as HSA for prudential purposes reduces their attractiveness for retailers. Whilst these factors can generally be efficiently managed within the large retailer/generators, they create both a significant cost and barrier to entry for other participants. Adding additional FTR or ASX nodes will merely transfer value to parties who have physical assets in the case of FTRs or reduce liquidity further in the case of the ASX.

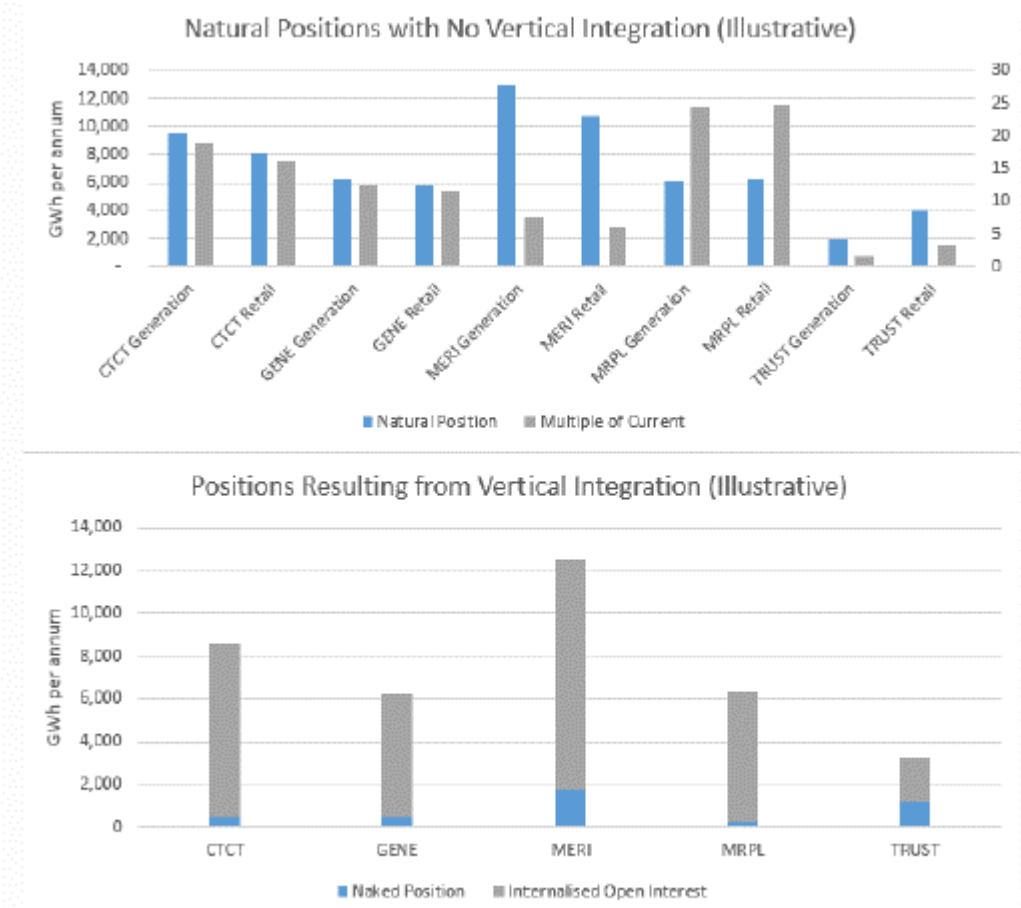
	It is not clear what benefits may or may not exist for many of the other proposals due to the fundamental problem definition not capturing the two issues we raised in our response to question 1. Incrementalism is not the answer. We would support the reduction in the number of nodes for off take pricing as this would concentrate liquidity and should remove the requirement for FTRs. These together would simplify the market and increase the potential for competition. We do not see any value in a day-ahead market. There is a significant asymmetry of information and control that would make participation a high risk activity compared to longer dated hedging activity. The prohibition of withholding capacity should be advanced irrespective of any other considerations. The original and current market is intended for efficient price discovery and dispatch of physical plant. Not offering available plant is at odds with this objective, irrespective of the offered price. Price caps should be considered. The uncapped spot prices are an economic nicety, but as the majority of off take has limited or no ability to react in real time, the extreme level of prices possible serve only as a warning that non-generators should stay clear of the oligopoly.
Trustpower	Most of the proposals appear to be overtly prescriptive, and we struggle to see the benefit of introducing them to the market. Of the proposals that we consider worth perusing, the reduction of contract size from 1MW to 100kW, and the introduction of prudential offset are supported by Trustpower. Both these proposals are soon to be implemented. Before any new products are launched, there must be not only a genuine demand for those products but also a willing supply. It is not clear that this is the case with new products being discussed to date.

Q6: Are there any other specific initiatives that could improve the ability to manage the different facets of price risk that you think should be considered?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation, New Zealand Steel	Not individually addressed
EMH Trade	As per above, OTC trades that will significantly impact spot price outcomes should have higher disclosure obligations than is currently the case. Same day disclosure including buyer and seller would remove information asymmetry and allow all participants to assess the impact of these changes in position on short term spot market outcomes, leading to more efficient pricing in the front futures contracts. Similarly, tighter obligations around outage notifications and trading around notifications may help remove information asymmetry between physical and other participants.
Genesis	No.
Meridian	Meridian does not have any further specific initiatives to suggest.
MEUG	Yes. See suggested priorities noted in answers to question 5 above and 11 below.
MRP	No.
Nova	Currently the ASX front quarter can also be traded on a monthly basis. We think that consideration should be given to being able to trade the second quarter on a monthly basis as well as that will enable parties to manage near term volume risk and also provide the opportunity for generators to manage shorter term outages and variable fuel (hydro/wind/thermal fuel) supply.
Pulse	See response to previous question
Trustpower	Yes. Risk covers far more than just future price risk, but also includes the uncertainty of where the spot price will settle.

	Currently, final prices are determined ex post. In our opinion, there needs to be greater certainty that the prices seen in real time are accurate, better enabling participants to take actions that reflect the conditions on the market at the time. Participants currently shed load, or run backup generators (which are not offered) into the market to relieve a problem, only to find that the final price settles at a different level, often no longer making the decision efficient. This can impose a financial penalty on the participant with no means to recover the cost. The uncertainty in the final price outcome is a problem which has been identified by the WAG, and, in our opinion, will provide significantly greater benefit to the market than developments in the hedge markets.

Q7: What evidence is there to support the view that vertical integration may be creating a barrier to hedging by independent generators and/or retailers?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation, New Zealand Steel	Not individually addressed
EMH Trade	Our view is that vertical integration (VI) is the single biggest impediment to a liquid hedge market. Whilst the paper highlights the high percentage of physical volume that is internalised through vertical integration, we think further explanation of the issue is warranted, particularly with regards to the

effect that this risk internalisation has on the market for risk. The two charts below (adapted from the chart in the paper) illustrate how much more 'skin in the game' there would be without vertical integration.



There are two things that are clear from these charts. Firstly, that the risk that needs to be managed through the market by participants is, in some cases, negligible compared to their total portfolio. For these participants, there is very low incentive to innovate and improve best practice in risk management relative to if that participant was not vertically integrated.

The second and perhaps more important point that is highlighted above is that the number of natural participants in the market would at least double with no vertical integration. In such a market environment, not only would there be more participants, but they would be trading around positions that are an order of magnitude

	larger than those in the market today. Trade in derivatives occurs when two parties have an overlapping willingness to buy and sell a product at a given price. Their individual willingness will depend on their position, risk tolerance, and view on expected prices. As participant numbers increase, the possible combinations of potential counterparties, and thus the probability of there being an overlapping view, increases exponentially. Thus the marginal benefit of even 5 new participants with significant risk to manage is high, especially with regard to the impact on spreads. With more participants, each with considerably more incentive to manage risk, not only would the volume traded be significantly higher, but the types of risk management tools traded would dramatically increase. In such an environment, it would be far easier to find a willing counterparty for the transfer of specific types of risk. There would be innovation in product development such that risk management tools will evolve in the market to suit participant's needs. Vertical integration has stifled the eco-system that is needed to support an active, liquid and dynamic hedge market. This stifling has down-stream effects on other aspects of the industry including retail, load management, distributed generation, and electric vehicle uptake. Innovators in these areas would be far more likely to find the hedge products they need, at a price that works, under a no VI counterfactual world than in the market that we have today.
Genesis	We do not consider that vertical integration creates a barrier to hedging by independent generators and/or retailers. Liquid, open and accessible hedge markets are a valuable tool for vertically integrated utilities as well as new entrants. Therefore, we suggest the development of these hedge markets will continue to be actively supported by the large gentailers. Vertical integration can be a very effective hedging tool. We suggest new entrant generators and/or retailers might want to explore this themselves in the future.
Meridian	Meridian agrees with the WAG's assessment of the private and market benefits arising from vertical integration. We consider such benefits far outweigh any impact on limiting hedge market liquidity. Even under a vertically separated structure, parties are likely to enter

	long-term bilateral contracts to manage spot market risk in a way that replicates a vertically integrated structure. As such, any improvement in hedge market liquidity from vertical separation would be small.
MEUG	MEUG has no new evidence. The WAG paper has partly advanced the debate on the pros and cons of vertical integration though no firm conclusions can be drawn. We support ongoing investigation on this critical issue while recognising the analysis is not straightforward (see answer to question 4 above).
MRP	We are unable to reconcile claims that there is insufficient liquidity in the futures market to support hedging by independent generators and/or retailers. The equivalent of a 50MW baseload generation unit can be readily traded through the ASX market within a week which provides independent retailers with significant volume to build a residential sales portfolio as well as assisting generators with plant operating decisions and management.
Nova	The downside of vertical integration is overstated. We note that while some parties may complain about the impact of vertical integration that does not appear to have prevented a number of new retailers entering the retail market in the last two years. Size provides a competitive advantage to generator / retailers. It also means that they can afford the risk of building large CCGTs and writing multi-year gas contracts to supply them. Genesis could never have built its e3p CCGT if it did not have a major customer base against which it could offset the revenue risk. That is simply a feature of the market. Independent retailers and generators can sign long-term power purchase agreements that simulate the same net exposure as the large integrated generator / retailers. The volume risks they face are not necessarily any greater in percentage terms than the seasonal uncertainty faced by Meridian Energy over inflows in the Waitaki catchment. It should also be recognised that despite their vertical integration, the large generator / retailers are still the largest traders in hedges as they adjust for their net positions on a seasonal and locational basis.

	Many of the smaller Participants are only interested in OTC FPVV hedges because they prefer to avoid any volume risk whatsoever.
Pulse	From Pulse's perspective the evidence is significant but is composed of two components: • Credit risk • Trading with a competitor Like most businesses in New Zealand, Pulse is a lower credit quality compared to the larger generator retailers. This significantly limits how they will trade with Pulse. There is limited appetite to trade CFDs with Pulse. It is possible to arrange block trades via brokers and executed via the ASX, but generally with the ASX products, subject to market making requirements and spreads. It is clear the large generator retailers' trade quantities of CFDs and FPVV (fixed price variable volume) contracts with large end use consumers, many of whom may be of equivalent credit quality as Pulse. The distinction that the generator retailers draw in trading CFDs and FPVV with other businesses, but limiting their interactions with Pulse, can only be interpreted as limiting supply to a competitor. This is only possible due to their vertical integration A further indicator of the oligopoly nature and complexity of the industry is that medium to large scale generation entry has basically been only possible for parties that participate with one of the large generators. Whilst this may be a function of capital costs, it is not clear that capital is the limiting factor. To an extent the existing generators have the majority of the expertise, but also the scale and capital resources to outbid and out last most new entrants. The complexity of the market and lack of liquidity compounds this, even though the market is open access. This is not to say that the spot market is not competitive, as clearly for the majority of time it is. What this does imply is the entry is commercially challenging.
Trustpower	Trustpower does not believe that vertical integration has created a noticeable barrier to hedging. It is likely that vertical integration has assisted in the development of hedge markets. Indeed, like other

	new-entrant merchant retailers, Trustpower is a net purchaser in the wholesale market, and has been for many years. We have been able to manage our risks successfully over this period through a variety of mechanisms.

Q8: Do you agree with the WAG's high-level assessment of options that might improve hedging opportunities available to independent generators and retailers? Which, if any, of the options discussed do you prefer or not prefer?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation, New Zealand Steel	Not individually addressed
EMH Trade	Broadly, we agree with the options that are outlined. We recognise that it is probably not feasible to remove or restrict vertical integration in the market, and also that there are benefits that arise from vertical integration. However, it must also be recognised that the benefits of VI are generally private whilst the cost, all of the efficiency losses from a lack of hedge market, are socialised. It is for this reason that additional regulatory intervention is necessary. When considering what form this should take, we suggest the Authority take a similar approach to monopoly pricing regulation and consider the counterfactual that would exist if there were no VI. What would the hedge market look like under such a counterfactual? What sort of products would be available? In what volume and at what spread? Regulatory intervention should ensure that the benefits of such are world are replicated despite participants choosing VI. Our view is that the best way to do this would be through firmer market making obligations across a wider product base (perhaps

	including OTC markets). We do not think these obligations should be set by the size of a participant's generation fleet, rather they should be based on the extent to which a participant is vertically integrated. Independent generators that have no retail position have a natural incentive to participate in the market and as such should not have additional obligations. However those participants that choose to internalise their risk through VI should offset the socialised cost of this decision through larger obligations to support the market. Such an approach would also ensure that small vertically integrated participants contributed to liquidity (this will be much more feasible with 0.1MW lot sizes). A fairer, socialised-cost based approach to market making obligations may result in more willingness to take them on voluntarily.
Genesis	Please refer to our cover letter.
Meridian	Meridian considers that increased market making will not address barriers to entry associated with margining obligations. Such issues would be more effectively dealt with through the involvement of intermediaries. We agree there is a large risk of unintended consequences and extreme implementation costs associated with separating generation and retail businesses. We agree that there is a moderate-to-large risk of unintended consequences and a high implementation cost associated with imposing trading requirements. We consider these conclusions are reinforced by the analysis undertaken by Ofgem in the UK, which ultimately rejected the likes of mandatory auctions, self-supply restrictions and generator trading obligations.
MEUG	The bubble diagrams on pages 69 and 70 are a good start but not definitive.
MRP	For existing futures products, we consider the priority is to facilitate the participation of all market participants of sufficient size (including independent retailers and generators) in market making agreements.

	We are opposed to compulsory market making for cap or option products given the asymmetric risk of existing market makers providing capital from their balance sheets to fund speculation by third parties. We agree with the WAG assessment that code of conduct provisions are likely to be limited in their effectiveness due to high level of interpretation required.
Nova	The broad assessment is reasonable. Market making requires a significant level of expertise and capital. The cost of this, versus the marginal benefits of extending the current coverage, needs to be very carefully considered before any changes are made.
Pulse	Pulse would support the increase in market making requirements and the imposition of trading requirements. The separation of generation and retail should also be seriously investigated as it is clear that both retail and generation entry is limited by the current industry structure and vertical integration.
Trustpower	Trustpower does not understand how increasing the obligations on participants to market make will prove beneficial to the entire electricity market. To consider the ASX market in isolation to other aspects of the entire electricity market increases the likelihood of inefficiencies being introduced. For example, increasing obligations on participants to market make may reduce competition in other areas. This is particularly true if the obligations are considered in isolation to a participant's net position and their ability to control generation output as it will reduce their ability to manage spot market risk.

Q9: Are there any other specific options aimed at improving the hedging opportunities available to independent generators and retailers that you think should be considered?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, Nova, NZX, Pioneer Generation, New Zealand Steel	Not individually addressed
EMH Trade	See response to previous question
Genesis	Please refer to our cover letter.
Meridian	Meridian does not have any further specific initiatives to suggest.
MEUG	Not applicable for large users'.
MRP	Given our view that there is sufficient liquidity in quarterly baseload products, we support a focus on improving the liquidity of existing monthly and peak quarterly futures products rather than introducing new products. Market making of such products has been a focus of discussion for the Electricity Authority and could be progressed voluntarily via the ASX User Group process and/or its on-going consultation process.
Pulse	See response to previous question
Trustpower	We believe that it is more desirable to have a reasonable number of well supported risk management products, than a large number, which may not have support or adequate resource available to add value.

Q10: What is your view on the importance of speculators and intermediaries in the hedge market? What factors do you think are limiting their involvement?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation	Not individually addressed
EMH Trade	Speculators add benefit but without natural players actively managing risk through the market, there will be no foundation for a sustainable, liquid hedge market. The existence of a number of international speculators will be a good indication that the market for NZ electricity risk is efficient. The existence of speculators will create a higher probability of opposing views and therefore tighter spreads, but we see it as unlikely that speculators will add any significant volume in the long term. Currently there are three impediments to speculating in NZ electricity derivatives: 1. Finding a counterparty with an opposing and overlapping price in the product that you are trying to trade. As highlighted above, a market with only 5 traders with small exposure does not create a high probability of trades occurring. 2. As noted in the paper, infinite right tail on the spot distribution, with no liquid market to hedge it, limits the amount of spot and prompt forward exposure that speculators are willing to take. 3. Physical market size and concentration of ownership. Whilst NZ electricity may be initially appealing to global macro speculators due to the volatility and lack of correlation with other commodities, the reality is that there are very real constraints on the amount of speculation that the market

	can absorb. Given the small number of generators and their vertical integration, any significant speculator is likely to face only a few large generators as a counterparty to their trades. Due to the small volume in the physical market, for the gentailers, changes in position of as little as 50MW can have significant changes in generation decisions and subsequent spot market outcomes. 4. In a deeper physical market, or one where positions could be spread across a greater number of smaller participants, these position changes would be less likely to create adverse spot market outcomes for speculators.
Genesis	Please refer to our cover letter.
Meridian	Meridian believes speculators and intermediaries play an important role in the hedge market. With the four largest generators already market-making on ASX, encouraging participation from speculators is likely to be critical to any further increase in market liquidity. Intermediaries will assist in opening the hedge market up to smaller players through the provision of more customised hedge products. We note that several intermediaries have been active on ASX. We support their continued involvement. The intermediaries themselves will be best placed to provide information on what they need to encourage their ongoing participation. Meridian notes WAG's comment that low margins between futures and FPVV contracts may have an impact on the ability of intermediaries to compete in the market. In Meridian's view, the fact that intermediaries may struggle to make a margin could be seen as evidence that the hedge market is already competitive.
MEUG	Speculators and intermediaries play an important role in financial derivative markets in discovering efficient prices. There is no reason this would not also apply to the New Zealand wholesale electricity market except for the fact the market is extremely small relative to other markets. A speculator is more likely to invest his

	or her time into understanding much larger markets in order to find arbitrage opportunities than see such opportunities in the New Zealand wholesale electricity market. Speculators and intermediaries themselves should answer why they may not participate in the New Zealand wholesale electricity market but do in other overseas wholesale electricity markets. While a subjective view, MEUG agrees with the suggestion in the paper one reason may be a lack of risk management products for extreme spot price events. If that is the case then exchange traded cap or option products would help.
MRP	See response to question two.
New Zealand Steel	Speculators will assist increasing liquidity and developing the market. The fact they are not currently involved to any real extent is something the WAG need to further consider. The statement has been made that if there are higher than justified hedge prices, there will be an arbitrage opportunity. The spread seems to be there, why not the speculators? WAG needs to understand these dynamics. Intermediaries can assist greatly in developing the market, particularly ASX products, by handling the management and compliance issues. As per Question 2, WAG needs to keep to the forefront that development of the hedge market must ultimately be for the long-term benefit of consumers.
Nova	Intermediaries need liquidity and depth in the hedge market in order to be able to repackage risk products to suit consumers' preferences. They need a sufficiently large consumer base to make such activities worthwhile; and also need to be able to compete with retailers that are also prepared to package their offerings to suit consumers. So the primary factor limiting the involvement of intermediaries is the small market size, and level of competition between the large vertically integrated retailers, which means that there is already a range of FPVV options available to consumers. In addition, as noted in the discussions paper, since the GFC,

	regulatory requirements are limiting the ability of those financial institutions that typically trade in hedge markets to participate. The objective of those regulations is to limit risk taking by financial intermediaries. That then potentially causes weakness in the broader financial market place.
Pulse	We consider broader participation in the hedge market to be an advantage and include both speculators and intermediaries in our assessment. The complexity, asymmetry of information and industry structure are just a few of the aspects that limit involvement of other potential participants. The physical assets and implicit real options contained in the generator's portfolios mean that they have a degree of control and access to information that is off putting for most potential participants. Other aspects discussed earlier such as uncapped, ex-post prices, ability to withhold capacity, ability to influence power flows (and FTR pay-offs) all add to the perceptions of a one sided market.
Trustpower	Speculators can play a valuable role in providing opportunities for generators and purchasers/retailers to pass on risk. Intermediaries also have an important role to provide advice to participants and ensure they are sufficiently educated on the risks of the market. At this stage, involvement appears to be limited by the high level of risk associated with a market which has no price cap, or price capping product.

Q11: Do you agree with the WAG's high-level assessment of options that might improve liquidity in the hedge market by increasing engagement, and reducing barriers to participation? Which, if any, of the options discussed do you prefer or not prefer?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, NZX, Pioneer Generation, EMH Trade, New Zealand Steel	Not individually addressed
Genesis	Please refer to our cover letter.
Meridian	We support reducing ASX contract size (under the grouping "address hard barriers"). Meridian considers this is likely to encourage participation from a broader range of market participants. We support work to allow futures contracts to offset prudentials held with the clearing manager (under the grouping "address cash-flow issues"). We consider prudential obligations are likely to limit the attractiveness of direct participation in the spot market, particularly for small players, although we note that some improvements should be expected from changes to the settlement and prudentials regime in March 2015. We support investigating a reduction in the margins required on ASX futures, although it is important to be aware that such a change may simply shift risk from one group to another. We support the concept of a forum for trading managers, although we would encourage any such forum to also include representation from consumers (including consumers that may not currently be accessing the hedge market). We support the range of initiatives listed under the grouping "address information transparency". Meridian considers greater availability of information will assist with the further development

	of the hedge market.
MEUG	Some options are clearly important: • "Making the process of becoming a direct market participant less involved" (paragraph 8.5.3 b)). One of the main barriers is agreeing a use of system agreement with the local network provider. WAG should recommend to the EA that work on possibly standardising Model Use of System Agreements should be accelerated. • "Futures to offset prudentials held with the clearing manager" (paragraph 8.5.4 a). MEUG support the EA monitoring the work in the Australian market by ASX on this possibility. • "Encourage lodging of hedge settlement agreements" (paragraph 8.5.4 c)). There has been a long standing question on whether suppliers use their market power to veto a purchaser's ability to lodge hedge settlement agreements. This may be an issue WAG could investigate further. • "Improved access to data/analysis" (paragraph 8.5.10 b)) in particular around outages as the paper suggests. Information ahead of time on planned outages and during and after both planned and unplanned outages has improved but is still a problem for many MEUG members. Poor quality outage information to meet the needs of end user's is also noted as an area for improvement in MEUG's answer to question 5 above. To address information transparency barriers the paper (paragraph 8.5.10 a) lists "a review of hedge disclosure" with the purpose of determining "if they are still required ...". Some MEUG members find the hedge disclosure information very helpful and would not wish collection and publication to cease. Their concern

	is whether the quality of the information collected is accurate because there have been instances of significant variation in prices for apparently similar hedges. The option for an "Industry self-insurance scheme" (paragraph 8.5.4 e)) we suggest should be culled from further consideration because it will likely increase costs on both participants and consumers greater than any likely benefits.
MRP	We are concerned by implications in the paper and other external forums that reduced futures contract sizes will be implemented in 2015, despite being the subject of current WAG consultation and discussion by the ASX users group. Mighty River Power has made a number of suggestions to increase liquidity to the ASX user group forum that in our view have yet to be fully consulted on or discussed. Using futures to offset prudential requirements is supported in principle but would appear challenging given different exchanges are responsible for the separate functions. Further, while participants would benefit from decreased prudential requirements, margin calls would presumably increase. We are supportive of education initiatives that improve understanding of the hedge market with potential market participants and financial institutions.
Nova	Yes.
Pulse	We support the options identified, particularly reducing the ASX contract size, initial margins, ability to offset prudential requirements.
Trustpower	Trustpower agrees that the WAG has identified options that may improve liquidity in risk management products, but we believe they have not yet fully assessed the impacts on the electricity market. We support the initiative that futures should be available to offset spot market prudential requirements; which is set to be implemented in March 2015. The current work stream to reduce the ASX contract size from 1MW to 100kW is also supported by Trustpower.

	Trustpower would not support the introduction of an industry self-insurance scheme. This may allow participants to increase speculation, increasing price volatility and probability of default as a result. Trustpower does not support any initiative to mandate market making. Trustpower expects that much of the discussion relating to increased participation by Commercial and Industrial customers may be flawed. Our observations suggest that non-electricity market factors have a greater impact on decision making. We also question if the 2000 potential customers over 10GWhrs/pa is accurate.

Q12: Are there any other specific options aimed at increasing engagement and reducing barriers to participation that you think should be considered?	
Contact, EPOC, Fonterra, FTR Manager (EMS), Norske Skog, Nova, NZX, Pioneer Generation, EMH Trade, New Zealand Steel	Not individually addressed
Genesis	Please refer to our cover letter.
Meridian	Meridian does not have any further specific initiatives to suggest.
MEUG	Nothing more to add to those considered by WAG.
MRP	No.
Pulse	See response to previous question
Trustpower	We believe that there are no significant changes required to the risk management markets. However if the WAG feel that changes are required, we recommend that they first confirm that there is a real and sustainable demand for change, and for these changes to be implemented via a series of small incremental steps.

Further comments	
EPOC, New Zealand Steel, Norske Skog	No other comments
Contact	Refer to full submission. Executive summary is reproduced here: • Contact believes significant progress has been made in the New Zealand electricity hedge market and that developments to date have led to a robust price curve

	helping to provide good investment incentives and risk management options. • Voluntary market making has been a significant catalyst to this progress • Sustaining market making is important to the continued efficiency of the hedge market going forward. • Additional costs faced by market makers and the potential to free ride put current voluntary arrangements at risk. • It is therefore important to find a sustainable solution that supports continued market making and liquidity in the hedge market. • There are three main options to support continued market making: ○ Status Quo ○ Compensating market makers ○ Regulating market making • Based on Contact's high level assessments, compensating market makers may provide the most commercially sustainable solution.
EMH Trade	Participants and the Authority should be commended for the improvements that have been made over the last 5 years, most notably in the ASX and FTR markets, however as the discussion paper notes, the current status quo is far from an acceptable end-point in terms of market development.
Fonterra	Fonterra Co-operative Group ("Fonterra") thanks the Wholesale Advisory Group ("WAG") for the opportunity to make a submission in response to the discussion paper entitled 'Hedge Market Development – A WAG discussion paper' ("Discussion Paper").

	Fonterra is the world's largest global milk processor and exporter of dairy products and is at the heart of the New Zealand dairy industry, and the dairy industry is at the heart of the New Zealand economy. Through our integrated "grass to glass" supply chain we deliver high quality dairy ingredients and a portfolio of respected consumer brands to customers and consumers in over 140 countries around the world. In the 2014 annual report, Fonterra recorded a net profit after tax of $179 million, on revenue of $22.3 billion, and a final cash payout of $8.50 for the 2014 year for a 100 percent share-backed farmer – comprising a Farmgate Milk Price of $8.40 per kilogram of milk solids ("kgMS") and a dividend of 10 cents per share. During this season, 18 billion litres of milk were collected in NZ. Compared with the previous season, North Island volumes were up 9% at 969 million kgMS, while the South Island delivered a 7% rise in volumes to 615 million kgMS. Fonterra is owned by approximately 10,600 farmer shareholders who supply Fonterra with 18 billion litres of milk each year that is processed across 28 processing sites in New Zealand. Therefore, Fonterra's processing sites are reliant on an efficient, reliable, and secure electricity supply in order to process the large volumes of milk that are collected each year. In NZ, Fonterra uses approximately 23PJ of energy annually. Of this, approximately 1,000 GWh of electricity is used annually, which includes the electricity from co-generation facilities. Four of Fonterra's processing sites are supplied electricity and steam by co-generation facilities: Te Rapa, Whareroa, Edgecumbe, and Kapuni. Fonterra is a member of the Major Electricity User Group ("MEUG") and supports the MEUG submission, except where the points raised in the MEUG submission differ from those raised in this submission. In this submission, Fonterra will provide general feedback on the Discussion Paper, rather than answer the 13 questions specifically. The Discussion Paper has articulated the many challenges in

	managing risk through the hedge market. However, the Discussion Paper does not address the shape risk related to the dairy season. The dairy season results in a load profile that is different to many other large electricity users, or that of domestic users. The electricity use within Fonterra's processing sites mirrors the milk production profile, often referred to as the "dairy season". An overview of the dairy season: • Once a cow has calved, milk production is initiated. Calving typically occurs in June – August, and the majority of farms will have a lactation period of 300 days. • The peak of the season (the time when the most amount of milk is collected from the farms) occurs typically in August to December. • Milk production generally tails off from January to April and this is referred to as a "shoulder" of the season. • The dairy season is influenced by numerous factors which can lead to increased or decreased volumes of milk being produced to be processed – e.g. a drought can cause milk production to decrease. Due to the shape and timing of the dairy season, the current hedge market products are insufficient to adequately manage price and volume risk. The Discussion Paper does not provide any suggestions on how to address shape profile risk. Fonterra suggests that the hedge market could extend the current three month period for monthly contracts to six months to enable the shape profile risk to be addressed. Fonterra supports the continued development of the hedge market. In particular, Fonterra supports the development of smaller contract sizes and the developments to improve settlement and prudential requirements. The Discussion Paper has also correctly summarised many of the

	barriers to participation in the wholesale market. In particular, Fonterra agrees with the observation that the process to become a direct market participant is an involved and complicated process that would take considerable time and resources to complete. The Discussion Paper makes several suggestions in section 6.5 to improve the ability to manage different facets of price risk. Fonterra supports further development of these suggestions, in particular the development of the gas futures market and the introduction of a day-ahead OTC market which could assist with improving liquidity. However, Fonterra is uncertain about the value of progressing the initiative in section 6.5.12(b)(i) to prohibit withholding of capacity. Fonterra agrees with the comments made in response to the hedge market survey that there are limited offers when seeking hedges. Fonterra supports further investigation of the suggestions in section 7.6 to extend the market-making arrangements to improve the liquidity of the market. Fonterra views that greater participation in the hedge market by speculators and intermediaries will assist with improving liquidity which is of benefit to participants. The Discussion Paper suggestion in section 8.5.4(e) of an industry self-insurance scheme is of concern as it could have the potential to increase costs on both participants and consumers.
FTR Manager (EMS)	The paper recognises FTRs as one of the available hedge products, along with CfD, ASX, FPVV and others. The FTR market has recently expanded to five hubs. We note the many references in the paper to the advantages of introducing the additional hubs. In 2015, having embedded this expanded market, the FTR Manger will be engaging with the industry on how to define criteria for adding new FTR hubs and removing existing ones1. There have been many previous industry discussions on FTR hub definition, initially over Transpower's 2002 proposal for an FTR Market, and more recently and relevantly through the Locational Price Risk Technical Group (LPRTG). In all these discussions, some

	parties have raised concerns over market power – albeit that others have not, or have dismissed them. We therefore expect that the issue of market power will be raised in our forthcoming discussions on FTR hub criteria. Subject to further information and feedback, the FTR Manager's view on this is that: a) There is no market power within the FTR auction, as all participants can bid freely b) FTR ownership can increase the incentives of participants to exercise any market power that they hold in the energy market c)FTR ownership can decrease the incentives of participants to exercise any market power that they hold in the energy market d) FTR ownership can protect participants from the impact of other parties' exercising of market power e) FTRs encourage competition which over the long-term will reduce participants' ability to exercise any market power in the energy market f) It is the role of the Electricity Authority through the Code and the Commerce Commission through the Commerce Act to prevent the inefficient exercising of market power in the energy market: it is not the role of the FTR Manager If some parties consider that adding certain hubs to the FTR market would raise issues of market power, then presumably those same concerns would apply to some other hedge products, or combination of products. We were therefore surprised that the impact of hedge availability and ownership on market power in the hedge or energy markets is hardly mentioned in the paper. The WAG's consideration of this issue in the context of the wider hedge markets would be useful to wholesale market design in

	general, as well as to FTR market design in particular. If the paper's silence on market power is because the WAG does not consider it to be an issue, then an explicit reasoning and statement on this would be most helpful.
Genesis	In general, Genesis Energy endorses the WAG's view that incremental change to the current hedge market is appropriate and will deliver the desired outcomes. We also consider that any regulatory intervention should initially focus on the core products already traded, rather than adding additional complexity. Whilst still at the early stage of policy development, Genesis Energy considers the paper to be a sound starting point for a hedging market development framework. Such a market development framework will guide the Authority, the WAG, market participants and service providers on adopting suitable market development options to ensure the market matures appropriately over time. In regards to the specific issues that WAG considers in the paper: Genesis Energy agrees more liquidity would be beneficial for the New Zealand electricity futures market ("ASX Futures"). We suggest this can be achieved through improving market making in the ASX Futures and a smaller product size. • We suggest ASX Futures should focus on improving the liquidity of existing products, especially peak products. • The industry must focus on improvements across multiple trading channels. • We support lowering the prudential requirement by establishing centralized margining. We elaborate on these points below. Our specific responses to the consultation paper questions are found in Appendix A. Supporting incremental approach to change Any regulatory intervention in the hedging markets may have serious unintended consequences if not supported by robust assessment. This is because of the relatively long-term financial positions and the number of parties participating in the hedging

	markets – particularly in the ASX Futures. Therefore, Genesis Energy supports the WAG's approach to promote incremental changes to the hedging market rather than quick or substantial interventions. An incremental approach will provide participants with certainty to invest resources in the hedging markets, knowing the regulatory framework is unlikely to significantly change. Introducing changes gradually, and transparently, helps avoid unintended consequences by providing participants with the time to adapt. More liquidity would be beneficial for the futures market Genesis Energy considers there are a number of initiatives that may enhance liquidity in the market. We suggest that improving market making obligations, reducing the current ASX Futures product size, and focusing on existing traded products are the most cost-effective actions to achieve this goal. The first priority should be to extend the current market making agreement We consider there are three key reasons why extending the market making agreement should be the first priority: 1. More market makers would significantly increase the robustness and efficiency of price discovery in the ASX Futures market and provide more depth to both the bid and offer stacks. 2. The obligation to market make should be transparent and consistent. The current ad hoc voluntary scheme does not provide the certainty required for a more mature ASX Futures market. 3. A more transparent and well defined mandatory market making obligation will ensure a level playing field in the market. Currently the significant cost of market making is met by only four participants. Such cost and responsibility should be shared by the industry.

	We consider that a mandatory market making obligation is practical and effective in the current New Zealand context. Any mandatory obligation should be based on clear criteria to assess which parties are included. We suggest that a range of criteria are used for this, such as; generation capacity, load portfolio, volume of buy and sell activities and size of the entity. The WAG should consult with the industry further on the framework and criteria for these obligations. Smaller size product is desirable for different market participants Genesis Energy agrees with the WAG that smaller size ASX Futures products will be beneficial for the electricity market, and ultimately for consumers. We consider that the current 1 MW product is too large for small or new entrant retailers. Lastly, a smaller product will enable both retailers and generators to match their hedges more accurately to their actual exposure. We are fully supportive of the proposition to reduce the ASX Futures product size to 0.1MW. A 0.1MW product size will also be beneficial in matching the current FTR contract size. We understand the ASX Futures transaction fee is under consideration and that the ASX is considering structuring the fee proportional to any contract size reduction. In our view this move should be supported as it further lowers the barriers to entry for future participants. Focus on existing hedging products In our view, focusing on the liquidity of existing products is the simplest and most effective solution to develop the hedging market. This could be aided by two changes to the existing market arrangements: 1. Mandating market making in peak futures products will make accessing these important hedging products easier for all participants. 2. Extending the number of available monthly contracts will give generators and retailers a greater ability to shape their book over the front months of the forward curve.

	Sophisticated products should be considered later In our view the current priority for the industry must be ensuring adequate liquidity for the set of existing products in the futures market. We suggest introducing more sophisticated products (such as options) should be considered at a later stage. This is because the skillset to trade and market make in options is very different to the skillset required for the existing futures products. There would be a significant additional cost imposed on market makers if options were included. Multiple trading channels should continue to be encouraged The multiple trading channels available all have an important place in the market. The WAG should continue to ensure there are multiple channels available in order to meet the needs of as many participants as possible. Improve current prudential requirement by having centralised margining Genesis Energy is fully supportive of centralised margining, as it will reduce costs for all market participants. Co-ordinated approach to regulatory work programme The Authority currently has work programmes planned that focus on improvements to the hedging markets, including looking at options for facilitating market making for ASX products. The Authority is also currently developing an issues and options paper that will consider the benefit of robust and transparent daily pricing of existing contracts and that will describe the high level options for achieving this. Those projects are to be consulted on early next year and are running in parallel to the WAG work program. Whilst we understand the desire to move quickly on solutions that appear very clear and uncontroversial, from a process point of view we suggest that the proper policy development framework must still be followed. The Authority must be mindful to avoid any potential inefficiency of running multiple work programmes for the same initiative simultaneously, and also to minimise any confusion to the industry stakeholders.

Meridian	Meridian supports incremental improvements to the hedge market We consider that there has been significant progress in the development of the hedge market in recent years. This is borne out in the observed growth in unmatched open interest (UOI) and traded volumes, increased participation, and improving views on the competitiveness of New Zealand's hedge market. These developments have been driven by a 'market facilitation' approach involving collaboration between the regulator, ASX and market participants. While progress has been strong, Meridian agrees with WAG's assessment that more can be done to develop the hedge market. In particular, barriers to participation should be addressed where practicable. We also agree with WAG's assessment that 'incremental' change is appropriate given the current state of the hedge market. Meridian strongly supports any further change being driven by 'market facilitation' rather than regulation. We consider a market facilitation approach is more likely to see the development of the hedge market progress in a way that meets the needs of participants, without imposing undue costs or incurring unintended consequences. Separating generation and retail businesses would not be a proportionate response to hedge market issues Meridian agrees with WAG's assessment of the private and market benefits arising from vertical integration, including: • Reduced costs of contracting; • Reduced exposure to risk of counterparty default; • Reduced exposure to spot price risk; • Reduced operating costs; • Reduced incentives to exercise market power. As WAG notes, these benefits can result in more stable profits, a lower cost of capital, greater ability to invest, greater market

	stability, and ultimately lower retail prices for consumers. These benefits are significant. The fact that most large New Zealand generators and retailers have chosen to operate as vertically integrated entities suggests this is a highly efficient means of managing risk in New Zealand's volatile wholesale market. We consider these benefits far outweigh any impact of vertical integration on hedge market liquidity. Even under a vertically separated structure, parties are likely to enter long-term bilateral contracts to manage spot market risk in a way that replicates a vertically integrated structure. As such, any improvement in hedge market liquidity from vertical disintegration may be small. We agree with WAG's assessment that there is a large risk of unintended consequences and extreme implementation costs associated with separating generation and retail businesses. Given WAG's conclusion that incremental change is appropriate, we recommend this option is not pursued further. Preferred initiatives WAG has identified a comprehensive range of potential initiatives to further develop the hedge market. As noted above, Meridian's preference is for incremental, market-led initiatives rather than a regulatory approach. In particular, we support: • Reducing ASX contract size. We consider this is a straight-forward and simple means of opening the ASX market up to a broader range of parties. Costs associated with this are likely to be low (but not zero). We note that this work is under investigation by the ASX User Group. • Reducing ASX market-maker spreads. While we don't consider the current 5% spread to be unreasonable, reducing this spread further is likely to improve confidence amongst hedge market participants (and potential participants) in the competitiveness of the ASX market. Such a move could be facilitated by the Authority in

	conjunction with ASX. • Using hedge contracts to offset spot market prudential requirements. We consider prudential obligations are likely to limit the attractiveness of direct participation in the spot market, particularly for small players. This is likely to flow through to hedge market participation. We support the efforts of the Authority and the Clearing Manager to further this work. We note also that some improvements should be expected from changes to the settlement and prudentials regime in March 2015. • Encouraging participation by speculators and intermediaries. With the four largest market participants already market-making on ASX, significant further improvements in liquidity are likely to depend on increased involvement by speculators. Intermediaries will assist in opening the hedge market up to smaller players through the provision of more customised hedge products. We support investigating how these parties could be further encouraged to participate in the hedge market. • Improving availability of information. Markets work on the basis of good information. We support efforts to improve the availability of relevant information to hedge market participants. In particular, we support making additional information on thermal fuel prices, contracts and stockpiles available. Such information can have an important impact on the outlook for future spot prices, but is currently held by a subset of market participants. We suggest WAG recommends the Authority continue to pursue the disclosure of thermal fuel information as initiated under the Wholesale Market Information workstream (noting Meridian has been disclosing information on snowpack in

	accordance with the voluntary information disclosure agreement).
MEUG	MEUG members manage their wholesale electricity purchase costs using all of the possible strategies listed in appendix I of the paper, except FTR and other exchange traded derivatives (other than indirectly), plus other physical market responses such as onsite industrial generation and actively managing demand in response to spot price signals . Progress has been made over the last decade and in particular since 2010-11 on these alternatives including using financial derivatives to hedge. However no MEUG member has indicated they believe the market has reached a level of maturity where they are satisfied with their ability to hedge or use alternative physical market initiatives. There is a very strong perception the market is predominately a seller's market whereas a mature market would over time have an unbiased probability of being either a seller's or a buyer's market. The analysis by WAG has some new evidence and analysis not seen before on the state of the competitiveness of the financial derivatives and FPVV markets. Some of this analysis is insightful, other evidence contradictory and parts of interest but tangential to uncovering underlying issues. This is not unexpected given the complexity of the issue and the small historic datasets available. No definitive conclusion can be reached that there is a fundamental problem with the market. Equally it cannot be ruled out that there may be underlying systemic or structural problems to be addressed. Going forward MEUG support an incremental approach as described in the Executive Summary of the paper (p2): "The WAG considers that there are opportunities to add value to the market. At this point in time, the WAG is of the view that incremental change is appropriate, given the positive developments seen in the market in recent years, and the need to ensure that ongoing evolution of the market is not adversely impacted." We stress though that the potential value at risk for consumers in terms of excessive power bills and for the economy as a whole with inefficient pricing signals is sufficient to justify rapid, rather

	than just steady, progress being made. The Electricity Authority is also working in parallel on a number of other work streams to facilitate a more competitive hedge market and we similarly support that work being a priority. While the work on hedging options, both physical and financial, is important - it is a second order question as to whether the underlying physical spot price is efficient. The WAG consideration of vertical integration touches on this issue and MEUG's answer to question 4 below is relevant. WAG has acknowledged that they have not heard directly from either large users' or large suppliers. MEUG members would welcome an opportunity to present to WAG and answer questions on this collective MEUG submission and their own individual submissions. Another approach to measuring liquidity was considered by New Zealand Institute for the Study of Competition and Regulation in their March 2014 newsletter. A copy of that article is included in the appendix [*of the MEUG submission*]. This may be a useful approach for WAG to consider.
MRP	Mighty River Power supports the hedge market and in our view it should be left to its own devices to grow organically. We are strongly opposed to the introduction of new cap and option futures products where market making is forced via regulation. The balance sheets of existing market makers should not be used to fund speculation from foreign hedge funds and banks and expose the wider market to unnecessary risk. We consider further engagement is required as to the actual level of support and demand for new futures products. Existing futures products are highly liquid with the equivalent of a 50MW baseload generation unit able to be readily traded through the ASX within a week. Hedges of less than a week are also available in the OTC market. The transparency of the ASX forward curve has unquestionably led to more efficient pricing in the OTC market which, as noted by the WAG, is highly competitive, liquid and well understood by market participants.

	We are therefore unable to reconcile claims that the hedge market is insufficient and in particular that further futures products are warranted at this stage. We support consideration of how to improve the liquidity of existing monthly and peak quarterly futures products rather than introducing new products. Market making of such products has been a focus of discussion for the Electricity Authority and could be progressed voluntarily via the ASX User Group process and its on-going consultation process. We support a focus on continuing the facilitative process to widen the current number of market making participants for existing products before any expansion of new products is considered. We consider the market will deliver new products on commercial terms as it continues to mature.
Nova	Problem definition Nova Energy agrees with the statement (ref: 2.1.6) 'In the interests of confidence and stability for both producers and consumers, managing the risks associated with electricity spot prices is key.' As per section 2.2, 'a well-functioning hedge market helps parties to manage risk'. The discussion paper relates to concerns with respect to the effectiveness of the electricity hedge market and mechanisms by which this might be improved. The debate in respect the performance of the hedge market must however be considered in the context of being just one of the tools used to manage electricity price risk. Vertical integration, building generation or a retail customer base, or entering FPVV contracts are all equally valid forms of managing electricity price risk. Regulating, restricting or subsidising any one of these mechanisms over another is unlikely to have a positive net benefit to the market, even if it does help create opportunities for some parties. The discussion paper suffers from ignoring this context. By better defining the problem the scope of the discussion can focus on initiatives that will enhance the hedge market without creating

	undesirable second order effects. From reading the paper we infer that the primary objective is to facilitate improvements in retail competition through changes to existing hedge market arrangements. Narrowing down the objective means that issues such as outage coordination and inter-generator wholesale transactions can be deemed out of scope as they only indirectly impact on retail competition. Hedge market performance Nova has experience with regards to the ASX and OTC hedge markets. It is Nova's view that the ASX market is useful for price estimation and trading of trading of a few MW at a time, but cannot be relied upon for hedging anything more than a few MW's at a time without substantially impacting on the ASX price due to insufficient market depth. Generally if a party isn't prepared to accumulate volumes over time then they need to access larger quantities through the OTC market. The WAG has identified most, if not all, of the key issues impacting on the liquidity, and therefore the usefulness of the ASX market for electricity generators and retailers. Part of the issue is, of course, circular, in that market participants would use the market more if it had greater liquidity, and that in itself would create liquidity. This is illustrated in the Australian situation where market circumstances lead to a jump in liquidity in 2006/7, which then became self-sustaining. The ASX market is no different to any other competitive market, in that it needs to be able to provide a better value proposition to the next best alternative. In trading commodities, this generally means: price transparency, liquidity, counterparty risk, and anonymity. In the New Zealand context, where there are relatively few parties that are able to transact significant volumes, the OTC market can currently better the ASX for liquidity, and the counterparty risk is manageable. Trades can also be brokered under anonymity. Market development initiatives Nova supports the investigation of initiatives to reduce the ASX

	futures contract size, add a cap product, and potentially enable ASX futures margin funds to be taken into account when determining prudential requirements for the spot market. Nova also suggests that consideration be given to reducing ASX trades to a single reference node. This is viable given that location factor risk can now be managed with FTRs. While a single node would result in a loss of arbitrage trades between the nodes, it should help provide greater depth and liquidity for trades at the remaining node.
NZX	With particular reference to this consultation paper, we are committed to working with participants and the Electricity Authority in making the market as a whole more efficient. A recent example of this is the work we have done in investigating the possibility of netting spot and "futures" positions. This work remains ongoing. We have no comments to make with respect to specific areas of this paper. We do however wish to make the following more generic comments: 1. In our role as clearing manager, we deal with a number of new to market participants. Some observations of these interactions are as follows: a) The majority of these participants are acutely aware of their spot market risk prior to entering the spot market and actively investigate measures to counter this. b) While a proportion of these participants enter into hedge arrangements from day one, others are discouraged and hence carry price risk during their crucial start-up and growth phases. Increased educational opportunities to both participants and particularly their stakeholders may be beneficial in these instances. c) In the case of those susceptible to price risk, we hear anecdotal evidence of new and existing participants

	capping their growth ambitions to counter ongoing risk. d) In our wider role as securities market operator, we have day-to-day involvement in the development of products across a range of industries and markets. 2. Three characteristics stand out when developing successful markets: a) Liquidity – Sufficient to be able to find willing buyers or sellers without impact on the market price. b) Depth – Sufficient to withstand large transactions without significant movement in price. c) Resilience – Prices which closely reflect expected market conditions We would encourage decisions made and discussions had as a result of this consultation to focus on these three characteristics.
Pioneer Generation	In Pioneer's view liquidity in both the ASX and OTC markets is important to facilitate competition in the wholesale and retail markets for the long term benefit of consumers. We commend the work undertaken by the Electricity Authority (Authority) to get the ASX market to the point we are at today. We view the WAG work as comprehensive and agree with the WAG that there are opportunities to make improvements – some incremental and some more fundamental - that reflect our focus on increasing the opportunity to hedge efficiently and competitively. Below we reiterate our views presented to the WAG meeting on 9 April 2014 and comment on proposals discussed in the consultation paper. Improve liquidity and transparency Pioneer's small trades (1 – 2MW) regularly move the prices on the ASX demonstrating poor liquidity. There are a number of options Pioneer supports to improve the liquidity of the ASX futures market and the transparency of hedge prices:

	a) narrow the spread of bid / offers to $1 or 1%; b) if this does not result in higher trading volumes require the vertically integrated major gentailers to purchase a material proportion of their retail volumes from non-affiliates; and/or c)as a last resort legislate for a split of generation and retail activities. In addition to the above points raised in April we: d) support the planned change by the ASX to reduce the unit size to 0.1MW in early 2015. The benefits of a smaller unit include making the ASX a more accessible market for smaller players, especially when the market is tight, as well as potentially making it more attractive to speculators as the parcels cost less and margin calls are less; e) suggest that the hedge contract disclosure requirements or disclosures be reviewed to determine if it is relevant to include FPVV contracts between retailers and TOU customers in the hedge market data. Pioneer's view is that these contracts are different to ASX or OTC contracts which are used to manage exposure to spot prices and locational risk (which may be FPVV) for the sale and purchase of generation volumes and should be separately identified in the hedge market disclosures and analysis; and f) would support the development of a half-hourly cap product on the ASX only after trading volumes in the vanilla product has improved (noting that the peak product is hardly traded and appears to have no liquidity). Over 200 spot market price nodes compare with the opportunity to manage exposure to spot market risks at 2 ASX and 5 FTR nodes

	The reconciliation model solves at 378 NSPs1. For every spot market node there is different nodal demand, spot price, residual profile shape etc, etc. In order to be able to understand and manage this voluminous data requires investment in tools and platforms regardless of the scale of an organisation participating in the market. In our experience this volume of data is a real barrier to retail market entry, lowers the opportunity to introduce innovation and ultimately represents a cost to electricity consumers. The WAG report discusses this in paragraphs 6.5.6 b). This many spot prices may facilitate demand response or signal to generation to respond to constraints (but the reserve price is separate from the spot price). However, do these benefits outweigh the cost of complexity for new entrants who are at a distinct disadvantage to incumbents with established systems, tools and platforms and scale to absorb these costs? As discussed in our recent submission on the 2015/16 appropriation consultation paper, we have undertaken some preliminary analysis which shows there is mostly minimal deviation in half hour prices for nodes that are geographically close. The current 200+ nodes used to determine the least-cost despatch in the spot market can be retained ensuring no out of merit order dispatch of generation. However, we support a significantly smaller number of nodes for reconciliation, with reconciliation volumes consolidated onto say 15 nodes (from over 200, or say 7.5% of the current total). With just 15 (say) reconciliation nodes we submit that a liquid hedge market would develop at each of these nodes: • Retailers and generators would be able to directly manage/hedge the risk they are exposed to in the physical market – that is, at the same reconciliation node. This contrasts with the current situation where the majority of locations are unhedgeable. • More brokers and speculators could be attracted to deal in

	this market given the higher volumes and reduced risks; • A liquid physical and hedge market at these 15 nodes would greatly improve the ability to manage price risk and improve the efficiency and competitiveness of both the ASX and the OTC markets. This would be similar to the AEMO model – a market where there is a very liquid hedge market on the ASX and OTC. • Liquid hedge markets for more advanced products such as peak, options and caps would naturally follow. We note the WAG has categorised this "reduce price resolution" proposal as 'extreme high cost / time' in the bubble diagrams on page 56 and 57 of the consultation paper. We disagree. It appears the WAG is assuming the reduction in nodes would apply for despatch and reconciliation. Our view is that an overlay of regional nodes can be applied for reconciliation only and that this will result in a significant increase in physical and hedge trading on those nodes with efficiency gains. We would appreciate more information about how the WAG's conclusion was reached. Pioneer strongly submits the WAG (and the Authority) investigates introducing regional pricing nodes for reconciliation. We would appreciate a clear articulation by the WAG or Authority of the current benefits (or otherwise) of having spot market prices determined at over 200 locations across New Zealand – maybe this will be addressed in the Authority's spot market review. Ability to offset futures position with NZX market prudentials We strongly support the Authority working on the interaction between the spot and hedge markets, in particular with respect to prudential requirements. The Authority's December Market Commentary report states the Authority is "now considering how ASX futures and options contracts might be taken into account by the clearing manager in its assessment of the level of prudential security required to be deposited by wholesale market purchasers, including retailers and industrial users. There is potential to trial such a solution in our market." In our view this will make a

	significant difference for smaller and/or new entrant companies, facilitating more competition in the spot and hedge markets. Pioneer agrees with WAG's conclusion that "A deep and competitive hedge market is an essential element of an efficient and competitive electricity market, because it allows generators, retailers and customers to better manage the risks arising from the spot market, and provides important information about likely forward electricity prices" (para 1.1.1) Pioneer invests in only economic distributed generation projects based predominately on renewable fuel. We use the hedge and OTC markets to manage risk – not for trading or speculation. The availability and pricing of hedge or OTC contracts will influence how and when we grow our business. Pioneer is engaged in the regulatory process because we are concerned to ensure market arrangements promote competition, reduce barriers to entry and achieve the efficient end to end delivery of electricity for the long term benefit of consumers. In our view, there are relatively simple opportunities to improve the liquidity of the hedge market. Complexity creates confusion and distrust from consumers and represents a significant barrier to new entrants and innovation.
Pulse	Our general perspective is that the WAG has limited its problem definition, which it acknowledges, but that the consequence of that decision is to consider only incremental changes or band aids, rather than addressing the fundamental causes. The primary problems stem from the origins of the market, the main participants and original market design choices. The market was designed to achieve efficient dispatch and open access. With respect to these features, the market is a success. The concentrated nature of the market is a function of the fact that four of the five largest participants originated from one monopoly entity. In this regard the market has the dominant features of an oligopoly. In addition the largest participants quickly became vertically integrated, limiting the scope and need for them to trade with each other and other participants.

	The original market design concentrated on the spot market. A day-ahead market was contemplated, but it is of little consideration within the context of the WAG discussion paper and the current hedge market limitations. The reality is that the choice of a full nodal pricing model was driven by a desire for efficient dispatch, not from the desire to create a liquid derivatives market. As a consequence trade-offs were either not made or not fully understood when balancing efficient dispatch and overall competitive outcomes including hedge market liquidity. With hindsight we now know the outcomes of the incentives and structures that were put in place. Even though it is with hindsight that different choices can be seen, that does not mean that significant choices should be avoided now in order to correct current outcomes that may be limiting the full realisation of competitive benefits. It is within this contact that Pulse provides the following responses to the discussion paper questions.
Trustpower	Trustpower agrees with the WAG's definition of the scope of the hedge market as including a range of risk management tools encompassing both the retail and wholesale markets. We do not think that it is in the consumer's best interest for the WAG to focus solely on the ASX. Like many large purchasers in the market, and new-entrant merchant retailers, Trustpower is a net purchaser in the wholesale market. We are naturally "short" in the wholesale market (i.e. we sell more power than we generate), and have been for at least the last decade. As an active participant in the New Zealand electricity market, Trustpower looks at many options to manage any risks we may encounter. We have been able to manage our risks successfully over this period through a variety of mechanisms, and remain a viable and competitive retailer. We therefore believe that the existing risk management mechanisms available to participants function adequately and therefore do not require major enhancements. There are other, more pressing issues that the WAG should be focussing on, such as spot market price certainty. We believe that the risk management market has developed to a point where it is now able to grow organically. We believe that it

	is best that the market is left to develop incrementally without undue external influence, developing products naturally as they are required. Removal of barriers to entry There will always be calls from affected participants for the Electricity Authority to reduce their risks and costs, and while this lobbying is understandable, it is not necessarily in the best interests of the consumer. Reducing the contract size appears to be a low cost option to reducing a barrier to entry, whilst posing little to no risk of an unintended consequence. Trustpower would therefore support this initiative. Trustpower believes that the recent Settlement and Prudential Security Review, with its associated Code changes (due to be introduced in March 2015), is likely to achieve its goal of balancing the need for reduced barriers to entry against the need for purchasers to face the cost of their own business risks. The recent increase in retail competition and arrival of new retail participants is also encouraging in this regard. Conclusion Trustpower supports elements of the paper. We can see the value in reducing the hedge size to a level that will promote liquidity, and agree that the change to include prudential offset will provide benefits. It appears that much of the paper's recommendations, such as reducing the contract size, and prudential offset are in the process of being implemented, or being developed, supporting our belief that the market has now been developed so that future enhancements will organically grow as the market requires. Trustpower believes that there are much more pressing issues which need to be addressed in the electricity market. For example, operating in a market where the final price is unknown until after the event imposes the risk that a participant may react to a price signal which is not reflected in final prices. This issue is further exacerbated by infeasibilities indicating real-time prices in the order of $100,000/MWh. No participant knows where the

	price may settle, which increases the risk that inefficient actions are taken that will distort final outcomes.