



Summary of submissions

Options to improve retail competition: Findings of the spot market review

1 August 2015

Introduction

- 1 On 24 March 2015, the Electricity Authority (Authority) published a discussion paper *Options to improve retail competition: Findings of the spot market review* (discussion paper). The discussion paper is available on the Authority's website and the submissions have been made available on the same webpage.¹
- 2 In the discussion paper, the Authority proposed exploring two refinements to the spot market, by adding a project to its work programme in 2015/16 to:
 - (a) base settlement on real-time prices calculated and published during the trading period
 - (b) add some form of an ahead market so real-time prices apply only to residual quantities.
- 3 The discussion paper also considered options to reduce the number of nodes at which spot prices are calculated (zonal pricing), provide payments for demand response, and to introduce mandatory capacity payments. The Authority proposed not to pursue these three options any further at this time.
- 4 This paper summarises the feedback received from stakeholders in response to the discussion paper. It does not contain an exhaustive list of the points made in the feedback received, but rather, summarises the key themes that arose.

¹ <http://www.ea.govt.nz/development/work-programme/wholesale/exploring-refinements-to-the-spot-market/development/authority-seeks-feedback-on-findings-on-the-spot-market-review/>

Feedback received

- 5 In response to the discussion paper, the Authority received feedback from the 18 parties listed in Table 1.
- 6 NZ Steel's feedback stated they agreed with the submission made by the Major Electricity Users Group (MEUG), and provided no further comment. Their comments have hence been captured under those of MEUG.

Table 1 List of parties that provided feedback

Major generator/ retailers	Others generators and retailers	Service providers	Distributors	Traders and consultants	Consumers and reps
Contact Energy Genesis Energy Meridian Energy Mighty River Power Trustpower	Nova Energy Flick Electric Pioneer Generation	Transpower NZX	Orion	EMH Trade Smartwin Neil Walbran Consulting	MEUG Norske Skog NZ Steel EnerNOC

Summary of key areas covered in feedback received

- 7 This section provides a summary of feedback in the following areas:
- (a) the choice of high level spot market design refinements considered in the Authority's review
 - (b) the proposal:
 - (i) to explore further options to real-time pricing options and add an ahead market
 - (ii) not to explore moving to zonal pricing or increasing the incentives for demand response or to invest in new generating capacity.

Most respondents agreed with the choice of design issues considered

- 8 Ten respondents clearly stated that they agreed with the choice of design issues considered in the discussion paper. Two expressed clear disagreement with the issues considered, with a further six expressing qualified support or suggesting additional issues.
- 9 In many instances, other issues suggested for examination were subsets of, or closely related to those considered in the discussion paper. For example, infeasibility pricing and forecast accuracy (which were issues raised by multiple parties), as well as high spring washer pricing, would need to be considered as part of real-time pricing or an ahead market.
- 10 Those that expressed clear disagreement with the choice of issues commented that:
- (a) the review did not appear to be a response to any instances of market failure or inefficiency, and it was unclear why the Authority had considered some issues and not others
 - (b) there was little in the paper from the perspective of new entrant retailers or end consumers
 - (c) it was not clear why issues such as the effect on competition of vertical integration and developing the FTR market had not been considered.

Most respondents supported exploring real-time pricing options

- 11 The majority of respondents supported the Authority's proposal to explore real-time pricing options in 2015/16. Within this category, some expressed clear support while others included qualifications. Two parties opposed the exploration of real-time pricing and one did not express a view at all.
- 12 Respondents that expressed clear support for exploration of real-time pricing options commented that:
- (a) under current ex-post pricing arrangements, consumers must guess what spot prices will be. This increases risk and uncertainty for consumers, and discourages effective demand side participation
 - (b) consumers need prices to be actionable before they can respond to them

- (c) improving spot price certainty is a key enabler for smart grid technologies – including automated demand response
 - (d) moving to real-time prices could create efficiencies for industrial load
 - (e) the current ex-post pricing regime limits the effective participation of embedded generators, and can result in plant operating at a loss
 - (f) spot price signals are especially important during times of market stress – and under present arrangements signals can arrive too late to be acted upon, reducing market efficiency.
- 13 Of those respondents that expressed conditional or qualified support for exploration of real-time pricing, many preferred improvements being made to the accuracy and transparency of prices in the first instance. Comments included that:
- (a) an incremental approach is desirable, in particular, looking to improve demand forecasting in the first instance
 - (b) current arrangements relating to publication of infeasible prices create concern and confusion - the Authority should solve the ‘infeasibility problem’ before deciding whether to move to real-time pricing
 - (c) a higher priority should be given to improving settlement price forecasts
 - (d) improving the quality of forecasts is important – particularly that of intermittent generation.
- 14 There were also concerns raised about the potential for unintended consequences, with comments such as:
- (a) any real-time pricing approach should ensure that prices are not subject to market manipulation
 - (b) there may be merit in moving to real-time pricing, but there is a need for significant caution, given the potential for unintended consequences
- 15 Two of the eighteen respondents did not favour exploration of real-time pricing options. The reasons expressed for this view include:
- (a) it is unclear whether current arrangements create significant problems
 - (b) publishing prices on ex post basis allows data and other errors to be corrected - accuracy of prices is more important than certainty
 - (c) while the current approach to infeasible prices is problematic, that could be addressed without moving to real-time pricing.

Most respondents supported the proposal not to look further at zonal pricing

- 16 Twelve of the eighteen respondents agreed with the Authority’s proposal not to explore zonal pricing. One respondent provided partial support, while three disagreed with the Authority’s proposed approach.
- 17 Respondents that agreed with the proposal tended to consider that nodal pricing, while complex, was preferable to zonal pricing. Comments included that:
- (a) the overheads associated with managing the current nodal pricing approach are not prohibitive

- (b) market distortions from moving to zonal pricing would far outweigh any potential transactional benefits
 - (c) the option of zonal pricing creates its own set of complexities, including the need to define (and re-define) zonal boundaries, and to establish procedures to deal with intra-zone congestion - such decisions inevitably create winners and losers, and therefore give rise to ongoing lobbying, which is inefficient
 - (d) nodal prices provide important locational investment signals that should not be blunted
 - (e) it is clear from the experience in the Australian National Electricity Market and the PJM market that zonal pricing becomes a constraint on market efficiency over time no matter how well the zones are originally specified.
- 18 Two parties considered that real-time pricing should be the priority at this point in time but supported investigating the merits of zonal pricing at a later stage.
- 19 Four parties considered that more work should be done on the zonal pricing issue now. Comments included that:
- (a) there may be opportunities to reduce the number of pricing nodes without distorting investment signals - for example, by removing nodes at low-voltage supply points or spur nodes
 - (b) the difficulty in managing locational price risk represents a market failure, and for this reason zonal pricing should be further considered, or the range of FTR products should be further developed
 - (c) the current granularity, with 250+ pricing nodes, is in excess of that required to provide efficient signals
 - (d) the analysis undertaken by the Authority of only two 'zonal' regions is unrealistic and does not provide a valid option with which to compare the current structure
 - (e) there are alternative ways to consolidate the number of pricing nodes without materially impacting the accuracy or meaningfulness of pricing signals.

Half of respondents supported exploring an ahead market in 2015/16

- 20 Respondents expressed a range of views on whether to explore an ahead market in 2015/16. Nine respondents expressed clear support for this proposal. Of the other nine, three respondents did not support further exploration of an ahead market at all and the others felt that it should receive a lower priority than work on real-time pricing options.
- 21 The respondents that expressed clear support for exploration of an ahead market in 2015/16 commented that:
- (a) an ahead market would allow greater participation from demand-responsive consumers who cannot respond fast enough to real-time prices
 - (b) an ahead market would likely have net benefits via more efficient unit commitment, greater consumer participation, and lower risk management costs
 - (c) an ahead market would facilitate increased demand-side participation, which would improve dynamic efficiency of investment for both generation and load

- (d) an ahead market would help participants to mitigate spot market volatility and plant commitment decisions.
- 22 Submissions that expressed conditional or partial support for exploration of an ahead market made comments such as:
- (a) the Authority should not consider an ahead market until real-time pricing is fully explored
 - (b) the potential gains from an ahead market justify its exploration – but the Authority should review the accuracy and reliability of current market inputs, and consider how a two-settlement system would impact different plant and support appropriate decision making
 - (c) further work on an ahead market and shorter gate closure is desirable, but the Authority should undertake it after it completes the work on real-time pricing options
 - (d) real-time pricing should be the focus in the first instance, with potential for an ahead market to be added in the much longer-term
 - (e) the Authority should consider an ahead market after it has implemented gate closure, improved forecasting, and real-time pricing
 - (f) a [physical] ahead market is likely to impede new entry into retail and generation - the Authority should investigate financial ahead markets as that would be a simpler solution.
- 23 Submitters that did not favour the Authority considering an ahead market an further commented that:
- (a) the Authority should not explore an ahead market – noting that it may be preferable to implement via financial contracts rather than a physical market
 - (b) a [compulsory] ahead market would add complexity, and provide benefit to few market participants - implementing a voluntary day-ahead hedge market would be more efficient
 - (c) New Zealand’s system is not well suited to an ahead market because there are few inflexible thermal units, most price risk is avoided by hedging well in advance given longer-term fuel risks, and there are significant volumes of intermittent generation that would be disadvantaged by an ahead market
 - (d) an ahead market would transfer wealth from unpredictable loads to others, which would not improve efficiency.

Most respondents support improving spot price signals in preference to ‘paid for’ demand response programmes

- 24 Of the eighteen parties that provided feedback on the paper, sixteen agreed with the Authority’s assessment regarding paid-for demand response programmes, and that they should not be further explored in 2015/16. One respondent disagreed, and another provided partial support for the proposal.
- 25 Those parties that agreed with the proposal generally considered that a move to real-time pricing, and consideration of an ahead market, were sufficient first steps to improve demand-side participation. Comments included that:

- (a) the Authority should design the market in such a way that allows demand response decisions to be made by participants based on price signals
 - (b) paying for demand response, in addition to the benefit of avoiding high prices, effectively results in a double payment and is not an efficient economic signal
 - (c) the proposed two settlement market better addresses demand-side incentives to participate
 - (d) there is little value in further investigating demand response products - a change to real-time prices would make a more significant step change for successful demand response than formally developing and implementing demand response programmes.
- 26 Two respondents referred to the dispatchable demand regime, and suggested that it might be better to develop those arrangements to improve demand-side response.
- 27 Some submitters commented that there is scope for a wider role for demand-side management generally, but did not support paid-for demand response itself.
- 28 The respondent that disagreed with the Authority's assessment commented that the benefits in terms of increased demand-side participation from a NEM-style approach make the added complexity worthwhile.

Respondents agreed that there is little need to increase incentives to invest in new generating capacity

- 29 The majority of respondents agreed an efficient energy-only market and risk management market provided an efficient incentive for investment in new generating capacity. They agreed there was no apparent need to provide further incentives, such as adding a separate capacity market. Comments included that:
- (a) there doesn't appear to be any evidence that a capacity market will improve the New Zealand system, and the likely costs of implementation are high
 - (b) New Zealand's market design has delivered substantial renewable (and thermal) investment without subsidy, in a timely manner and at reasonable cost, as well as seeing sensible economic decisions around retirement of existing plant
 - (c) a key success of New Zealand's wholesale market has been the way it has commercialised and de-politicised generation investment (and disinvestment) decision-making
 - (d) a mandatory capacity market is unlikely to offer benefits greater than those that might be realised by a well-functioning energy-only market and competitive hedge market.
- 30 One respondent, while agreeing with the Authority's assessment, suggested it may be necessary to reconsider the merits of a mandatory capacity payments if the system becomes more capacity constrained in the future. Two other respondents suggested that security of supply may be negatively impacted by new technologies.
- 31 The submitter that disagreed with the Authority's proposal did so because it considered that the closure of Southdown signalled the need to consider paying more to ensure secure supply.

Summary of feedback received

- 32 The main body of this report summarises the feedback received to each question in the discussion paper.
- 33 There is a table at the start of each section which summarises respondents' overall position. This identifies parties that were in clear agreement with the Authority's proposal, clear disagreement, and those that did not appear to fit readily under either category. Submitters' individual comments are then summarised in alphabetical order.²
- 34 Appendix A contains the full list of questions from the consultation paper.

Question 1: Do you agree with the choice of high level spot market design issues we've considered? If not, what other issues should be evaluated and why?

Question 1 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	18	All
Parties that clearly agreed with the approach and/or options considered	10	emhTrade, EnerNOC, Genesis Energy, MEUG (and NZ Steel), Mighty River Power, Neil Walbran Consulting, Nova, Smartwin, Transpower
Parties that clearly disagreed with the approach and/or options considered	2	Norske Skog, Orion
Other	6	Contact Energy, Flick, Meridian Energy, NZX, Pioneer Generation, Trustpower

- 35 Contact Energy considered that, before considering real-time settlement, the Authority should consider incremental changes to improve the alignment between 5-minute prices and final pricing. They suggested this could be achieved through:
- (a) modified processes, such as placing limits on how high the price at a GXP can go relative to offer prices
 - (b) improved supply and demand forecasting – particularly by capturing embedded generation within forecasts, and funding the system operator's development of its load forecasts.
- 36 emhTrade agreed with the choice of design issues considered.
- 37 EnerNOC agreed with the choice of design issues considered.

² According to the abbreviated name of the submitter, where relevant.

- 38 Flick stated they were comfortable with the choice of design issues considered. However, they noted that the Authority's approach to the review of comparing New Zealand with international markets may have led to some other options being excluded from consideration.
- 39 Genesis Energy agreed with the choice of design issues considered.
- 40 MEUG (and NZ Steel) agreed with the design issues considered.
- 41 Might River Power suggested that the Authority had evaluated the appropriate issues.
- 42 Meridian Energy agreed with the design issues considered. It suggested the Authority could further consider reducing gate closure, and reducing the settlement period to 5 or 15 minutes, and that it may be efficient to do so in conjunction with the proposed options.
- 43 Neil Walbran Consulting agreed, but noted the need to investigate the interaction between an hours ahead market and the hedge market.
- 44 Norske Skog stated that the choice of issues did not reflect identified instances of market failure or inefficiency. Norske Skog were unclear as to how the Authority had selected the issues considered, noting that vertical integration and further development of the FTR market had not been considered. It suggested that the Authority should address the issue of infeasibility pricing.
- 45 Nova agreed with the choice of issues considered.
- 46 NZX considered that the spot market review is timely, and supported the options considered by the Authority. NZX noted they support any improvements to the wholesale market that will enhance competition and benefit end-consumers. However, it considered that other international market designs could have been included in the review, and that other remedial work could be undertaken to improve the accuracy of spot prices.
- 47 Orion did not consider the discussion paper to have adequately considered the perspective of entrant retailers or consumers. It suggested that the design issues considered were unlikely to address some parties' concerns about market complexity or bias in favour of sellers. Orion suggested the Authority consider insights from how market arrangements might be designed if it were done from scratch today, or by a single buyer, or by parties negotiating bilaterally. In particular, it suggested costs and/or risk might be shared differently between buyers and sellers, with less emphasis on mathematical purity, and a focus on different time horizons. More specifically, Orion suggested the Authority:
- (a) consider addressing infeasible pricing and the uncapped nature of the spot market, both of which may act as a barrier to entry due to the risk that credit providers perceive
 - (b) analyse the value of optimising dispatch over longer periods – eg a day
 - (c) consider if the experience with hot water load management in the upper South Island can support improved demand forecasting, and potentially inform an approach to demand-side response, for example, through the use of local system operators for coordinating load, and optimising over a longer period.
- 48 Pioneer Generation suggested it was unclear how the issues considered had been identified and prioritised, and suspected that the Authority had undertaken more work than what was provided in the discussion paper.
- 49 Smartwin agreed with the choice of design issues considered.

- 50 Transpower agreed with the choice of design issues considered, and those proposed to be further explored. It noted this work should have regard to other relevant projects going on in parallel.
- 51 Trustpower agreed with the choice of issues, and further noted that the Authority should carefully consider infeasibility pricing, and high spring washer situations as part of its proposed next steps.

Question 2: Do you agree that the Authority should explore real-time pricing options in 2015/16? Please explain your reasoning.

Question 2 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	18	All
Parties that clearly agreed with the Authority's proposal to explore real-time pricing	12	EnerNOC, Flick, Genesis Energy, Mighty River Power, Neil Walbran Consulting, Nova, NZX, Orion, Pioneer Generation, Smartwin, Transpower, Trustpower
Parties that clearly disagreed with the Authority's proposal	2	emhTrade, Norske Skog
Other	4	Contact Energy, MEUG (and NZ Steel), Meridian Energy

- 52 Contact Energy expressed concern about the inaccuracy of using real-time prices when generation capacity is tight. It considered that improving the accuracy of 5-minute pricing inputs would go a long way to addressing the problem. It also suggested that removing lower voltage, problematic GXPs might improve confidence in moving to real-time pricing.
- 53 emhTrade was not convinced there was a significant issue with current arrangements, and suggested including infeasible prices in the data may have affected the conclusions. It suggested that educating parties about infeasible prices and making these calculations more transparent, may be an easier solution than moving to real-time prices. However, it suggested that doing this would be unnecessary if a short-term ahead market were implemented. emhTrade also considered that if a consumer chooses to reduce demand in response to price then it should face both the quantity and price impact (eg if the price falls following their actions) of that decision.
- 54 EnerNOC agreed with the Authority's proposal, stating that consumers need prices to be actionable before they will respond to them. It suggested the current ex-post pricing arrangements are inadequate in this regard, as consumers have to guess what prices will be, which increases risk and uncertainty, and discourages participation. EnerNOC considered the efficiency benefits from increased consumer-response and reduced overheads would out-weigh any costs from reduced pricing accuracy – noting that accurate prices are of limited value if they cannot affect decision making. EnerNOC referred to pricing in the Australian National Electricity Market, whereby prices are set at the end of each 30 minute trading period, and can be influenced by generators revising bids during the trading period. It suggested that such an approach does not provide parties with a real ability to respond, and that the Authority should avoid a similar approach.
- 55 Flick strongly supported the Authority exploring real-time pricing. It considered that the current pricing arrangements do not allow consumers on spot to make reliable demand-response decisions. It suggested that real-time pricing would increase confidence and the competitiveness of the spot market, and increase investment in the industry. Flick suggested the Authority seek pricing arrangements that would lock in prices prior to the

commencement of a trading period, and avoid problems associated with having 5-minute price setting versus 30-minute settlement. It suggested that spot price certainty is a key enabler for smart grid technologies – and automated demand response more specifically.

- 56 Genesis Energy supported the Authority’s proposal. It expected real-time pricing would deliver a net benefit and encouraged a timely process. However, it noted that to ensure real-time pricing is effective, there is a need to improve the accuracy of the system operator’s demand forecasts (with Genesis Energy having noted a number of \$100+ differences between long-run and short-run schedule prices), and the transparency of prices (eg by estimating prices during infeasible situations). Genesis Energy suggested that the Authority should ensure its development process includes widespread engagement and seeks a consensus position, considers the costs and benefits under different generation scenarios, and considers the impacts on consumers.
- 57 MEUG (and NZ Steel) noted that its members have long expressed concern about infeasible prices and the confusion they create. MEUG suggested that the Authority would need to solve the infeasibility problem before it could move to real-time pricing, and that it should hence do so first, and then consider whether to go further with real-time pricing. MEUG also suggested the Authority give a higher priority to improving settlement price forecasts.
- 58 Mighty River Power agreed with the Authority’s proposal, though it felt a lot of work will be necessary to determine the suitability and practicality of real-time pricing. It questioned the accuracy of Transpower’s GXP metering equipment and whether it is comparable to that used in other jurisdictions that have real-time pricing. It further identified that the Authority will need to consider the settlement period and time (eg 5/30 mins, ex ante/ ex post), how to address infeasible prices and high-spring washer situations, and an appropriate implementation timeframe. Mighty River Power suggested that improving the quality of forecasting – particularly that of intermittent generation - will be important for attracting demand response, and realising benefits from real-time pricing.
- 59 Meridian Energy considered there may be merit in moving to real-time pricing, but expressed a need for significant caution. It suggested the Authority:
- (a) take an incremental approach and, in particular, look to improve demand forecasting in the first instance
 - (b) only proceed based on sound evidence, and a clear understanding of the cause and scale of price divergences
 - (c) not pursue significant change if the scale of the problem is small, and limited to a small number of periods where forecast and final prices diverge
 - (d) thoroughly assess the potential increase in participant response to real-time prices, to inform the likely size of benefit
 - (e) thoroughly assess the potential for unintended consequences.
- 60 Neil Walbran Consulting agreed with the Authority’s proposal, suggesting that real-time pricing, in combination with an hours-ahead market, would facilitate greater demand-side participation, and hence increase dynamic efficiency.
- 61 Norske Skog disagreed with the Authority’s proposal, as it considered price accuracy to be more important than certainty. Norske Skog suggested the Authority address infeasible pricing – which it would need to under a move to real-time pricing anyway – and noted it

has some ideas for how prices could be estimated when infeasible prices occur, which it could share with the Authority.

- 62 Nova agreed with the Authority's proposal, and the timely development of a plan to improve pricing accuracy, necessary to facilitate real-time pricing. Nova further suggested that any real-time pricing approach should ensure that prices are not subject to market manipulation, or the misallocation of revenues in the event of errors. It suggested the Authority should also consider whether it is appropriate to retain the ability to modify prices ex-post to address some behaviours.
- 63 NZX agreed with the Authority's proposal, suggesting that current arrangements create doubt, which affects participants' ability to make effective decisions. It felt the lag in publishing final prices has increased over time as the underlying rules have changed. It suggested the Authority could improve current arrangements by improving the accuracy of inputs into the pricing process – eg, metering data or standing data.
- 64 Orion agreed with the Authority's proposal to explore real-time pricing, but was unsure whether real-time pricing would actually address issues, or just expose issues earlier. It considered that the more important issue with regard to pricing is to know when they lose their economic content, because a response is no longer possible. Orion considered that solutions to technical pricing issues should favour simplicity over accuracy, and err on the side of the purchaser where reasonable (eg, in shortage situations).
- 65 Pioneer Generation supported the Authority exploring real-time pricing. It considered that ex-post pricing limits the effective participation of embedded generators, can result in plant operating at a loss if expected high-prices 'wash-out' in final pricing, and does not provide actionable price information. Pioneer Generation queried whether the increased penetration of smart meters might provide better data to improve the forecast price schedule. It expected the Authority to undertake a thorough investigation and consultation process, and suggested the Authority consider the impacts on the hedge market in its investigation. Pioneer Generation considered that requiring generators to offer a proportion of their volumes to a third party would improve liquidity in the hedge market, as well as making the market supply curve less steep, and prices less volatile.
- 66 Smartwin agreed with the Authority's proposal, suggesting that the potential benefits from better demand side participation and more efficient deployment of generation assets are substantial, and should not be overlooked or delayed.
- 67 Transpower agreed with the Authority's proposal, noting participants' desire for more accurate and timely price settlement, and is open to working with the Authority to find solutions to technical issues. Transpower suggested that the Authority should consider, as part of its investigation:
- (a) settling close to real-time (eg 30 mins), as well as settling on 5-minute prices themselves
 - (b) the accuracy of short/medium term load forecasts.
- 68 Trustpower agreed with the Authority's proposal, and supported the comments on the issue made by Oakley Greenwood and Monitoring Analytics, and analysis included in the discussion paper. Trustpower suggested there is no sound reason to require participants to transact on prices determined after a trading commitment has been made, and that price signals during times of market stress arrive too late to be acted upon, which reduces their efficiency.

Question 3: Do you agree that the Authority should not explore zonal pricing in 2015/16? Please explain your reasoning.

Question 3 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	18	All
Parties that clearly agreed with the Authority's proposal to not explore zonal pricing in 2015/16	14	emhTrade, EnerNOC, Flick, Genesis Energy, MEUG (and NZ Steel), Mighty River Power, Meridian Energy, Neil Walbran Consulting, Nova, NZX, Smartwin, Transpower, Trustpower
Parties that clearly disagreed with the Authority's proposal	3	Norske Skog, Orion, Pioneer Generation
Other	1	Contact Energy

- 69 Contact Energy considered that there may be opportunities to reduce the number of GXPs, by removing some lower voltage GXPs (<220kV). It suggested that this has been occurring anyway, as Transpower has been divesting some assets to networks, which may suggest there is a more optimal way of determining the location and number of GXPs than just basing it on grid ownership. Contact Energy suggested that a greater focus on 'core GXPs' may reduce constraint-driven pricing complexity and the risk of spring washers arising from low-voltage parallel paths; reduce market overheads; and improve 5-minute prices, without distorting investment signals.
- 70 emhTrade agreed with the Authority's proposal.
- 71 EnerNOC considered that zonal pricing would be retrograde step from nodal pricing, and agreed with the Authority's proposal.
- 72 Flick agreed with the Authority's proposal, suggesting that the overheads associated with nodal pricing are not prohibitive, and that the costs of zonal pricing would likely out-weigh any benefits.
- 73 Genesis Energy considered that the Authority should focus on real-time pricing and an ahead market in 2015/16, but consider reviewing zonal pricing in its future work programme. It suggested that the number of nodes adds unnecessary complexity and creates costs. Genesis Energy suggested that the Authority should further develop hedging tools for managing locational price risk (including FTRs), in the first instance, and then undertake a full review of nodal pricing and its alternatives. Genesis Energy also requested that the Authority provide more transparency around what hedging tools it is currently exploring.
- 74 MEUG (and NZ Steel) agreed with the Authority's proposal, noting the analysis presented by Oakley Greenwood and Monitoring Analytics.
- 75 Mighty River Power agreed with the Authority's proposal, suggesting that the distortions zonal pricing would create would out-weigh any potential transactional benefits.

- 76 Meridian Energy agreed with the Authority's proposal. It acknowledged complexities arising from nodal pricing, but did not consider them a substantial barrier for new-entrant retailers. Meridian Energy suggested that retailers have the sophistication to manage the risks, and that there are sufficient hedging tools available to manage the majority of risk, as per the analysis presented in the discussion paper. Furthermore, Meridian Energy noted that zonal pricing would create its own complexities, and result in winners and losers, with the consequent potential for lobbying.
- 77 Neil Walbran Consulting supported the Authority's proposal, suggesting that investment signals should not be blunted.
- 78 Norske Skog, whilst agreeing with many of the arguments against nodal pricing, considered impossible to manage locational price risk and this represents a market failure. It suggested that locational price risk represents a significant challenge for retailers and loads. It therefore suggested that zonal pricing be further considered, or that the FTR grid be further developed (including introducing a Central North Island node).
- 79 Nova agreed with the Authority's proposal, noting the experience in the NEM and PJM. It suggested that New Zealand's weather-dependent generation and demand, and extended power grid, makes nodal pricing more critical than in other electricity markets.
- 80 NZX agreed with the Authority's proposal. It suggested that zonal pricing dilutes price signals and would create cross-subsidies between traders. It also suggested that the hedge market alone will be insufficient for managing locational price risk going forward. NZX further considered that nodal pricing provides the best incentives for dispatch and demand response, and does not create an undue barrier to entry for new retailers.
- 81 Orion considered that there are challenges to zonal pricing, and moving away from the status quo has risks. However, it considered that there are likely to be options to simplify arrangements for participants, which might avoid many of the risks identified in the discussion paper. Specifically, Orion noted that:
- (a) prices could be determined at interconnection nodes only. Many nodes are spur nodes, which are likely to only feature a small price difference, and there is little that can be done about constraints on spur lines
 - (b) nodes at the same location but at different voltages could be amalgamated. Price differences between these nodes are trivial, and are unlikely to present a real choice to consumers
 - (c) consumers can be connected to multiple nodes at the same location – hence the use of balancing areas in the reconciliation process. It therefore seems inconsistent to set multiple prices as if it is possible to determine where consumption was sourced
 - (d) a number of distributors have been acquiring spur assets from Transpower, reducing the number of nodes, which does not appear to be resulting in less efficient outcomes
 - (e) the work to determine FTR nodes is an implicit acknowledgement that there is limited price separation between nodes and their associated FTR node. This work could inform appropriate zones
 - (f) retailers and consumers generally standardise across GXPs within a network area anyway, indicating the price differences are trivial.

- 82 Pioneer Generation strongly recommended the Authority further explore zonal pricing. Pioneer Generation:
- (a) considered that nodal pricing creates significant complexity in the market, which presents a barrier to new entrants. It noted the need to reduce complexity has been identified by the WAG and RAG
 - (b) considered that 250+ nodes provides a level of granularity well in excess of what is likely to be efficient for the market. It suggested that the Authority's analysis based on two zonal regions represents an extreme example, rather than a valid alternative to compare with the status quo
 - (c) engaged TDB Advisory to review the analysis presented in the discussion paper, and to conduct its own analysis into zonal pricing. TDB Advisory:
 - (i) noted that the costs/benefits associated with the current arrangements were not quantified in the discussion paper, nor were the costs/benefits associated with more/fewer nodes
 - (ii) analysed price differences within hypothetical zones during trading period 33 on 22 February 2011. It repeated its analysis for three different levels of node aggregation. It found that the different levels of consolidation resulted in different conclusions from those reached by the Authority's analysis of two zones
 - (iii) engaged in further analysis of inter-regional price differences across the year ending September 2014, which led it to conclude that there is scope for a reduction in the number of pricing nodes without materially impacting the accuracy or meaningfulness of pricing signals
 - (d) outlined its view that there are a number of opportunities to reduce the number of nodes which could be implemented easily, noting the 4 nodes in Penrose and 5 in Otahuhu in particular
 - (e) suggested that locational price signals are unlikely to impact where generation is located, as the majority of new generation is renewable, which must be located where the fuel is and where consents can be obtained, and any investment would reduce the price incentive anyway by lowering the price at a GXP
 - (f) agreed with the view of Oakley Greenwood that more granular pricing means a higher risk of market power and price risk, which Pioneer Generation suggested is particularly relevant given New Zealand's stringy transmission grid and the location of assets
 - (g) noted that the Singapore market pays generators on a nodal basis but charges consumers based on average prices
 - (h) strongly recommended the Authority investigate the option of fewer pricing nodes for settlement of retail volumes, which in its view:
 - (i) would be unlikely to impact on the efficiency of the spot market
 - (ii) would reduce a barrier to entry, and the complexity of the market
 - (iii) would improve the ability to manage locational price risk, given the mis-match between the hedging tools available and number of price nodes

- (iv) reflects the fact that retailers cannot practically offer a price at each node, and that most consolidate prices into a number of price zones anyway – hence introducing cross-subsidies
 - (i) suggested it would welcome the opportunity for it and TDB Advisory to discuss the TDB Advisory analysis with the Authority.
- 83 Smartwin agreed with the Authority’s proposal, suggesting that zonal pricing is inappropriate for the New Zealand grid, and is less than optimally efficient because it creates cross-subsidies within zones.
- 84 Transpower agreed with the Authority’s proposal.
- 85 Trustpower agreed with the Authority’s proposal, and supported the reasoning provided in the discussion paper. However, it suggested a further assessment about the merits of zonal pricing be made after actionable nodal prices have been allowed to bed in.

Question 4: Do you agree that the Authority should explore introducing an ahead market (and shorter gate closure) in 2015/16? Please explain your reasoning.

Question 4 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	18	All
Parties that clearly agreed with the Authority's proposal to further explore an ahead market and shorter gate closure in 2015/16	9	emhTrade, EnerNOC, Genesis Energy, Neil Walbran Consulting, Nova, NZX, Orion, Smartwin, Transpower
Parties that clearly disagreed with the Authority's proposal	4	Contact Energy, Flick, Meridian Energy, Trustpower
Other	5	MEUG (and NZ Steel), Mighty River Power, Norske Skog, Pioneer Generation

- 86 Contact Energy considered that a day-ahead market would add complexity, but be of benefit to few market participants, and that implementing a voluntary day-ahead hedge market would be more efficient.
- 87 emhTrade considered that further exploration should be undertaken. However, it considered that an ahead market would add complexity and provide limited benefit to participants. It suggested a derivatives ahead product would be simpler to implement, could include more players, possibly utilise HSAs and the EnergyHedge platform, and could remain optional as an interim first step. It suggested that shorter gate closure should be considered as a separate issue.
- 88 EnerNOC agreed with the Authority's proposal. It considered that an ahead market will allow for much greater participation from consumers who cannot respond fast enough to real-time prices. While acknowledging that it would add complexity, it considered there would likely be net benefits, due to more efficient unit commitment, greater consumer participation, and lower risk management costs. EnerNOC suggested an hours-ahead market would be preferable to a day-ahead market, and considered that participation by generators should be mandatory to overcome the 'chicken and egg' problem of establishing liquidity, and to provide maximum information. EnerNOC considered there may be efficiency benefits from a shorter gate closure, but expressed caution about the potential for participants to exploit timing constraints, as has occurred in the NEM.
- 89 Flick disagreed with the Authority's proposal. It suggested that an ahead market would come at significant cost but have minor incremental benefits. Flick suggested that the Authority focus on its other planned enhancements to the market, and reconsider an ahead market once the impact of real-time pricing is understood.
- 90 Genesis Energy agreed with the Authority's proposal, suggesting a more certain and less volatile wholesale market is likely to benefit consumers, and provide a better platform for sustainable retail competition. However, it suggested that the Authority develop a good understanding of the impacts on both generators and consumers before making any decision to proceed. It suggested the Authority ensure its development process includes

widespread engagement with the sector and seeks a consensus position, considers the costs and benefits under different generation scenarios, and the impacts on consumers.

- 91 MEUG (and NZ Steel) supported the Authority considering an ahead market as a long-term possibility, but not as a primary focus for the Authority. It suggested that, were an ahead market required, a voluntary derivatives market for ahead products would develop. MEUG suggested that the NEM experience is more akin to the New Zealand market than the PJM experience. It suggested the PJM market appears targeted toward slow starting thermal plant, and has resulted in arbitrage and exploitation of loopholes that did not inspire confidence that an ahead market is appropriate or desirable for New Zealand. MEUG considered that the Authority should focus on real-time pricing in the first instance, but when considering that design, factor in the potential for an ahead market to be added in the much longer-term.
- 92 Mighty River Power supported investigating a shorter gate closure period (< 15 minutes), suggesting it be given priority, and that it be done irrespective of any consideration of an ahead market. It suggested this, along with conduct provisions, will help address concerns about market power. Mighty River Power suggested that an ahead market only be considered after gate closure, improved forecasting, and real-time pricing has been implemented and their impact understood. It suggested that New Zealand does not have sufficient inflexible generation and large industrial customers to motivate an ahead market, as in PJM. It suggested that reduced gate closure, real-time pricing and financial instruments may be the better option for New Zealand.
- 93 Meridian Energy did not support the Authority's proposal. It suggested New Zealand is not well suited to an ahead market, because there are few inflexible thermal units, most price risk is avoided by hedging well in advance given longer-term fuel risks, and there is significant intermittent generation sources that would be disadvantaged by an ahead market. Meridian Energy suggested that ahead markets introduce 'uplift', which can add significant costs in the balancing market. It further suggested that an ahead market could result in a more disorderly market solution in real-time, as generators would be more constrained in their ability to respond to issues leading up to real-time. Meridian Energy suggested hedging is likely to be a more efficient and effective way for parties to lock-in prices ahead of real-time, and that introducing a new reference price would be likely to split liquidity in the hedge market, counter to the Authority's recent efforts to improve liquidity. Meridian Energy considered that, given the size of the market, a single gross pool is most conducive to hedge market liquidity. Meridian Energy considered that an ahead market should only be considered after first improving the alignment between forecast and settlement prices, and considering real-time price settlement. Meridian Energy supported reduced gate closure, which would better allow parties to respond to changing circumstances close to real time. Meridian Energy did not consider it necessary to consider shorter gate closure and an ahead market together, and suggested these two initiatives could be seen as being at odds with each other.
- 94 Neil Walbran Consulting supported the Authority's proposal. It suggested that an ahead market would facilitate increased demand-side participation, which would improve dynamic efficiency of investment as generation and load would be in competition. Neil Walbran Consulting supported settlement on multiple period blocks to increase the type of loads that can participate. It suggested the Authority should consider how an ahead market would interact with hedge trading.

- 95 Norske Skog supported a shorter gate closure period, but did not support an ahead market, as it considered an ahead market would transfer wealth from unpredictable loads to others, which would not improve efficiency.
- 96 Nova supported the Authority's proposal, as it would allow participants to insulate themselves from spot market volatility and help with plant commitment decisions. Nova suggested that with increased quantities of geothermal and wind, and fewer large thermal plants operating, there is an increased risk of inadequate generation being offered within the gate closure period. It therefore considered that a shorter gate closure is necessary, as it would allow generators to be more responsive to short-term changes in demand and intermittent generation.
- 97 NZX agreed with the Authority's proposal, suggesting that the potential for increased certainty and reduced volatility justifies exploration of cost effective ways to provide advanced settlement. However, NZX suggested that the Authority would need to review the accuracy and reliability of the current market inputs, and consider how a two-settlement system would impact different plant to ensure appropriate decision making.
- 98 Orion supported the Authority's proposal, and suggested that the Authority consider the interaction between an ahead market, and the spot and hedge markets. It referred to the experience of the ECNZ in developing a day-ahead market, which foundered because of the basis risk for day-ahead purchases, against hedges referenced to the real-time price.
- 99 Pioneer Generation supported further work on an ahead market and shorter gate closure, but strongly recommended it be undertaken after real-time pricing has been completed. Pioneer Generation suggested that any investigation include thorough analysis of potential options and a comprehensive consultation process. It suggested the Authority review the previous work undertaken by the Commission into a day ahead market, and that the impact of a two-settlement arrangement on hedge market liquidity be carefully considered.
- 100 Smartwin supported the Authority's proposal, noting that price signals and incentives for efficient behaviour are key to an efficient market. It suggested that any investigation consider whether virtual bidding arrangements are desirable. Smartwin suggested that gate closure be considered as a separate and optional issue.
- 101 Transpower agreed with the Authority's proposal, and suggested it would like to work with the Authority to explore design options that are compatible with existing schedules and tools, and appropriately balance real-time reliability, efficiency and competition.
- 102 Trustpower did not support the Authority's proposal, and did not support an ahead market being considered prior to the implementation of real-time pricing. Trustpower considered that an ahead market would introduce additional complexity, making reconciliation, prudential calculations and hedge settlement twice as data-intensive. It considered that an ahead market is likely to be a barrier to entry for retail and generation and that the Authority should instead investigate barriers to financial ahead markets, as that would be a simpler solution.

Question 5: Do you agree that the Authority should not explore ‘paid for’ demand response programmes in 2015/16? Please explain your reasoning.

Question 5 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	18	All
Parties that clearly agreed with the Authority’s proposal to not explore paid-for demand response programmes in 2015/16	16	Contact Energy, emhTrade, Flick, Genesis Energy, MEUG (and NZ Steel), Mighty River Power, Meridian Energy, Neil Walbran Consulting, Norske Skog, Nova, NZX, Pioneer Generation, Smartwin, Transpower, Trustpower.
Parties that clearly disagreed with the Authority’s proposal	1	EnerNOC
Other	1	Orion

- 103 Contact Energy agreed with the Authority’s proposal, suggesting that paid-for demand response would not provide a level playing field, and would undermine the energy market.
- 104 emhTrade agreed with the Authority’s proposal.
- 105 EnerNOC disagreed with the Authority’s proposal. It suggested that, to see a benefit from demand response, consumers need to be exposed to spot prices, and that for most, the risk and management overhead associated with that is unlikely to offset the benefits of responding to high prices for a few hours a year. It suggested it was therefore necessary to develop arrangements that allowed for consumers to participate while maintaining a retail contract. EnerNOC considered that an approach like that in the NEM provides an incentive to demand-responsive consumers, which is equivalent to that of avoiding spot prices. It suggested that, while this requires a baseline to be determined, workable solutions have been developed in many other markets. It suggested that separating settlement into normal retail settlement and demand response settlement would:
- (a) allow customers to provide demand response while maintaining a retail contract
 - (b) support demand-response acting as sellers in the hedge market
 - (c) support greater involvement by aggregators, which it says are necessary for achieving high levels of customer participation.
- 106 Flick agreed with the Authority’s proposal, suggesting that paid-for demand response products add additional overheads and are open to gaming. Flick considered that demand response decisions should be made based on price signals, with the potential exception of needing to specifically avoid transmission or distribution investments.
- 107 Genesis Energy agreed with the Authority’s proposal.
- 108 MEUG (and NZ Steel) agreed with the Authority’s proposal.
- 109 Mighty River Power agreed with the Authority’s proposal, suggesting that the Authority should focus on improving spot price signals instead.

- 110 Meridian Energy agreed with the Authority's proposal. It considered that demand-response payments would essentially be rewarding responsive demand twice as they already avoid high prices, and that this sends an inefficient signal. It agreed with the Authority's view that demand-response payments create distortions arising from the need to set a baseline level of demand, and from uplift fees required to fund payments. Meridian Energy suggested the Authority instead ensure there are no barriers to purchasers participating in the dispatchable demand regime.
- 111 Neil Walbran Consulting agreed with the Authority's proposal, and suggested a two-settlement market would better address demand-side incentives.
- 112 Norske Skog suggested it was unclear what problem would be solved by providing demand response payments. It suggested that a better way to increase load-management by consumers paying fixed prices would be to roll out half hour meters, aggregate their demand, and offer it as dispatchable demand.
- 113 Nova agreed with the Authority's proposal, suggesting that moving to real-time pricing is the better solution to enable more demand-response.
- 114 NZX agreed with the Authority's proposal, suggesting that the Authority should instead develop the dispatchable demand regime to encourage further uptake by industrials. NZX considered that efficient spot price signalling provides the right incentives for participants to reduce demand, and that improved spot pricing and new technology may prove to be sufficient to provide more demand-response.
- 115 Orion partially agreed with the Authority's proposal. While it considered that there is a risk of paid-for demand response free-riding on other response, Orion supported consideration of the wider role of demand-side management in supporting more accurate forecasting of demand, and shaping demand to support lower-cost dispatch over the day. It suggested that optimisation over periods longer than a half hour could lead to superior outcomes.
- 116 Pioneer Generation agreed with the Authority's proposal, as it considered that further investigation would likely provide little value, and real-time pricing would have greater benefits in terms of providing for demand response.
- 117 Smartwin agreed with the Authority's proposal, suggesting that paid-for demand response is an inefficient market distortion, and that other markets have been unable to prevent gaming and ensure reliable performance.
- 118 Transpower agreed that paid-for demand response should not be a priority for the Authority in 2015/16, but supported the Authority's work to develop demand-response principles, which will support its own work in this area.
- 119 Trustpower agreed with the Authority's proposal, and suggested the Authority assess the benefits gained from Transpower's demand-response programme to inform its position.

Question 6: Do you agree that the Authority should not explore mandatory capacity products in 2015/16? Please explain your reasoning.

Question 6 feedback	No. out of 18	Parties
Parties that provided feedback in response to this question	17	All except Genesis Energy
Parties that clearly agreed with the Authority's proposal to not explore mandatory capacity products in 2015/16	15	emhTrade, EnerNOC, Flick, MEUG (and NZ Steel), Mighty River Power, Meridian Energy, Neil Walbran Consulting, Nova, NZX, Orion, Pioneer Generation, Smartwin, Transpower, Trustpower.
Parties that clearly disagreed with the Authority's proposal	1	Contact Energy
Other	1	Norske Skog

- 120 Contact Energy disagreed with the Authority's proposal, and expressed a desire for a cost-benefit analysis to be undertaken into a capacity market. Contact Energy considered that the closure of Southdown signals the need to consider paying for secure supply due to a lack of capacity being available.
- 121 emhTrade agreed with the Authority's proposal.
- 122 EnerNOC considered that improving the energy market via real-time pricing and an ahead market should have priority and is a sufficient undertaking for now. However, EnerNOC disagreed with the criticisms of energy-plus-capacity designs, suggesting that these markets can allow for more cost effective risk management for all parties. It suggested that energy-plus-capacity designs are best for markets with rare but extreme peaks in demand, as an energy-only market would require very volatile prices to provide for adequate investment incentives in that environment. It suggested that, because New Zealand is more-often energy constrained, the capacity price would likely be very low and have minimal effect on behaviour. EnerNOC suggested that if supply and demand characteristics appear likely to change, such that capacity is more often scarce, then the Authority should further consider a capacity market well in advance of that transition.
- 123 Flick agreed with the Authority's proposal, suggesting that a well-functioning energy only market and competitive hedge market are likely to provide greater benefits than a capacity market.
- 124 MEUG (and NZ Steel) agreed with the Authority's proposal.
- 125 Mighty River Power agreed with the Authority's proposal, and did not consider there to be any benefit in introducing a capacity market.
- 126 Meridian Energy agreed with the Authority's proposal. It considered that the energy only market has supported efficient investment (and retirement) without subsidy, and that a capacity market would confuse investment decisions and create instability.

- 127 Neil Walbran Consulting agreed with the Authority's proposal. It did not consider that there is a capacity problem to be addressed, and thus suggested that a capacity market would just create complications.
- 128 Norske Skog suggested they would not want to pay for idle capacity, but would shut down their plant to free up capacity for a suitable payment.
- 129 Nova agreed with the Authority's proposal, suggesting there is no evidence of a likely benefit, but that costs would likely be high. It suggested that both peak demand and hydro shortages would need to be considered under such a procurement arrangement, which would mean also paying for thermal fuel reserves. It suggested that rational risk management practices should ensure sufficient reserves.
- 130 NZX agreed with the Authority's proposal given current capacity availability, but suggested there is value in supporting initiatives that ensure security of supply, with a focus on new technology investment.
- 131 Orion agreed with the Authority's proposal. It considered generation investment on a purely commercial basis to have been successful, and suggested it will be interesting to see how the market responds to disruptive technology.
- 132 Pioneer Generation agreed with the Authority's proposal. It considered that the improvements to the futures market have enabled better management of dry year risk, and it supported continued improvement in the hedge market, rather than investigation of a capacity market.
- 133 Smartwin agreed with the Authority's proposal, and suggested that capacity markets are not necessary at present, are open to distortion and non-performance, and would be made redundant by an ahead market.
- 134 Transpower agreed with the Authority's proposal, and considered current investment incentives to be working adequately.
- 135 Trustpower agreed with the Authority's proposal. It suggested that prudent risk management should support capacity adequacy, rather than being mandated by regulations, and that the stress tests are sufficient in this regard. It also suggested that the system operator's annual assessments of capacity margins are sufficient to highlight capacity risks, and that the energy-only market has proved sufficient to incentivise capacity investment to date.

Appendix A Consultation paper questions

	Question
Q1	Do you agree with the choice of high level spot market design issues we've considered? If not, what other issues should be evaluated and why?
Q2	Do you agree that the Authority should explore real time pricing options in 2015/16? Please explain your reasoning.
Q3	Do you agree that the Authority should not explore zonal pricing in 2015/16? Please explain your reasoning.
Q4	Do you agree that the Authority should explore introducing an ahead market (and shorter gate closure) in 2015/16? Please explain your reasoning.
Q5	Do you agree that the Authority should not explore 'paid for' demand response programmes in 2015/16? Please explain your reasoning.
Q6	Do you agree that the Authority should not explore mandatory capacity products in 2015/16? Please explain your reasoning.