Financial Transmission Rights development

Issues and options paper

Submissions close: 9 May 2017

28 March 2017

Executive summary

The Authority is considering opportunities to further develop the market for financial transmission rights (FTR). FTRs are financial contracts that help parties to manage the risk of wholesale electricity prices being different between two points on the grid ('locational price risk').

We have identified twelve options for improving the FTR market, and how it integrates with other markets for managing wholesale electricity price risk.

We consider that all twelve options have some merit. We are seeking views to help us decide which of them, if any, are worth considering further, and if so, how we should progress them.

Effective management of locational price risk supports wholesale and retail market competition. This is because parties are more likely to operate in regions that are subject to locational price risk if they can manage that risk in a straight forward manner.

It also supports reliability and efficiency. This is because parties that have a clear view of the risks and can manage them well are better able to make good decisions about how to operate their assets, and invest in new assets.

The FTR market has been developing well since its inception in 2013. However, we expect that we could enhance its value by making improvements in five key areas.

1. *Reducing barriers to participation*. The complexity of the FTR market limits participation because understanding the arrangements, analysing the products, and participating in monthly auctions involves time and cost. Additionally, parties that are not based in New Zealand are excluded from directly participating.

2. *Improving the ability to purchase or resell FTRs as and when desired*. There is an inherently limited supply of FTRs, they are only auctioned periodically, and most parties that acquire FTRs hold them until they expire, making it difficult to acquire them outside of auctions.

3. *Reducing volatility in the daily assessment of an FTR's value.* A market price for FTRs is only determined periodically due to the frequency of auctions. Because of this, the clearing manager often has to estimate the FTR's value. That estimate can vary substantially over time, which affects the amount of prudential security that FTR holders lodge with the clearing manager to secure settlement.

4. *Improving the ability to cover locational price risks with FTRs*. Some parties need to manage price risk at locations that FTRs don't cover. They may also need to cover locational price risk for different amounts of electricity at different times of the day, week or month. However, FTRs cover only a consistent amount of electricity over a whole month.

5. *Improving the ability to mesh FTRs with other commonly used risk management products.* It is common practice for parties to establish a portfolio of products to manage risk. For example, they might combine FTRs that manage locational price risk with other financial risk management contracts that cover the remaining elements of wholesale electricity price risk. However, there are some differences in the structure and availability of the various contracts, which might make it harder than it needs to be to build a comprehensive risk management portfolio.

A successful FTR market also affects, and is affected by, the markets for other products for managing wholesale electricity price risk. New Zealand electricity derivatives are traded on the

Australian Securities Exchange (ASX), and the Authority has been encouraging the continuing development of this market. Two new electricity price cap products will become available on ASX in mid-2017, and developments in the FTR market could support their success and vice versa.

We have identified twelve developments that could improve the FTR market, and how it integrates with other markets for managing wholesale electricity price risk.

We are seeking high-level comment on the merits and priority of eight of the twelve potential developments. The eight developments would:

1. increase the number of locations where participants can use FTRs to manage price risks
2. help participants to better understand the FTR market and how they can benefit from it.
3. auction FTR contracts more regularly.
4. introduce FTR contracts that cover only those locational price risks that arise during certain critical times of the day and week.
5. introduce FTR contracts that cover a calendar quarter, on top of the current month-long contracts.
6. introduce FTRs that allow parties to cover-off their price risks further in advance.
7. split FTRs into two tranches. One tranche would provide certainty that the purchaser will receive the full payment due under the contracts. The other would feature cheaper contracts but they would come with a risk that they might not be paid in full all the time.
8. improve the transparency around the operation of the FTR market and its participants.

If any of the eight developments are worth taking forward, we think our service providers (FTR manager and clearing manager) can further assess and progress them as appropriate. However, we will use the comments we receive to decide the priority of these developments.

We are also seeking more detailed comment on the other four proposed developments. These could potentially provide a long-term benefit to consumers, but might do that best if we implement some of them together. These four developments would:

9. allow parties that are based in Australia to directly participate in the New Zealand FTR market. There are parties in Australia that trade the New Zealand electricity derivatives on the ASX, and there might be benefits for both markets if they can operate directly in both markets.
10. allow parties to privately fund FTRs and sell them through the existing FTR auctions. This would mean the supply of FTRs doesn't have to be limited by what the 'loss and constraint excess rentals' can fund, as it currently is.
11. develop a new financial derivative of an FTR that would be traded on an exchange, and would provide another way to manage locational price risk. The ASX could add this derivative to its existing range of New Zealand electricity derivatives. This new product would be privately funded, and would trade in parallel to FTRs. Again, this development would mean the supply of financial contracts for managing locational price risk doesn't have to be limited.

12. support developing a platform that parties could use to trade FTRs over the counter, outside of the periodic auctions, so that they could be easily bought and sold at any time.

We think there could be a lot of benefits from allowing parties that are based in Australia to directly trade FTRs. However, because the supply of FTRs is limited, existing participants would have to compete harder to acquire them, and that could make it harder for them to manage locational price risk. We think the other options could help avoid these potentially negative results, and allow the Australian-based parties to directly trade in a way that provides the most benefits to consumers in the long term.

However, we would like to hear from stakeholders so we can assess whether and how we should further progress any of these four developments.

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1 What you need to know to make a submission

What this issues and options paper is about

1.1 The Authority is seeking stakeholder views on twelve potential developments to the market for Financial Transmission Rights (FTRs).

1.2 The Authority is seeking detailed views on four of these developments. Specifically:

(a) whether there should be wider participation in the FTR market, and especially whether parties based in Australia should be allowed to participate directly

(b) whether the Authority should pursue either of two options for overcoming limitations in the supply of FTRs:

(i) allowing parties other than the FTR manager to originate FTRs

(ii) developing an FTR derivative product

(c) whether the Authority should provide support for secondary trading of FTRs, for example, by facilitating establishment of a bulletin board facility.

1.3 The Authority is also seeking views to inform the merits and priority of eight other potential developments. However, if any of these developments are worth taking forward, the Authority considers that its service providers are best placed to further assess and progress them as appropriate.

1.4 At this stage, we are seeking views only on the broad direction of development for the FTR market. However, it is possible that specific developments could be implemented through the FTR Allocation Plan (allocation plan) and the clearing manager's operational documents, or through other market facilitation measures. This means further consultation by the Authority may not be necessary. Further consultation would be carried out by the FTR manager or clearing manager.

How to make a submission

1.5 The Authority invites you to make a submission on this paper.

1.6 Please note the Authority will publish all submissions it receives. If you consider that it should not publish any part of your submission, please indicate which part, set out the reasons why you consider the Authority should not publish it, and provide a version of your submission that the Authority can publish (if it agrees not to publish your full submission).

1.7 If you indicate there is part of your submission the Authority should not publish, the Authority will discuss it with you before deciding whether to publish that part of your submission.

1.8 However, please note that all submissions the Authority receives, including any parts that it may not publish, can be requested under the Official Information Act 1982. This means the Authority would be required to release your submission unless good reason existed under the Official Information Act to withhold it. The Authority would normally consult with you before releasing any material that you said we should not publish.

1.9 The Authority would prefer to receive submissions in electronic format (Microsoft Word) in the format shown in Appendix A. Submissions in electronic form should be emailed to

submissions@ea.govt.nz with "Issues and Options Paper – Financial Transmission Rights development" in the subject line.

1.10 If you cannot send your submission electronically, post one hard copy to either of the addresses below.

Postal address	Physical address
Submissions Electricity Authority PO Box 10041 Wellington 6143	Submissions Electricity Authority Level 7, ASB Bank Tower 2 Hunter Street Wellington

When to make a submission

1.11 You should deliver your submission by email or otherwise so it arrives by **5pm** on **9 May 2017**. Please note we are unlikely to consider late submissions.

1.12 We will acknowledge receipt of all submissions electronically. Please contact the Submissions Administrator if you do not receive electronic acknowledgement of your submission within two business days.

2 Introduction

2.1 This paper describes options for developing the market for FTRs. We seek your views on twelve potential developments that we consider could improve the FTR market, and the way it integrates with other markets for managing wholesale electricity price risk. Your comments will help us to decide if any of these developments are worth progressing further. We are interested in high level comments on eight of the proposals and detailed comments on the remaining four.

3 Financial Transmission Rights help manage risk

FTRs allow purchasers to manage locational price risk

3.1 FTRs are a type of risk management or "hedge" contract that protects against the risk of electricity spot prices being different between two points on the electricity grid in the same trading period.

3.2 Price differences between two points on the electricity grid can be significant at times. Specifically, when parts of the transmission infrastructure are operating near their limits, or assets are out of service due to maintenance or a fault. The potential for these price differences creates risk for parties that are:

(a) buying wholesale electricity at one point on the grid and selling wholesale electricity at another point on the grid

(b) buying or selling wholesale electricity at one location, but managing the associated spot price risk by using a hedge contract priced at another location.

3.3 Parties can reduce this risk by buying an FTR at an organised auction. An FTR pays its purchaser the difference in spot price between two points on the grid (assuming the FTR is not revenue inadequate, discussed in more detail in section 3.14(c)), for a contracted amount and period.

3.4 If a party were selling electricity at Benmore, and buying it at Otahuhu, they might buy 'obligation' FTRs for electricity flowing from Benmore (the source) to Otahuhu (the sink). Under these FTRs, they would receive a payment when the price at Otahuhu was higher than Benmore, and they'd pay the difference when the opposite was true. In effect, the FTR allows this party to sell electricity for the same price they buy it for, less the cost of the FTR.

3.5 Similarly, a party selling electricity at Otahuhu and buying it at Benmore might buy an 'option' FTR in the opposite direction—that is, with Otahuhu as the source, and Benmore the sink. Under that FTR, they would receive a payment whenever the price at Benmore was higher than the price at Otahuhu. Because it is an 'option' FTR, they wouldn't have to pay when the opposite was true. It might be unlikely the Benmore price would be higher than the Otahuhu price. However, for any trading periods when it was, the FTR reduces the purchaser's risk that their income would be less than their expenses.

3.6 For both types of FTR, the purchaser buys the FTR for the price at which it clears at auction. Each FTR covers a month-long period sometime in the future. After the end of that contract period, the purchaser will have received payment equal to:

(a) for an obligation FTR, the sum of all the differences in spot prices—both positive and negative—that occurred in each trading period during that month

(b) for an option FTR, the sum of the differences in spot prices—but only positive differences - that occurred in each trading period during that month.

3.7 Both the obligation and option FTRs give the purchaser some certainty about costs. The purchaser pays a known price for the FTR, to avoid risk from a difference in spot prices that isn't known in advance, and can on occasions be substantial.

3.8 Effective management of locational price risk is important, because it supports:

(a) wholesale and retail market competition. Parties are more likely to operate in regions that are subject to locational price risk if they can manage the associated price risk in a straight forward manner

(b) reliability and efficiency. Parties that have a clear view of the risks and can manage them well, can make better decisions about how to operate their assets, and where, what, and when to invest in new assets.

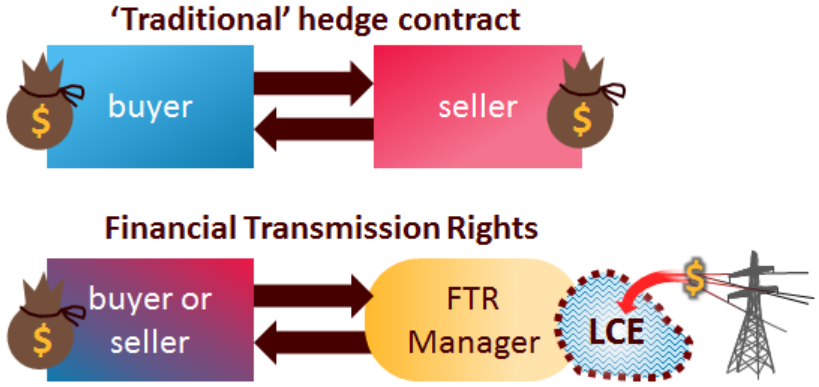
3.9 FTRs are similar in some respects to other hedge contracts that parties use to manage electricity price risk, such as contracts for differences (CfDs). For a CfD, a party agrees to pay, or be paid, a fixed price for electricity at a specific location, rather than the spot price that cannot be known in advance. Like CfDs, FTRs are purely financial arrangements. Settlement doesn't involve physical delivery of electricity, and so they are described as derivatives.

3.10 However, FTRs are different from other hedge contracts in some important ways:

(a) While other hedge contracts are traditionally between a buyer and a seller (potentially with an exchange or middle-person in between), there is no end counter-party to an FTR. Instead, the FTR manager allocates FTRs to parties.

(b) Other hedge contracts are settled by participants drawing on their own funds. However FTRs are centrally funded from FTR auction revenues and loss and constraint excess rentals (LCE), and are ultimately supported by the FTR pool administered by the clearing manager.

Figure 1: Comparison between FTRs and traditional hedge contract



Source: Electricity Authority

3.11 LCE funds provide a pool of money that exists because of the price differences that FTRs are intended to protect against. Spot prices are calculated using marginal losses and congestion. Marginal losses and congestion result in spot prices on average being higher where electricity is consumed, and on average being lower where electricity is generated.

3.12 Because spot prices are calculated like this, the amount of money paid by all electricity purchasers is more than is needed to reimburse all sellers, which leaves a surplus.

3.13 Ordinarily, LCE funds are paid to Transpower, which rebates them to parties that pay transmission charges. However, with FTRs, some of the LCE funds are set aside, and parties essentially bid for the right to a share of these reserved funds.

Important dynamics of the FTR arrangements

3.14 Paragraphs 3.1 - 3.13 explain FTRs at a very high level. This section outlines some important dynamics of FTRs that are relevant to the issues discussed later in this paper.

(a) **There are currently 40 different FTR products available**. Each FTR contract covers 0.1 MW for a single calendar month, and these contracts are auctioned as early as two years before settlement. The 40 FTR products vary in three dimensions:

(i) Location – FTRs are available to cover spot price differences between any two of five locations, called 'hubs': Otahuhu, Haywards, Islington, Benmore and Invercargill.

(ii) Direction – FTRs can relate to spot price differences in either or both directions between the two locations referenced in a particular FTR contract. For example, it might relate to the spot price at location A minus spot price at location B, or the spot price at location B minus spot price at location A.

(iii) Type – FTRs can be either an option or an obligation. An option FTR is essentially a one-way FTR, whereby the holder receives the sum of half-hourly trading periods with positive differences in spot price at the two specified locations. An obligation is a two-way FTR, whereby the holder receives or pays the sum of all the half hourly trading period differences in spot price at the two specified locations, whether they are positive or negative.

(b) **The FTR manager initially allocates FTRs through auctions.** Parties wanting to acquire FTRs, or to sell previously acquired FTRs, can participate in auctions that the FTR manager administers. The auctions:

(i) are held monthly

(ii) offer only a restricted supply at each auction, for a restricted range of FTR contract periods, with the total supply released gradually over time through a series of auctions. Currently each FTR month has portions of its full release capacity auctioned in nine different auctions. From April 2017 this is to be raised to 12 auctions per contracted month

(iii) are held separately for FTRs that are being made available for the first time (primary auctions), and FTRs that have already had some initial supply allocated through a primary auction (variation auction)

(iv) are single-stage, sealed-bid auctions, that is, participants submit their bids without knowing the competing bids, and then the FTR manager processes all the bids through the auction in one step

(v) aim to maximise the value of the FTRs sold, through a complex optimisation process. To be successful, bids don't just have to be competitively priced compared to other bids for the same product. They must also compete

against bids for other FTR products that would use common parts of the transmission grid over the same period. This is because there is limited capacity to transmit electricity.

(vi) set a market price for each auctioned FTR product for each month, based on the lowest-priced bid needed to exhaust the available supply, as determined through the optimisation process.

(c) **Revenue from FTR auctions and the available LCE is what funds FTRs.** The funds will either be:

(i) more than enough to settle the FTRs that have been allocated, in which case the residual amount is added to the proportion of LCE not used for FTRs, which Transpower rebates back to transmission customers

(ii) not enough to settle the FTRs that have been allocated, in which case partial payments are made on a pro-rata basis. The FTR manager does not take on any financial liability in issuing FTRs. Therefore, holders of FTRs are exposed to this risk of "revenue inadequacy".

(d) **The FTR manager determines the grid scaling factor which limits the supply of FTRs for each future month, and affects the LCE that funds them**. This depends on how much projected capacity there is for electricity to flow between FTR locations when price differences occur. To assess this, the FTR manager relies on forecasts of the future grid capacity and configuration, with allowances for maintenance and outages. The FTR supply affects:

(i) revenue inadequacy. The risk of revenue inadequacy exists because of the potential for estimated and actual electricity flows—and hence LCE—to differ.[1] The FTR manager has an objective to auction a sufficient supply of FTRs to target the settlement of FTRs to be revenue inadequate one month in a year. This objective is intended to discourage the FTR manager from being overly conservative in determining the FTR supply provided at FTR auctions

(ii) the approach to auctions. By releasing the limited supply of FTRs gradually, availability is maintained over time. This ensures that a market price is established at intervals. It also prevents the FTRs from being over-issued, given that estimates of future grid capacity, and therefore available LCE will become more accurately forecast as the settlement period approaches.

(e) **A party that holds an FTR can sell it again if they decide they no longer want it.** They can do this through:

(i) variation auctions. They would submit an offer to sell the FTR at the auction, which would be cleared if their asking price was lower than the eventual price set in the auction

[1] This might occur if, for example, there was an unplanned outage of the HVDC, creating price separation between Benmore and Haywards/Otahuhu. In that instance, the FTR manager may have sold more megawatts of FTRs than what the HVDC was capable of delivering in practice. Therefore, the LCE revenue when prices separated would be lower than what was necessary to pay out that price difference for the allocated FTRs.

(ii) a private trade. In this instance, two parties negotiate an over-the-counter transaction, the FTR is "reassigned" to a new owner whose name is shown in the FTR Register maintained by the FTR manager.

(f) **Holders of FTRs must lodge prudential security with the clearing manager to target full settlement in the event of default**. The clearing manager calculates the amount of prudential security required for each FTR product, which it updates each trading day as the value, or Daily Settlement Price (DSP), of each product changes. The clearing manager assesses total prudential security requirements against a participant's net FTR position (that is, an FTR in one direction can offset the prudential security required for an FTR in the opposite direction). FTR prudential security requirements can offset a participant's prudential security requirements for the spot electricity and ancillary service markets. They can also take account of any hedge settlement agreements a participant has lodged with the clearing manager. However, if an FTR participant were to default, only FTR holders would be affected by any shortfall in FTR settlement funds. Likewise, a default of a spot electricity and ancillary services market participant could only affect settlement in those markets.

The FTR market has developed since it was introduced in 2013

3.15 Since 2013, there have been positive developments in the FTR market, led by both the Authority and the FTR manager, with support from stakeholders.

3.16 FTRs first began trading between Otahuhu and Benmore in June 2013, and the market arrangements have continued to develop since then. There is significant scope for the FTR market to develop organically. The Code[2] sets out the design of the FTR Market at a high level, with most of the detailed design set out in the allocation plan, and the clearing manager's operational documents. The clearing manager can initiate draft changes to its own documents, which the Authority approves. Changes to the allocation plan can be initiated by:

(a) stakeholders

(b) the FTR manager

(c) the Authority.

3.17 Changes to the allocation plan are subject to the Authority's approval, and the Authority therefore assesses any changes against its statutory objective. The Authority may also need to prioritise funding (which is subject to consultation on its appropriations) to pay for any necessary development of the market systems.

3.18 Through this market-led process, there have been several developments in the FTR market since it was introduced in 2013, including:

(a) In 2014 participants became able to sell back FTRs that they had previously purchased, through variation auctions.

(b) FTRs hubs were extended to include Haywards, Islington and Invercargill in November 2014, and a new process for adding further FTR hubs was introduced in 2016.

[2] That is, the Electricity Industry Participation Code 2010.

(c) The clearing manager has made incremental improvements over time to the way it assesses the FTR DSPs.

(d) The FTR manager reviewed the assumptions it uses to determine the supply of FTRs in 2016, which resulted in a 15% increase in quantities available in auctions.

(e) The number of contract periods available at each auction will be increased from nine to 12 in April 2017.

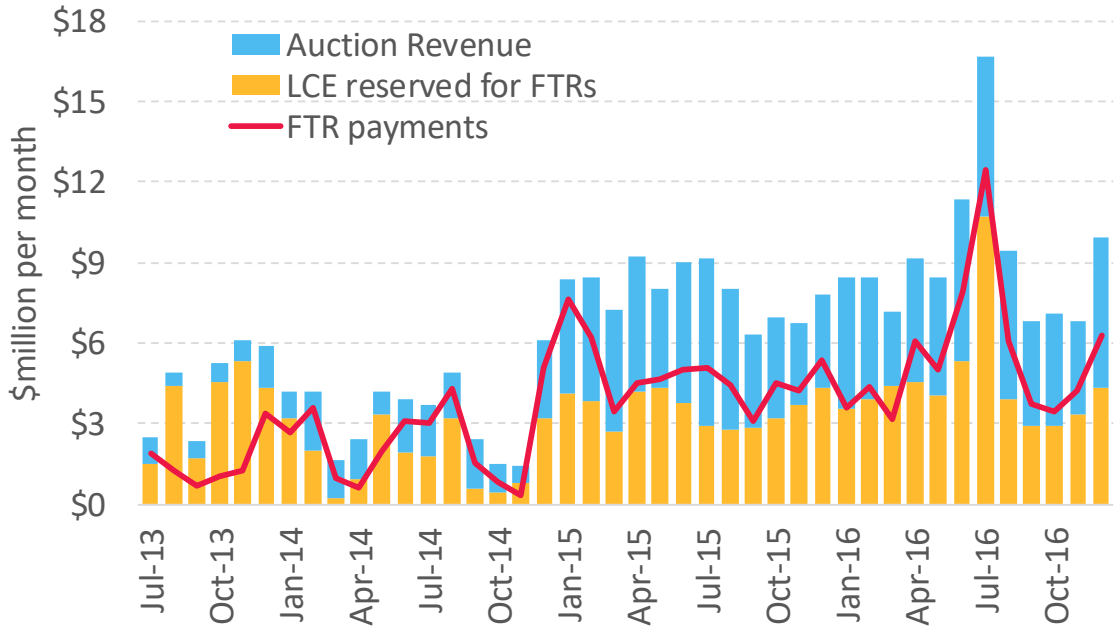
3.19 The Authority has also pursued various market facilitation measures that have affected the FTR market. For example:

(a) The lot size of New Zealand electricity futures and options available on the Australian Securities Exchange (ASX) were reduced from 1 MW to 0.1 MW. This has allowed parties to more accurately match their FTR and ASX position.

(b) The Authority's Wholesale Market Information project will enhance the disclosure and availability of wholesale market information, which affects FTR valuations. The Wholesale Advisory Group contributed its advice to this project.

3.20 Figure 2 shows the total funds available for each month's FTR settlement. The funds consisted of the LCE that was available for FTR settlement, and the auction revenue earned for each settled period (month) since the FTR market began. Figure 2 also shows the total payments made to settle FTRs. The gap between the red line and the top of each bar represents the revenue excess. If revenue was inadequate this would be indicated if the red line was above the full bar. This has never happened.

Figure 2: Available funding versus payments for FTRs since inception



Source: Electricity Authority using FTR manager data

3.21 From Figure 2 we can see that:

(a) The FTR manager has an objective to auction a sufficient supply of FTRs to target the settlement of FTRs to be revenue inadequate one month in a year. However, there have not been any instances of revenue being inadequate since the market

began, which means the FTR manager has not met its one-in-twelve objective over this period. As discussed, the FTR manager recently reviewed its processes around determining the supply of FTRs. Its decision to increase the grid scaling factor by 15% is likely to help it achieve this objective in future.

(b) Auction revenue often covered a significant portion—and occasionally all—of the funds required to meet FTR payments, but this ebbed and flowed. This suggests FTR auctions have been reasonably effective at discovering the long-run expected value of an FTR, with the actual value varying based on real-time system conditions (for example, hydrology, outages).

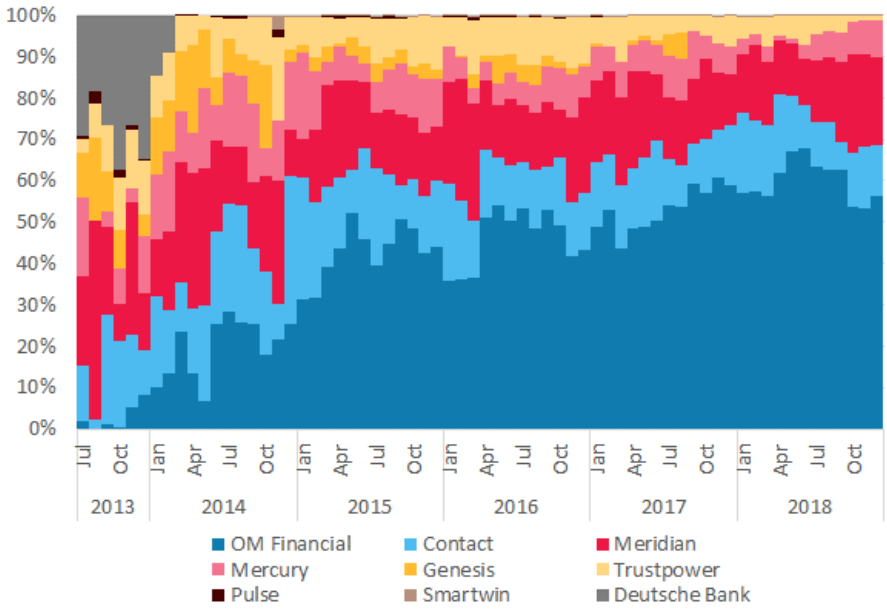
(c) In July 2016, a large North Island price spike substantially increased both available LCE and FTR settlement payments. It is these sorts of unexpected price events that auction revenue would be unlikely to cover, instead drawing heavily on available LCE. In July 2016, the price spike made a larger than normal amount of LCE available. However, if the price spike had occurred because important transmission assets, such as the HVDC, were not available, the amount of LCE would not have been so large.

3.22 Figure 3 shows who FTRs have been allocated to for each contract period—those that have expired, and those that are yet to settle. It shows that the number of direct participants has been fairly static over time, but the proportion traded by each direct participant has changed.

3.23 In particular, OM Financial has increased its share of allocated FTRs. It has so far been allocated around half of all FTRs for 2018 (noting only a portion of the full supply has so far been allocated). However, OM Financial does not trade on its own behalf. The Authority understands that it trades on behalf of multiple parties, some that are not registered FTR participants, and some that are, but that wish to trade anonymously. It is therefore difficult to tell how many parties are using FTRs, and to what extent this has changed.

3.24 Figure 3 also shows that Deutsche Bank was initially active in the FTR market. However, due to a general move away from trading energy derivatives worldwide, it ceased trading in New Zealand electricity derivatives in 2013.

Figure 3: Proportion of FTRs allocated to participants by contract period



Source: Electricity Authority using FTR Registry data

3.25 The Authority considers that the FTR market is generally functioning well, and that its progress to date has been very positive.

4 There are opportunities to improve FTR arrangements

FTRs could be more efficient for managing risk

4.1 Some particular features of FTRs may limit how useful they are for some parties. The twelve developments being considered by the Authority aim to address these limitations.

4.2 Specifically, the suggested developments have been targeted to address five issues:

(a) barriers to participation in the FTR market

(b) limited ability to purchase or resell FTRs as and when desired

(c) volatility in the daily assessment of an FTR's value (DSP)

(d) inability to cover all locational price risks with FTRs

(e) difficulty in meshing FTRs with other commonly used hedging products.

4.3 Each of these is explained in more detail below.

Issue 1: Barriers to participation in the FTR market

4.4 There are parties that would like to participate in the FTR market, but find they can't do so efficiently.

4.5 There are two key barriers to participating in the FTR market.

4.6 The first is that understanding FTRs and the FTR market can be challenging. At its surface, the concept of FTRs is quite simple – you buy an FTR at auction; you get paid or pay the difference in spot prices between two points on the grid. However, as the discussion in paragraph 3.14 suggests, the way the FTR market operates is much more complex than this high-level concept.

4.7 Complexity limits the number of parties that are likely to participate in the FTR market, because understanding the arrangements (including any decision to purchase at spot prices), analysing the various FTR products, and participating in monthly auctions involves time and cost.

4.8 The second key barrier is a blanket restriction on direct participation by parties that are not based in New Zealand. Under the current allocation plan, the FTR manager may accept a party as an FTR participant only if they are:

(a) a natural person resident in New Zealand

(b) a body corporate that is incorporated in New Zealand

(c) a person with a branch office or other substantial physical presence in New Zealand through which it conducts its FTR participation.

4.9 Parties that don't meet these criteria can trade FTRs through a third party that do meet the criteria, and that acts as an intermediary. However, some parties might not consider it desirable to trade FTRs through an intermediary. They might:

(a) find it more expensive than trading directly

(b) be able to meet the clearing manager's requirements for prudential security more easily than the intermediary's requirements (as intermediaries would set their own such requirements for their clients)

(c) worry that they could be affected by the default of other parties trading through the intermediary

(d) have policies that do not allow them to trade through parties who do not have at least their level of credit worthiness.

Issue 2: Limited ability to purchase or resell FTRs as and when desired

4.10 Participants might find FTRs more valuable for managing risk if they could access more of them, more often, and with lower search costs.

4.11 Parties may not be able to access or resell the FTRs they want, when they want, for three reasons:

(a) **The supply of FTRs is inherently limited.** As outlined in paragraph 3.14(d), the supply of FTRs is inherently limited to the amount that can be supported by the forecasted size of the grid and the related available LCE.

(b) **FTRs are only auctioned periodically.** As outlined in paragraph 3.14(b), auctions are held twice monthly, and only a restricted time range and quantity of product is available at each auction. From April 2017 an FTR covering a particular calendar month will typically feature at auction just 12 times over the course of its two-year life, an increase from the current nine times.

(c) **Secondary trading is low.** To date, holders of FTRs have tended to hold on to them until the FTRs expire. For all FTRs that have been sold at auction so far, at most only 5% have been sold back through subsequent auctions.[3] Further, only 0.25% of FTRs have been reassigned to someone else through a bilateral trade. Brokers can and do help parties find interested trading partners. Apart from these efforts by brokers, there is no marketplace for the reassigning of FTRs, so it can be difficult to find someone willing to trade, at an agreed price.

Issue 3: The assessment of an FTR's daily settlement price can be volatile

4.12 Parties may face costs because the assessment of an FTR's daily settlement price (DSP) can be volatile.

4.13 Each trading day the clearing manager reassesses the value of each FTR, producing a DSP. The changes in DSP reflect changes in expectations about the likely size and frequency, of price differences between FTR hubs, based on improved information. The DSPs can be inaccurate and quite volatile, because:

(a) A market price for FTRs is determined only periodically because each expiry is auctioned infrequently. This can result in material movements in the price from auction to auction. Prices for re-assignment trades are not considered when setting the DSP.

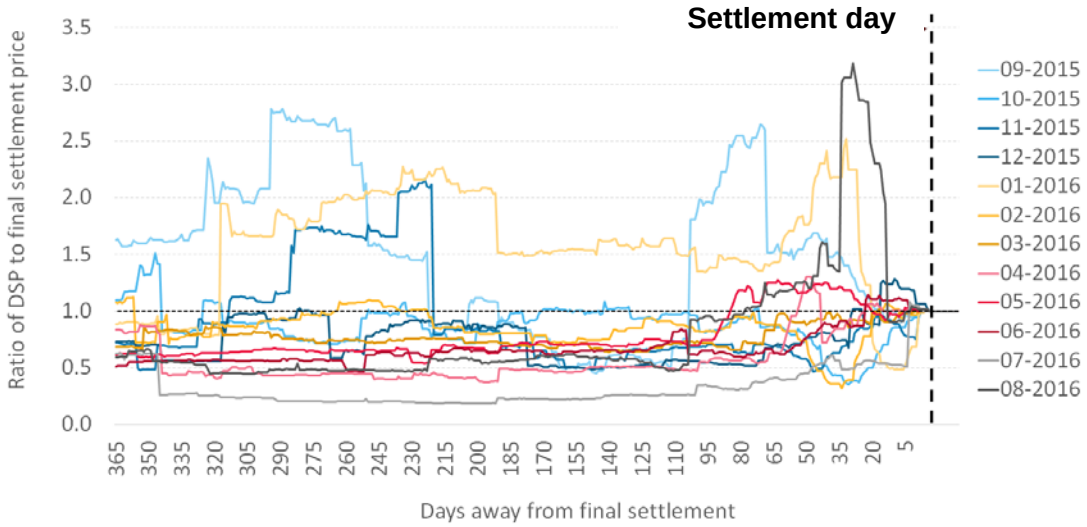
(b) In the absence of a market price, the clearing manager must estimate the value of the FTR each day. It does so by referencing ASX futures prices or drawing on EnergyLink's EMarket model, with an approved algorithm, to estimate future spot prices, and therefore spot price differences. In estimating the DSP for option FTRs, the clearing manager may use historic real-time price data within the calculation. Recent price spikes can have a significant impact on the result, even

[3] Based on data provided by the FTR manager

though they may be unlikely to reoccur. This was the case for the DSP for some August 2016 option FTRs, which was unrealistically high because the July 2016 price spike impacted it.

4.14 The historic volatility of DSPs is illustrated in Figure 4. Figure 4 shows how the DSP, as a proportion of the FTR settlement price, changed over the year leading up to settlement in August 2016. This is shown for twelve months of option FTRs between Benmore (source) and Otahuhu (sink). Sudden jumps and falls in the DSPs for a number of the FTR products are evident.

Figure 4: DSP as a proportion of FTR settlement price by lead time, for Benmore → Otahuhu option FTRs settled during the year ending August 2016



Source: Electricity Authority using Clearing Manager data

4.15 The clearing manager has made incremental improvements to the way it calculates DSPs, and continues to do so. It is currently reviewing its approach, with a view to removing volatility that is a product of the calculation methodology rather than the underlying volatility of the FTR product itself. However, the absence of a regularly-determined market price may mean that non-market related volatility is inevitable.

4.16 The main implication of the DSP is its effect on the amount of prudential security that a holder of FTRs must lodge with the clearing manager. A highly volatile DSP can hence impact cash-flow requirements for participants.

4.17 The clearing manager calculates prudential security requirements across all wholesale market exposures – including spot market and ancillary services purchases and hedge settlement agreements.

4.18 If the DSP were to be over-valued, the clearing manager's calculation of prudential security for an FTR holder (who is also a spot market purchaser) would be too low. It could even be zero, as was the case for some August 2016 FTRs. This would lower the holders' overall prudential security requirement for its spot market, ancillary services and hedge settlement agreement obligations. If the purchaser were to default, there would be a greater risk that the clearing manager would not have enough funds to fully settle all of these markets, resulting in only partial payments to generators.

4.19 Similarly, if the DSP were under-valued, participants would have to lodge more prudential security than is necessary, which may come at a cost for them, both in terms of interest costs and the management of scarce working capital.

4.20 Parties may also want to use the DSP to value FTRs within their own portfolios, and a volatile DSP could reduce its value for that purpose.

Issue 4: Inability to cover all locational price risk with FTRs

4.21 Parties could find FTRs more valuable if they allowed more locational price risk to be managed.

4.22 Participants are unlikely to be able to cover all their locational price risk with FTRs because:

(a) FTRs relate to a baseload of 0.1 MW in every hour within a calendar month. However, most participants will be managing price risks for load or generation that varies over time due to outage or profiles risks and changes in demand. There will hence be some residual risk from under-hedged or over-hedged load or generation.

(b) FTRs are currently available between five 'hubs', relating to nodes on the grid at Otahuhu, Haywards, Islington, Benmore and Invercargill. These five hubs were chosen on the basis that they would cover most locational price risks. However, there will be some residual risk for parties that are exposed to spot prices at other nodes.

Issue 5: Inability to perfectly mesh FTRs with other commonly-used hedge products

4.23 Parties might find FTRs more useful if they could more easily structure them to fit with other commonly-used hedge products.

4.24 FTRs and ASX futures and options are intended to be broadly complementary, so participants can combine them to manage risk. For example, FTRs:

(a) initially started trading between Otahuhu and Benmore, which are the same locations as for ASX futures

(b) cover 0.1 MW, and ASX futures and options now also trade at 0.1 MW (having been reduced from 1 MW in November 2015)

(c) cover a period of a calendar month, and ASX futures are also available on this basis for the near term.

4.25 While FTRs are complementary with ASX futures and options in these respects, they are not in others. Specifically:

(a) All FTRs are monthly contracts, whereas ASX futures are available only on a monthly basis for each of the nearest seven to nine months. For each of the nearest six months of these contracts, four participants have made a commitment to be available to buy and sell them every business day. For more distant periods, ASX futures are available for a quarter. These quarterly contracts cover three to four years ahead, and for each of them, four participants have committed to be available to buy and sell every business day. However, the three FTR contracts that cover a quarter are always auctioned at the same time, so there is some ability to mesh monthly FTRs with quarterly futures.

(b) FTRs are available out two years ahead, whereas ASX futures and options cover a minimum of three full calendar years (that is, three to four years ahead in total).

(c) All FTRs cover prices in every trading period during the contract period. ASX futures can also cover prices in every trading period. However, there are also ASX products that parties can use to selectively cover risk when it is high. The ASX quarterly peak product covers prices only during trading periods when demand (and hence price and risk) tends to be higher. However, these products do not have participants committed to being available to buy and sell them (often referred to as "market making"). Two ASX quarterly cap futures are scheduled to become available in calendar year 2017. These will protect against prices that exceed pre-determined levels.

4.26 Parties may be able to trade hedge contracts over the counter that fit more closely with their FTR position. However, over-the-counter contracts are increasingly being underwritten by ASX futures, and can require more time and effort to negotiate and trade.

FTR developments could improve efficiency in the wider hedge market

4.27 Developing FTRs could have benefits beyond the FTR market, because they form part of a wider framework for managing electricity price risk.

4.28 Participants manage various components of the risk through:

(a) standardised financially settled contracts on the ASX

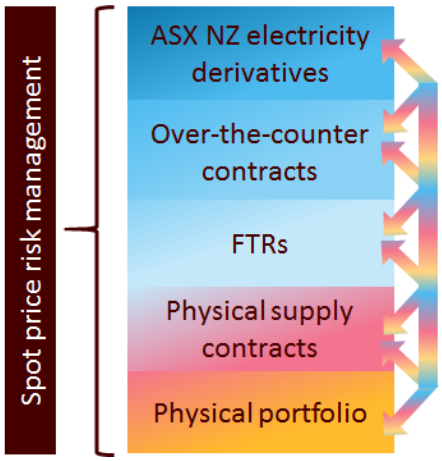
(b) more bespoke financially settled contracts in the over-the-counter market

(c) FTRs (financially settled)

(d) physical supply contracts

(e) physical management of their generation and / or load, including demand response.

Figure 5: Risk management framework



Source: Electricity Authority

4.29 These approaches to managing risk can feed-off and support one another, with improvements in one flowing into improvements in the others. For example:

(a) Parties could choose to use a combination of FTRs and futures at Otahuhu and Benmore to hedge their overall spot price risk, where they might otherwise rely on over-the-counter contracts. This can help to concentrate liquidity at Otahuhu and Benmore, which makes it easier to trade, and has benefits for pricing efficiency and transparency.

(b) Intermediaries can repackage futures and FTRs and sell them over the counter, potentially improving liquidity and competition in that market.

(c) Parties can use FTRs between Otahuhu and Benmore to underwrite trading of ASX products, and vice versa. The two markets provide forward price information that can inform the value of products in each, and create arbitrage opportunities that supports price efficiency.

4.30 Further enhancement of the FTR market could have wider benefits for risk management generally.

4.31 The Authority's Hedge Market Development project aims to improve arrangements for managing electricity price risk. It is a top priority project for the Authority, reflecting the importance of the hedge market to the wider electricity industry. Currently, the primary focus of the project is the development of a robust and regularly-priced cap product(s).[4]

4.32 In August 2016, ASX agreed to start a project to add two new cap products to its platform: a cap with a $130/MWh strike price and a cap with a $300/MWh strike price. Both caps are to be half-hourly-settled products. These products would limit a buyer's exposure to half-hourly spot prices above $130/MWh or $300/MWh respectively.

4.33 The Authority sees significant potential benefits from these two cap products. In particular, they will provide price signals to help parties make better decisions about asset investments and operation, thereby improving security of supply. They will also have benefits for retail competition and end-use consumers, because they will support the development of more robust and regular trading in other risk management products, and be valuable risk management tools in their own right.

4.34 ASX expects to make the two cap products available for trading by mid-2017. Developments in the FTR market could have flow-on benefits for participating and trading in other risk management products, and support the success of the ASX cap products. We already see prices of different risk management products inter-relating well.

Developing FTRs is consistent with the statutory objective

4.35 The Authority expects that improved FTR arrangements would promote all three limbs of the statutory objective:

(a) **Competition** would be improved in the:

(i) FTR and wider hedge market, because parties may be more inclined to actively participate in these markets than otherwise

(ii) wholesale market, because generators, consumers and service providers might be more likely to invest in regions that are subject to locational price risk

(iii) retail market, because retailers might compete more strongly to supply customers in regions that are subject to locational price risk.

(b) **Reliability** would be improved because of flow-on benefits for the wider hedge market that support improved investment decisions that affect system security (in terms of what, when and where to invest or operate).

[4] See the Authority's paper outlining its decision to focus on the development of a cap product: http://www.ea.govt.nz/dmsdocument/20183

(c) **Efficiency**, in terms of more efficient and transparent pricing of FTRs and other hedge products, would support:

(i) better decisions about investment regarding generation, demand-side assets and new technologies

(ii) better decisions about fuel management and operating.

Q1. Do you agree that further enhancing the FTR market could support the issues identified by the Authority, and provide benefits to the wider hedge market?

Q2. Are there other issues with the current arrangements for FTRs that we have not identified?

5 The Authority is considering FTR developments

We identified twelve potential FTR developments

5.1 Over the last three years, stakeholders, the FTR manager, clearing manager, and the Authority have identified various potential FTR developments. The Authority has accumulated a number of these into the following list of twelve potential developments. The following paragraphs give a high-level description of each one, and a brief outline of the benefits (why you might do it), and costs and risks (why you might not do it).

(a) **Allow for direct overseas participation in FTR trading**. Currently direct participation in the FTR market is limited to parties in New Zealand. This development would seek to reduce or remove this restriction.

Benefits:
- more participation brings improved price efficiency in FTR market
- flow-on benefits for liquidity in other hedge products and intermediary services

Costs / risks:
- risk of exposing FTR market to other countries' laws and financial regulations
- increased participation will increase competition for the limited volume of available FTRs

(b) **Allow parties other than the FTR manager to originate FTRs.** Currently, all FTRs are funded through auction revenue and available LCE, and this affects the number of FTRs that can be auctioned. This development would allow parties other than the FTR manager to originate FTRs—that is, a participant would fully fund the settlement of the FTR, rather than relying on auction revenue and the LCE. Under current arrangements, parties that hold an FTR can sell it back through variation auctions. This development would follow the same process: 'Originators' would offer to sell new FTRs at variation auctions, and earn the auction revenue for any FTRs that cleared the auction. The new FTR might not be allocated in the same way as it was offered. It might instead be used to increase the supply of FTRs between different locations that use similar parts of the grid.

Benefits:
- increased volume of FTRs available, potentially for different FTRs than what is being 'originated'
- uses existing FTR auction processes, so efficiency benefits for participants

Costs / risks:
- requires willing sellers
- costs to develop and operate market systems

(c) **Develop an FTR-like derivative product.** This product would be similar to FTRs in terms of their effect for managing risk. However, it would be more like a 'traditional' hedge contract, in that it would trade between buyers and sellers over-the-counter or on an exchange, and would not be backed by LCE.

Benefits:
- overcomes various limitations of FTR market—for instance, volume limits, auction frequency.
- supports price discovery / transparency for the clearing manager-settled FTR market, as market settlements would occur each trading day

Costs / risks:
- requires both a willing buyer and a willing seller for each trade, though not necessarily exactly the same paths
- has set-up costs and a potentially lengthy development time-frame

(d) **Support for secondary trading with bulletin board.** This would involve developing a bulletin board type facility to make it easier for parties to reassign their FTRs through private trades

Benefits:
- could improve ability to manage FTR portfolio
- could add some value in terms of price transparency / efficiency

Costs / risks:
- uncertain demand for such a development
- if the FTR manager were permitted to allocate FTRs to non-New Zealand parties, the use of a bulletin board for secondary trading could result in overseas parties being in breach of their securities laws or regulations
- set-up costs

(e) **Add FTR hubs under the allocation plan process.** The FTR manager now has a process for considering and potentially adding FTR products at new price hubs, and is consulting on extending FTR products to up to four new pricing hubs. The FTR manager is currently working with market participants and other interested parties to select up to 4 possible new hubs to be added to the FTR market. The FTR manager expects to make a recommendation on a number of additional hubs (0 to 4) to the Authority's Board during calendar year 2017.

Benefits:
- allows for management of price risk at more locations
- increases the total volume of FTRs available

Costs / risks:
- costs to develop and operate market systems
- increases complexity for participants, the FTR manager and the clearing manager
- risk that FTRs at some hubs will not trade often enough to achieve a reliable DSP

(f) **Support FTR education**. Understanding FTR products and how to trade them can be challenging, as there is a lot of complexity underlying the arrangements. There could be opportunities to support greater and more confident participation in the FTR market through education.

Benefits:
- more participation improves price efficiency in the FTR market
- improved risk management by participants, which can lead to broader competition, reliability and efficiency benefits

Costs / risks:
- time / cost involved in undertaking education

(g) **Auction all FTR contracts each month.** FTRs are currently allocated via a primary auction and variation auctions, and from April 2017 will have 12 contract periods auctioned each month. This development would see all open contracts auctioned at each monthly variation auction.

Benefits:
- improves ability to purchase and sell FTRs as and when desired

- improves efficiency of the DSP by more regular discovery of a market price

Costs / risks:
- increases risk of over-allocating FTRs, and hence revenue inadequacy
- costs to develop and operate market systems

(h) **Introduce a "peak" or "Super Peak" FTR product.** The FTR products currently available have a flat profile, relating to 0.1 MW in each trading period. This development would introduce a product that only related to certain times of the day that correlate with higher demand (that is, either full business day-diurnal day, or early morning and evening)

Benefits:
- would allow parties to more closely match their hedge cover to their load or generation profile
- could have flow-on benefits for liquidity in ASX peak futures

Costs / risks:
- costs to develop and operate market systems
- increases complexity

(i) **Introduce a quarterly FTR product or strip product.** All FTRs currently cover a period of a month. This development would introduce products that covered a calendar quarter. Alternatively, it could introduce the ability to trade a set of monthly products simultaneously (that is, buy all or none of the three FTRs covering a quarter)

Benefits:
- provides greater certainty that parties can access cover for the period they want
- increases alignment with ASX futures

Costs / risks:
- increases complexity
- costs to develop and operate market systems

(j) **Extend FTR price horizon.** FTRs are currently available for a period of 24 months. This development would extend the period to 36 months or longer

Benefits:
- improves ability to build risk management portfolio
- increases alignment with ASX futures

Costs / risks:
- increases complexity
- costs to develop and operate market systems
- costs for system operator in developing grid models that FTR manager uses to determine supply

(k) **Introduce FTRs with preferential pay-outs.** This development would introduce two tranches of FTRs. One tranche would retain the risk of partial payment if revenue was inadequate. A second tranche would give FTR purchasers greater certainty of full payment but the contracts would trade at a premium price.

Benefits:
- would allow for more volume to be made available, though some would be higher-risk

Costs / risks:
- costs to develop and operate market systems
- increases complexity, as parties would need to value the risk of partial payment in addition to general market risks

(l) **Improve transparency around FTR market.** This could involve developments such as publishing auction bids, or requiring disclosure from parties that trade FTRs through intermediaries

Benefits:
- could increase parties' confidence in participating in the FTR market
- could improve decision-making on issues affected by locational price risk and FTRs
- could assist with market monitoring and help inform further development

Costs / risks:
- potential compliance costs for participants

5.2 Table 1 summarises how the twelve potential developments are likely to help reduce the limitations discussed earlier in the paper, and support the efficiency of the hedge market more broadly. White indicates no contribution, yellow a moderate contribution, and green a strong contribution. Red indicates that a development could exacerbate existing problems.

Table 1: Contribution of options to FTR issues

Suggested development	Identified issues					Support wider hedge market
	1. Barriers to entry	2. Availability & access	3. DSP efficiency	4. Risk coverage	5. Portfolio integration	
a) Allow for direct overseas participation in FTR trading						
b) Develop an FTR-like derivative product						
c) Allow parties other than FTR manager to originate FTRs						
d) Support for secondary trading with bulletin board						
e) Add FTR hubs under allocation plan process						
f) Support FTR education						
g) Auction all FTR contracts each month						
h) Introduce a "peak" or "Super Peak" FTR product						
i) Introduce a quarterly FTR product or strip product						
j) Extend FTR price horizon						
k) Introduce FTRs with preferential pay-out priorities						
l) Improve transparency around FTRs						

Q3. Are there any other ways to develop the FTR market that we have not identified? If so, please describe them.

Q4. What are your views on the relative merits or priority of these twelve potential developments? Could some of them complement or substitute for others?

The developments should be further considered in two groups

5.3 The Authority considers there are merits to each of the twelve development options summarised in Table 1, and each could potentially contribute to the long-term benefit of consumers. It therefore considers the options should all be further assessed, to determine if they should be progressed. This should be done in two groups, which are outlined in Table 2.

Table 2: Two groups of development options

Group 1	Group 2
a) Allow for direct overseas participation in FTR trading	e) Add FTR hubs under allocation plan process
b) Allow parties other than the FTR manager to originate FTRs	f) Support FTR education
c) Develop an FTR-like derivative product	g) Auction all FTR contracts each month
d) Support secondary trading with a bulletin board	h) Introduce a “peak” or “Super Peak” FTR product
	i) Introduce a quarterly FTR product or strip product
	j) Extend FTR price horizon
	k) Introduce FTRs with preferential pay-out priorities
	l) Improve transparency around FTRs

5.4 The Authority considers that it needs to provide policy direction on the developments in Group 1, and is best placed to make a further assessment of their merits and decide if they should be progressed. This is because:

(a) Those developments may require changes to the Code if they’re to be implemented.

(b) Considering the merits of these developments – particularly developments (a) and (c)—is beyond the scope of the Authority’s service providers. This is because the developments could have benefits and costs that are not just limited to the FTR market and its participants.

(c) The Group 1 developments are complementary or substitute developments, and so the merits of one cannot be fully assessed without also considering the merits of the others.

5.5 The Authority considers that its service providers should lead the development options in Group 2. The FTR manager and clearing manager, in collaboration with stakeholders, are best placed to assess, prioritise and progress these developments in the first instance, because:

(a) The Group 2 developments are likely to have benefits primarily for the parties involved in trading FTRs. While there will be flow-on benefits for the wider market in terms of competition, reliability and efficiency, these benefits stem from improvements in the value of FTRs to users. This means that FTR users can make a reasonable assessment of the various developments for their:

(i) likely benefits

(ii) relative priority.

(b) The primary costs would be implementation costs, and the FTR manager and clearing manager are best placed to fully assess those.

(c) The Group 2 developments are likely to be put into effect through changes to the allocation plan or through market facilitation measures, rather than changing the Code.

5.6 The FTR manager is active in engaging with the FTR User Group on developments that may be of value.[5] The Authority wants to see the FTR market develop in ways that participants would find valuable, and that would be in the long-term benefit of consumers. The Authority would support the Group 2 developments where and how it can—for example, through market facilitation measures.

Q5. Do you agree the Authority should provide policy direction on the four developments in Group 1, but that service providers can lead further assessment of the developments in Group 2?

[5] The FTR User Group consists of FTR market participants. This group meets with the FTR manager as and when decisions in which they may be interested are considered by the FTR manager.

6 The Authority is exploring four of the potential developments

6.1 The Authority believes that the four development options under Group 1 in Table 2 have merit, but require further consideration—particularly because they could be related. The rest of this paper discusses the four options, and how they might fit together.

Allow for direct overseas participation

Extending participation could benefit the FTR and wider hedge markets

6.2 Extending participation to overseas parties is likely to result in benefits within and beyond the FTR market.

6.3 More participation in the FTR market could support more regular access to FTRs and improved price efficiency. This is because:

(a) Overseas parties are likely to trade predominantly on a proprietary basis, and hence may be less likely than others to hold an FTR until settlement. This may mean:

(i) there are improved opportunities to access FTRs in between auctions through reassignment trades

(ii) supply allocated in early auctions would be sold back through later auctions, potentially allowing for supply that is more attuned to the timing of demand from parties managing a physical risk position.

(b) Overseas parties trading primarily on a proprietary basis are likely to be interested in selling FTRs, increasing supply, noting that they would only be able to sell obligation FTRs, absent other developments.

(c) Overseas parties may compete to provide intermediary services, which could potentially improve access to FTRs for parties that can't or don't want to participate in the FTR market directly

(d) If there are more participants active in the FTR market:

(i) The diversity of views on the value of FTRs increases. The greater the number of informed participants, the more encompassing the information that prices incorporate.

(ii) Market prices may be regularly established for more FTR products, resulting in more reliable DSPs.

6.4 More diverse participation could also have some benefits in terms of market resilience, by reducing the market's exposure to the default of any individual participant.

6.5 However, the Authority expects that the primary benefits from extending participation to overseas parties would arise from increased trading and price efficiency in the wider hedge market.

6.6 Trading in FTRs can complement trading in ASX products, and the potential for arbitrage between the two markets improves the efficiency of both. Further, while also active in buying, overseas-based parties are often well resourced, and more willing than some New Zealand based parties to take on the risk of selling derivatives. These parties help

to make hedge products more available, and more efficiently priced for parties in New Zealand that are managing a physical risk position, which ultimately benefits consumers.

6.7 The Authority is aware of parties based in Australia that would like to be able to directly trade FTRs in New Zealand. These parties are already actively engaged in trading New Zealand electricity derivatives on the ASX. They have suggested that FTRs would be a valuable addition to their portfolios. Extending direct participation to non-resident parties would enhance their ability to provide intermediary services to physical market participants.

6.8 The ability to directly trade FTRs could improve overseas parties' ability to manage the risks from trading other hedge products. This contributes to the Authority's pursuit of a hedge market with robust pricing and regular trading. It is also likely to support the future pricing and trading success of the two ASX cap products that are to be introduced.

Overseas participation raises some legal issues but these can be overcome

6.9 The initial FTR market design restricted overseas participation because of concerns that the Authority or FTR market would be subject to, and inadvertently breach, overseas financial laws and regulations.

6.10 For example, one concern is that by dealing in financial products, the FTR manager and clearing manager may require licenses to operate in overseas markets. They could also become subject to information disclosure requirements that do not exist in New Zealand.

6.11 The Authority released an information paper in 2011 about the amendments it was making to the Code to implement the FTR market.[6] The paper stated that participation was to be restricted to New Zealand participants*, "unless otherwise approved by the FTR manager and provided any overseas party complies with all relevant local and international laws"*.

6.12 The FTR manager has so far taken a conservative approach to this issue, and so did not include any window of opportunity for overseas participation within the allocation plan.

6.13 It has been suggested that the FTR manager's legal concerns could be overcome by limiting further participation to parties that are resident, incorporated, or physically located in Australia only. This would likely capture most substantial parties interested in trading FTRs—since most interested parties of substantial size will probably have a registered office in Australia - so the full benefits would still be realised. It would also limit legal liability to a manageable number of jurisdictions.

6.14 The FTR manager has indicated to the Authority that it has received legal advice about its potential obligations under Australian laws and regulations. The clearing manager is likely to soon seek such advice as well.

6.15 The Authority has received separate legal advice that extending participation to Australia:

(a) would not breach any "favoured nation" clauses within international trade agreements

(b) would be consistent with the government objectives in our Closer Economic Relations agreement with Australia.

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[6] See http://www.ea.govt.nz/dmsdocument/9986

6.16 The Authority considers that extending participation to Australia would be a practical solution.

6.17 A participant also asked whether extending participation to overseas parties could create a risk of money laundering, by providing a vehicle to transfer funds between countries. This issue will be addressed in the advice the clearing manager is expected to seek.

There are also concerns about the limited FTR supply

6.18 Participants have raised three other concerns about extending direct participation in the FTR market to parties in Australia. These are that it would:

(a) result in a transfer of wealth outside of New Zealand

(b) increase FTR prices, making it more expensive for parties to access FTRs that were using them to hedge a physical position

(c) increase competition for the limited volume of FTRs, potentially making them less accessible for parties hedging a physical position.

6.19 In response to the first two concerns, the Authority notes that:

(a) In assessing the merits of any development, the Authority does not consider wealth transfers (including internationally) except to the extent they have broader economic efficiency impacts. Such impacts would have already been captured by the Authority when considering whether to develop an FTR market. The Authority also notes that:

(i) the ultimate beneficiaries (shareholders or parent companies) of any participant trading FTRs are often not from New Zealand, so it is not clear why the immediate beneficiaries should be

(ii) any Australian party trading FTRs would have to pay to acquire them, and could potentially provide a net transfer of funds into New Zealand.

(b) FTRs are allocated through a market-based process, and hence are intended to be available to participants at market prices. Extending direct participation to Australia is unlikely to introduce participants that will purchase FTRs above fair value.

6.20 In response to the concern about increased competition for the inherently limited volume of FTRs, the Authority acknowledges this could potentially be an issue.

6.21 The supply of FTRs is already fully allocated at each monthly auction—with around 15% of all bids being cleared on average.[7] However, some FTR products trade at prices well below their eventual settlement price (for example, cleared prices for some products have been as low as one cent per megawatt hour). This suggests that some of the demand for FTRs is opportunistic, rather than being driven by the risk management value of the products.

6.22 However, the Authority notes that:

(a) Physical market participants are likely to value FTRs more highly than proprietary traders given their value in offsetting underlying risks, which means they are more likely to successfully acquire them at auction.

[7] Based on FTR manager data

(b) Physical market participants already face competition to access FTRs under current arrangements, since:

(i) the supply of FTRs is necessarily somewhat conservative, so creates competition even amongst participants with a matching physical risk position

(ii) there are parties in New Zealand that are trading FTRs on a proprietary basis, including some that are also physical market participants

(iii) overseas-based parties can trade FTRs if they do so through a New Zealand based office or third party. This practice is not merely a possibility, as it already occurs. Therefore, these parties are not precluded from trading; they are just restricted from doing so directly from outside of New Zealand.

6.23 The Authority considers that there are likely to be benefits in the long term from overcoming the inherent constraints in the supply of FTRs, regardless of whether direct participation is extended to Australia. However, if direct participation is extended, it would likely mean the value of overcoming supply constraints would be realised earlier than otherwise. With this in mind, the following sections of this paper discuss the remaining three development options that might potentially overcome the inherently limited supply of FTRs.

Q6. What are your views on the merits of extending direct participation in the FTR market to parties based in Australia?

Allow parties other than the FTR manager to originate FTRs

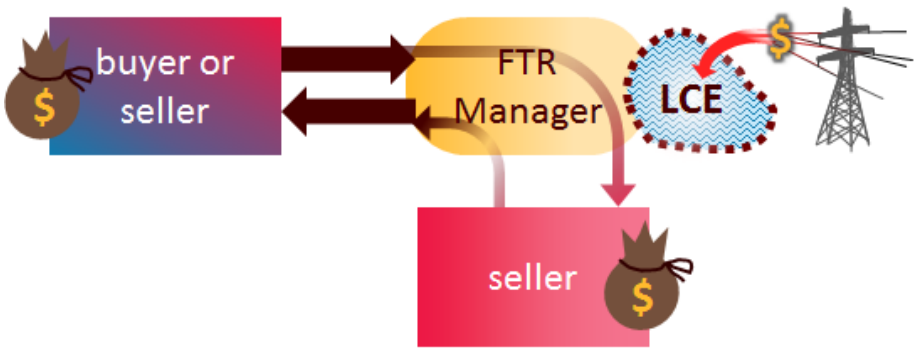
This would increase supply by allowing parties to fund FTRs

6.24 The supply of FTRs could be increased if parties could use their own funds to back them.

6.25 As discussed, FTRs are funded through LCE and auction revenue, and this informs the number of FTRs that can be made available.

6.26 This development would allow private parties to fund option FTRs, instead of the LCE, while still being allocated through regular FTR auctions.

Figure 6: Private parties would be able to fund FTRs



Source: Electricity Authority

6.27 Under current arrangements, it is possible for parties to sell obligation FTRs. This is because purchasing an obligation FTR between A and B is effectively the same as selling an obligation FTR between B and A. If an obligation FTR trades in one direction, it increases the supply for the opposite direction FTR by the same amount.

6.28 To date, demand for option FTRs has far outweighed demand for obligation FTRs, consistently making up between 90-100% of all FTRs allocated for each contract period.[8]

6.29 However, the supply of option FTRs cannot be increased in the same way as obligation FTRs, because of their one-way, positive-only pay-out. Allowing parties other than the FTR manager to originate FTRs builds on the dynamic for obligation FTRs, by allowing parties to create a new option FTR by funding it themselves, increasing supply.

6.30 Allowing parties other than the FTR manager to originate FTRs would, in theory, allow for unconstrained volume. In practice, the additional volume would depend on the extent to which there were willing sellers.

6.31 One benefit of this approach would be in having a single platform where participants could go to trade FTRs. It would use a proven auction process that concentrates buyers and sellers in one place and time, and may be particularly effective because it would build on liquidity that already exists.

6.32 The current auction process also already accepts sales of existing FTRs, so could be modified to accept sales of new FTRs.

There would be some challenges to overcome

6.33 There are challenges that would need to be overcome to implement this development, including:

(a) determining how to treat FTRs funded by private parties when there was revenue inadequacy. The Authority has identified two potential ways to approach settlement in such a circumstance:

(i) Scale back payments for all allocated FTRs for the period. There would be no distinction between FTRs that were originated by the FTR manager and funded by LCE, and those that were originated and funded by a private party. This would mean that a private party funding an FTR may not always have to settle in full. Funding an FTR would be less of a risk under such arrangements, and hence more people may be inclined to do it.

(ii) Introduce priority pay-outs. This would essentially mean that FTRs funded by private parties would have settlement guaranteed in full. Some or all the FTRs originated by the FTR manager and funded by LCE would remain subject to the risk of partial settlement. This approach would significantly increase complexity for participants because it would add a fourth dimension to the 40 FTR products already available, which they would need to be able to analyse and value. It would also require substantial development of the market systems.

[8] Based on FTR Registry data.

(b) finding parties that would be willing to fund option FTRs. Proprietary traders may be best positioned to fund options FTRs because:

(i) there can be significant upside risk from selling an option FTR since spot prices are uncapped, and proprietary traders' businesses revolve around taking on and managing these sorts of risks

(ii) there are unlikely to be many parties that have a physical position that could offset an option FTR risk profile, and hence use it to manage the upside risk

(iii) the volatility of the DSP has the potential to result in significant prudential security calls for a party that funds an option FTR, which may be a barrier for less well-resourced parties

(c) avoiding heightened settlement risks in the wholesale market – which is the main challenge to this development. The clearing manager settles the wholesale market, and requires prudential security to guarantee settlement in the event of default. As discussed, FTR holders need to lodge prudential security, but this may be offset against prudential security requirements relating to their spot market purchases or receipts and any hedge settlement agreements lodged with the clearing manager. Section 0 discussed the volatility of the DSP, and its impact on prudential security requirements. There are two reasons why allowing parties to originate FTRs, and using the existing mechanisms to allocate and settle these, could create additional risks for the market:

(i) It may increase the likelihood that a party defaults, due to the potential for high prudential security requirements. A party funding an FTR may have a very large prudential security obligation, because of the upside risk of funding that product. Furthermore, the volatility of the DSP can mean that a party funding an FTR could face large and sudden calls for prudential security. To the extent the volatility of the DSP reflects shortcomings in how the DSP is determined, rather than volatility in the true underlying value of the product, this could create an *unnecessary* risk of default.

(ii) It would merge the settlement of a purely financial product, with settlement of the physical market. Under current arrangements, FTRs are tied to the physical market since settlement draws on LCE. Under this development, the trading of FTRs may have no connection to the physical market at all, and some parties may not consider that to be desirable.

Q7. What are your views on the merits and practicality of allowing parties other than the FTR manager to originate FTRs?

Develop an FTR-derivative product

This would increase the supply of products for managing locational price risk

6.34 As discussed, FTRs are different in some respects from 'traditional' hedge contracts. However, parties can use more traditional means to manage locational price risk. This proposed development would introduce a new derivative product for managing locational price risk that would be traded between, and funded by, buyers and sellers on an exchange or over-the-counter.

6.35 It is already possible to trade a 'synthetic' obligation FTR between Otahuhu and Benmore—or vice versa—on ASX. This is done by buying a future at Otahuhu and selling one at Benmore—or vice versa. However, there is no similar method to synthesise an option FTR. Furthermore, using ASX futures to synthesise an FTR can only address locational price risk between Otahuhu and Benmore.

6.36 There would be several things to consider in terms of how to implement this development. For example, a derivative product could be introduced that:

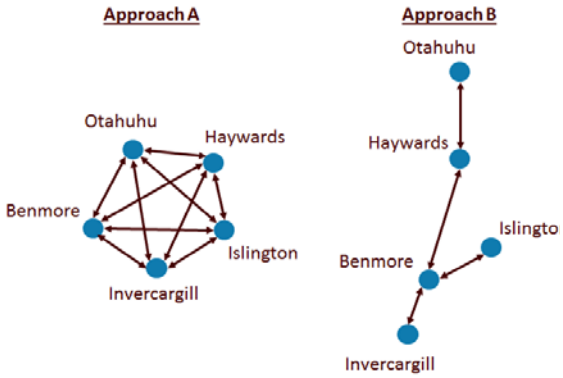
(a) settled based on actual FTR settlements (including any shortfall due to revenue inadequacy) or the spot price differential directly

(b) was available as an option, obligation, or both

(c) was traded over the counter or on an exchange. There would be certain efficiencies from having the product trade on the ASX, given the existing futures and options trading on that platform, and participants' familiarity with it. However, it would be ASX's decision whether to add this product, and other platforms may be better able to support a new product

(d) related to price differences between any combination of two locations (as with FTRs). Alternatively, it could group products together to cover the desired locations—that is, 'strip' products (approach A and B respectively in Figure 7). The former option would have more direct ties to FTRs and may be easier to trade, while the latter would be easier to develop since there would be fewer products.

Figure 7: Approaches to structuring derivative products



Source: Electricity Authority

6.37 As with allowing parties other than the FTR manager to originate FTRs, this development would, in theory, allow for unconstrained volume. It would have significant benefits in the sense that it would:

(a) allow parties to access and offload locational price risk management products on a much more regular basis—that is, every trading day

(b) allow for arbitrage opportunities between the two products, which can increase liquidity and help with price efficiency

(c) introduce a new reference-price, including a DSP. The two parallel markets could help to inform the price of the other, improving price discovery and efficiency, and the efficiency of the DSP for FTRs

(d) also allow for arbitrage opportunities with ASX futures, which may also support liquidity in those products.

6.38 Another benefit to this approach would be that it would not create concerns about merging prudential security requirements for physical and financial products, as it would operate entirely separately. There may also be the potential to allow prudential security requirements for the FTR derivative and the FTR itself to be offset across the two

markets. This would be like the arrangements being explored for ASX futures and prudential security requirements for the spot market.

The key challenge would be to connect buyers and sellers

6.39 Unlike allowing parties other than the FTR manager to originate FTRs, introducing a derivative product would not be able to build on existing liquidity—it would have to develop from the ground up.

6.40 There would be some challenges in connecting buyers and sellers of a derivative over locational price differences. For example:

(a) Most parties wanting to hedge locational price risks can already turn to the FTR market, and may continue to prefer FTRs for managing locational price risks.

(b) As discussed in paragraph 6.33(b), there are risks to funding an option FTR that may limit interest from sellers.

6.41 However, some level of trading could naturally develop through parties wanting to trade between auctions, sell FTRs that they already hold, and arbitrage across the different markets. Further, the Authority is aware of parties that have expressed some interest in actively trading a derivative product if it were listed on the ASX.

6.42 The other key challenge to developing a derivative product would be the likely time required to implement it. The Authority's focus for product development is on the cap products that ASX plans to introduce in 2017.

Q8. What are your views on the merits and practicality of developing an FTR derivative product?

Provide support for secondary trading with a bulletin board

This development would help support reassignment of existing FTRs

6.43 Developing a bulletin board would help to increase the trading of existing FTRs.

6.44 Currently, if a party decides that they no longer want an FTR that they have previously acquired, they can either:

(a) wait until the next time that contract comes up at auction, and re-sell it through the auction

(b) find someone that wants to buy it, and negotiate to re-assign it to them at an agreed price.

6.45 Developing a bulletin board would aim to significantly improve the ability to re-assign FTRs to other parties. It would do this by providing a single place for willing buyers and sellers to meet and agree to terms.

6.46 Establishing a bulletin board facility would not increase the overall supply of FTRs. However, it would help to increase the trading of existing FTRs, which could have benefits in that it would:

(a) allow parties to buy and sell FTRs on a more regular basis—that is, every trading day

(b) reduce the risk of acquiring FTRs, since they could be more easily sold if desired

(c) reduce the likelihood that parties will inefficiently maintain a hedge position that does not reflect changes in their underlying risks

(d) provide more information for participants on the value of FTRs, and how they change over time.

6.47 Parties trading FTRs via a bulletin board would still need to meet the FTR manager's criteria for participating in the FTR market, since FTRs can only be assigned to FTR market participants. Therefore, it would not overcome the existing barriers to direct participation by parties based overseas, but could be progressed in conjunction with developments to allow for direct overseas participation.

6.48 The Authority understands that the FTR manager would be able to quite easily introduce a bulletin board—the capability is already built into its existing software, but would need to be activated.

6.49 However, other parties could also potentially introduce a bulletin board. It may be that they can offer a slightly different or additional service, which might make it a preferable development. Further, if participation were extended to parties based overseas, any party hosting a bulletin board would need to ensure it complied with all relevant securities laws.

Q9. What are your views on the merits of developing a bulletin board?

Some of the developments might fit together

Two developments could be substitutes

6.50 The Authority considers that allowing parties other than the FTR manager to originate FTRs, and developing an FTR derivative product, would achieve the same thing. Both address the inherent limitations in the supply of FTRs, and progressing one could achieve most of the benefits of the other.

Q10. Of the two approaches to overcoming the inherent limitations in the supply of FTRs that have been discussed (allowing parties to originate or develop a derivative product), which do you consider preferable and why?

Q11. Are there other approaches to overcoming the inherent limitations in the supply of FTRs that the Authority has not identified?

The developments are complementary

6.51 The Authority considers that extending participation to parties based in Australia would be complemented by a combination of the other three developments that it is considering because:

(a) developing an FTR derivative product, and allowing parties other than the FTR manager to originate FTRs:

(i) are both ways to potentially overcome the inherently limited supply of FTRs. Overcoming these constraints could be important if participation in the market were to increase significantly. It may be appropriate to consider these developments as a pre-requisite or co-requisite to extending participation to parties based in Australia

(ii) would both improve opportunities to sell FTRs. The benefits of overseas participation may be greater if overseas parties have better opportunities to sell as well as buy FTRs

(b) overseas parties trading on a proprietary basis may value the development of a bulletin board facility that would support them in on-selling their FTRs between auctions

6.52 The opposite is also true. Parties based in Australia are likely to trade FTRs on a proprietary basis. Increased participation by proprietary traders may increase the benefits from:

(a) allowing other parties to originate FTRs, because these parties may be more interested, and better positioned to originate FTRs than physical market participants

(b) an FTR derivative product, because they would increase the pool of parties likely to engage in cross-trading and arbitrage

(c) a bulletin board, by increasing the pool of parties making use of that bulletin board for buying and on-selling FTRs in between auctions.

Q12. What are your views on how these developments would complement each other? To what extent might they be dependent on each other?

Appendix A Format for submissions

Submitter	

Question		Comment
Q1.	Do you agree that further enhancing the FTR market could support the issues identified by the Authority, and provide benefits to the wider hedge market?	
Q2.	Are there other issues with the current arrangements for FTRs that we have not identified?	
Q3.	Are there any other ways to develop the FTR market that we have not identified? If so, please describe them.	
Q4.	What are your views on the relative merits or priority of these twelve potential developments? Could some of them complement or substitute for others?	
Q5.	Do you agree the Authority should provide policy direction on the four developments in Group 1, but that service providers can lead further assessment of the developments in Group 2?	
Q6.	What are your views on the merits of extending direct participation in the FTR market to parties based in Australia?	
Q7.	What are your views on the merits and practicality of allowing parties other than the FTR manager to originate FTRs?	
Q8.	What are your views on the merits and practicality of developing an FTR derivative product?	
Q9.	What are your views on the merits of developing a bulletin board?	
Q10.	Of the two approaches to overcoming the inherent limitations in the supply of FTRs that have been discussed (allowing parties to originate or develop a derivative product), which do you consider preferable and why?	
Q11.	Are there other approaches to overcoming the inherent limitations in the supply of FTRs that the Authority has not identified?	
Q12.	What are your views on how these developments would complement each other? To what extent might they be dependent on each other?	

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Glossary of abbreviations and terms

Allocation plan	The FTR Allocation Plan, prepared by the FTR manager under subpart 6 of Part 13 of the Code. It plays a key role in defining the FTR market – setting out the FTR Manager's plan for the operation of the FTR market, the terms of FTR products, and the auction rules.
ASX	Australian Securities Exchange. Refer to http://www.asx.com.au/
Authority	Electricity Authority
Clearing manager	Manages the clearing and settlement of the markets for wholesale electricity, ancillary services and FTRs. A role currently performed by NZX.
Code	Electricity Industry Participation Code 2010
DSP	Daily Settlement Price. The assessment of the value of an FTR that is made each business day.
FTR	Financial Transmission Right
FTR Auction revenue	The pool of funds paid by parties that successfully acquire FTRs at auction.
FTR hub	A node - or potentially a group of nodes - that can be the subject of an FTR. An FTR hub will be identified as either the Source hub or the Sink hub of an FTR.
FTR manager	Operates the FTR market and prepares the allocation plan, under subpart 6 of Part 13 of the Code. A role currently performed by Energy Market Services (EMS).
FTR participant	A party who has been approved and registered by the FTR manager to participate in an FTR auction and to be assigned FTRs.
Hedge settlement agreement	A hedge settlement agreement is formed when two parties having transacted a hedge contract then lodge that contract for settlement with the clearing manager. The clearing manager takes the hedge settlement agreement into account when assessing each party's prudential security requirements.

LCE	Loss and Constraint Excess. Surplus funds that arise in the wholesale electricity market because nodal prices reflect marginal losses and congestion.
MW	Megawatts
Obligation FTR	A contract whereby the purchaser is paid the difference in spot prices between two FTR hubs when the difference is positive, or pays the difference when it is negative. A price determined as a result of an FTR auction, will be paid by or to the purchaser, as part of the settlement of the FTR.
Option FTR	A contract whereby the purchaser is paid the difference in spot prices between two FTR hubs when the difference is positive, but is not required to pay anything when the difference is negative. A price determined as a result of an FTR auction, will be paid by the purchaser, as part of the settlement of the FTR.
Primary auction	The first of two auctions in a month, in which FTRs relating to some contract periods are offered for the first time.
Revenue adequacy	A situation where there are sufficient funds available from auction revenues and LCE to settle all FTRs in full for a particular period.
Revenue inadequacy	A situation where there are insufficient funds available from auction revenues and LCE, to fully settle all FTRs for a particular period (month). The settlement will be limited to extent of the funds available.
Sink	The offtake Hub of an FTR.
Source	The injection Hub of an FTR.
Variation auction	The second of two auctions in a month, in which further supply is released for some FTRs that had previously been offered at a primary auction, and existing holders of those FTRs previously purchased may offer to sell them back into the available pool of FTRs offered.