Removing requirement for FTR manager to calculate the amount of LCE to be applied to FTRs

Revocation of Schedule 14.3

Consultation paper

Submissions close: 5:00 pm Tuesday 29 September 2020

18 August 2020

Market Performance

Executive summary

The Financial Transmission Rights (FTR) market is settled using Loss and Constraint Excess (LCE) and Auction Income.

The FTR manager is required to calculate the amount of LCE to be allocated to FTRs in accordance with Schedule 14.3. The FTR LCE allocation calculation is complex. It requires specialist software that is costly to upgrade and maintain.

Since shifting to an 8 hub FTR market in June 2018, on average 90% of LCE is available for settlement of FTRs. However, it is very rare for the amount of LCE required to settle the FTR market to exceed the LCE available.

The Authority is proposing to revoke Schedule 14.3 of the Electricity Industry Participation Code 2010 (Code) and make consequential amendments to clause 14.16 and 14.20 of the Code so that all LCE is available for the settlement of the FTR market.

This proposal is expected to:

1. deliver an estimated net present value (NPV) of $354,000 over 10 years relative to the base case, if done in conjunction with a pending FTR system upgrade
2. reduce the complexity and cost of making changes to the FTR systems in the future
3. have minimal impact on the LCE payments made to transmission customers.

We are consulting to seek stakeholders view of the merits of removing Schedule 14.3 of the Code, and the impact of aligning this work with an upcoming system upgrade.

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1 What you need to know to make a submission

What this consultation paper is about

1.1 The purpose of this paper is to consult with interested parties on the Authority's proposal to remove the requirement for the FTR manager to calculate the amount of loss and constraint excess (LCE) to be allocated to the settlement of FTRs.

1.2 Revoking Schedule 14.3 of the Code will have a minor impact on the allocation of LCE and will result in lower fees for the FTR manager service, which will reduce the amount of levy required to operate the FTR market.

1.3 The amendment would mean all LCE is available for settlement of the FTR market and any LCE and Auction Income not used in the settlement of the FTR market would continue to be allocated by Transpower to transmission customers.

1.4 Section 39(1)(c) of the Act requires the Authority to consult on any proposed amendment to the Code and corresponding regulatory statement. Section 39(2) provides that the regulatory statement must include a statement of the objectives of the proposed amendment, an evaluation of the costs and benefits of the proposed amendment, and an evaluation of alternative means of achieving the objectives of the proposed amendment. The regulatory statement is set out in part 3 of this paper.

How to make a submission

1.5 Our preference is to receive submissions in electronically (Microsoft Word) in the format shown in Appendix B. Submissions in electronic form should be emailed to FTRConsultation@ea.govt.nz with "Consultation Paper—Revocation of Schedule 14.3" in the subject line.

1.6 If you cannot send your submission electronically, post one hard copy to either of the addresses below, or fax it to 04 460 8879.

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

1.7 Please note the Authority wants to publish all submissions it receives. If you consider that we should not publish any part of your submission, please

(a) Indicate which part should not be published

(b) Explain why you consider we should not publish that part

(c) Provide a version of your submission that we can publish (if we agree not to publish your full submission).

1.8 If you indicate there is part of your submission that should not be published, we will discuss this with you before deciding not to publish that part of your submission.

1.9 However, please note that all submissions we receive, including any parts that we do not publish, can be requested under the Official Information Act 1982. This means we would be required to release material that we did not publish unless good reason existed under the Official Information Act to withhold it. We would normally consult with you before releasing any material that you said should not be published.

When to make a submission

1.10 Please deliver your submissions by **5pm** on Tuesday **29 September 2020**.

1.11 We will acknowledge receipt of all submissions electronically. Please contact the Authority info@ea.govt.nz or 04 460 8860 if you don't receive electronic acknowledgement of your submission within two business days.

2 Issue the Authority would like to address

The FTR market is settled using a combination of loss and constraint excess (LCE) allocated under Schedule 14.3 and auction income.

2.1 Loss and constraint excess (LCE) is the difference between purchaser and generator payments. LCE is part of the settlement of the wholesale electricity market and is caused by the impact of losses and constraints on the prices set at GXPs and GIPs.

2.2 The FTR market is settled using a combination of LCE allocated for the settlement for FTRs under Schedule 14.3 (known as the FTR rentals) and income from the sale of FTRs (auction income).

2.3 Transmission customers receive LCE not allocated to the FTR market under Schedule 14.3 (non-FTR rentals). Transmission customers also receive any money left over after settling the FTR market, known as residual LCE. [1]

2.4 FTRs do not cover all the grid electricity flows. The FTR rental is calculated by the FTR manager each month in accordance with Schedule 14.3. This calculation is designed to ensure that the amount of LCE available for the settlement of FTRs is representative of the parts of the grid that FTRs are traded across. [2]

2.5 The FTR LCE allocation calculation is complex and requires specialist software to calculate FTR rentals.

The LCE allocation rarely affects the settlement outcome

2.6 Since the FTR market shifted to eight hubs in May 2018 the amount of LCE allocated to FTRs has increased to a level where on average 90% and sometimes up to 100% of LCE is being made available for the settlement of FTRs.

2.7 While on average 90 per cent of LCE is available for the settlement of FTRs, because Auction Income is added to the LCE when settling FTRs, on average only 60 per cent of the available LCE is actually being used in FTR settlement (see Figure 1).

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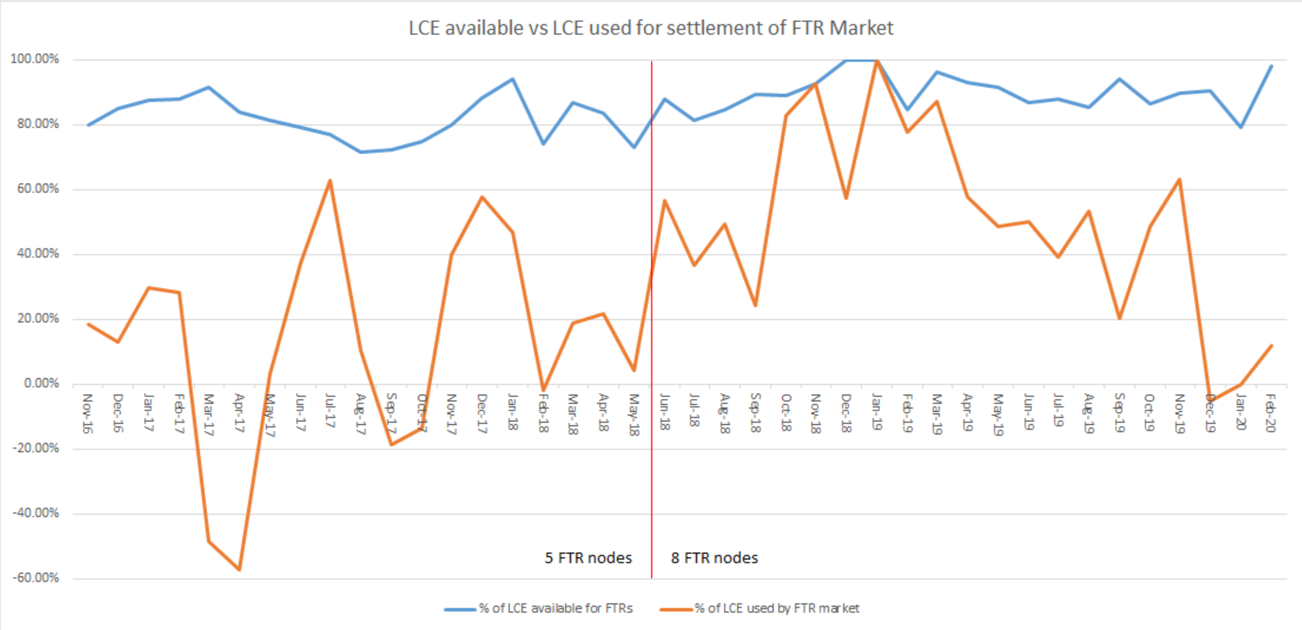
[1] On average transmission customers currently receive $4.8 million each month following the settlement of the FTR market. This is made up of money left over following the settlement of the FTR market and non-FTR rentals.

[2] Between July 2013 and November 2014 (2 FTR hubs) an average of 42% of LCE was allocated to FTRs under Schedule 14.3). This increased to 78% between December 2014 and May 2018 (5 FTR hubs) and is now (June 2018 to February 2020, 8 FTR hubs) an average of 90% of LCE being allocated to FTRs under.

Figure 1: Graph of LCE available for settlement of FTR market vs LCE used in settlement of the FTR market



Source: Electricity Authority

Notes: A negative *% of LCE used by FTR market* means auction income exceeded FTR payments and transmission customers received a payment that exceeded the LCE.

2.8 The FTR rentals calculation only impacts FTR settlement during periods of revenue inadequacy.[3]

2.9 Since the start of the FTR market in June 2013 there has been only one month where the rentals calculation under Schedule 14.3 has had an impact on the settlement of the FTR market. In November 2018 just over 90% of the LCE was allocated to the FTR market, however FTR payments exceeded the amount available for the settlement of the FTR market.

2.10 When revenue inadequacy occurs FTR payments are scaled down to match the amount of money available for the settlement of the FTR market. For November 2018 LCE payments to transmission customers were solely due to non-FTR rentals.

2.11 Revenue inadequacy has also occurred in January 2019, however in this case the allocation under Schedule 14.3 resulted in 100 per cent of LCE being made available for settlement of the FTR market. As a result there was no non-FTR LCE, so no payments were made to transmission customers.

2.12 The Authority considers it is inefficient to pay the FTR manager to determine how much LCE should be available for settlement of the FTR market when the FTR market is regularly being allocated approximately 90% of LCE, and allocating the full 100 per cent would very rarely affect the settlement outcome.

3 Revenue inadequacy occurs when the amount of money available for the settlement of the FTR market (FTR rentals plus auction income) is less than the amount of money required to settle the FTR market.

Why the Authority is addressing these issues now

2.13 The Authority is addressing these issues now because:

(a) there is sufficient historical evidence to show that LCE allocation to the FTR market is consistently high, so the impact of removing the LCE calculation and allocating 100 per cent of LCE to the settlement of the FTR market will be very small

(b) it will reduce the cost of an upcoming system upgrade

(c) it will reduce the monthly FTR service provider fee

Q1. Do you agree the issue identified by the Authority is worthy of attention?

3 Regulatory Statement for the proposed amendment

Objectives of the proposed amendment

3.1 The objective of the proposed amendment is to reduce the complexity of the LCE calculation by allocating all LCE to the settlement of FTRs.

Q2. Do you agree with the objectives of the proposed amendment? If not, why not?

The proposed amendment

3.2 The proposed amendment is to revoke Schedule 14.3 and make consequential changes to clause 14.16.

3.3 The drafting of the proposed amendment is contained in Appendix A

The proposed amendment's benefits are expected to outweigh the costs

Quantitative benefits

3.4 The Authority has quantified the benefits of the five most realistic options. These options are outlined in Table 1.

Table 1: Options for removing Schedule 14.3 with and without a system upgrade

	Upgrade FTR System		Remove Schedule 14.3	
	Now	In 1 year	Now	In 1 year
Option 1 - Only upgrade FTR system now	X			
Option 2 - Upgrade FTR system and remove LCE calculation now (preferred option)	X		X	
Option 3 - Only upgrade FTR system in 1 years' time (base case)		X		
Option 4 - Upgrade FTR system in 1 years' time and remove LCE calculation now		X	X	
Option 5 - Upgrade FTR system and remove LCE calculation in 1 years' time		X		X

3.5 The FTR system needs to be upgraded by 31 March 2022 so the base case against which all benefits are assessed is *Option 3 – Only upgrade FTR system in 1 years' time*.[4]

Option 1 Only upgrade FTR system now

3.6 In this scenario only the FTR system is upgraded. This is expected to deliver benefits of approximately $46,000 NPV over 10 years compared to the base case.[5]

3.7 This is because the annual upgrade costs are expected to reduce by $85,000 each year.

4 It is assumed that a decision will be made and implementation well underway 31 March 2021.

5 Using a discount rate of 6%

Option 2 Upgrade FTR system and remove LCE calculation now (preferred option)

3.8 In this scenario the FTR system is upgraded and LCE calculation is removed at the same time. This is expected to deliver benefits of approximately $354,000 NPV over 10 years compared to the base case.

3.9 In this scenario:

- the capital cost of delivering the changes is only $637,000. This is lower than upgrading the system without removing the LCE calculation at the same time because the system upgrade will be less complex due to the removal of the LCE calculation
- annual upgrade costs are expected to reduce by $85,000 each year due to the system upgrade
- FTR manager annual fees are expected to reduce by $32,000 each year due to removal of LCE calculation

Option 3 Only upgrade FTR system in one years' time (base case)[6]

3.10 In this scenario the FTR system is upgraded when it reaches end of supported life.

3.11 A system upgrade is required in 1 years' time, and this is when expenditure will be required to ensure the FTR market continues to operate.[7] The NPV of this option has been set to zero and all other options are assessed relative to this option.

3.12 Capital expenditure of $697,000 is expected at year 1 and annual upgrade costs are expected to reduce by $85,000 at the same time.

Option 4 Upgrade FTR system in 1 years' time and remove LCE calculation now

3.13 In this scenario the LCE calculation is removed now however the FTR system upgrade does not occur until it reaches end of supported life.

3.14 This is expected to deliver net benefits of approximately -$10,000 NPV over 10 years compared to the base case.

3.15 This will involve one-off capital expenditure to:

- remove the LCE calculation now; and
- upgrade the FTR system in one years' time

3.16 The FTR manager's annual fee is expected to reduce by $32,000 from when the LCE is removed and the annual upgrade costs will reduce by $85,000 each year once the system is upgraded.

Option 5 Upgrade FTR system and remove LCE calculation in 1 years' time

3.17 In this scenario the system upgrade and removal of LCE calculation are deferred until the FTR system reaches end of supported life.

3.18 This is expected to deliver net benefits of approximately $273,000 NPV over 10 years compared to the base case.

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6 The FTR system will reach end of supported life on 31 March 2022.

Table 2: Assessment of options for removing LCE calculation

Estimated costs and benefits of each option relative to the base case[8]

	OPTION	CAPEX (NPV)	OPERATIONAL SAVINGS (NPV)	TOTAL	TOTAL (RELATIVE TO BASE CASE)
1	**Only upgrade FTR system now**	$697,000	$663,000	-$34,000	$46,000
2	**Upgrade FTR system and remove LCE calculation now (preferred option)**	$637,000	$912,000	$274,000	$354,000
3	**Only upgrade FTR system in 1 years' time (base case)**	$657,000	$578,000	-$79,000	$0
4	**Upgrade FTR system in 1 years' time and remove LCE calculation now**	$916,000	$827,000	-$89,000	-$10,000
5	**Upgrade FTR system and remove LCE calculation in 1 years' time**	$601,000	$795,000	$194,000	$273,000

Source: Electricity Authority

Unquantified impacts

3.19 In addition to the quantified financial benefits of removing the rentals calculation, we expect the following unquantified financial benefits:

(a) a reduction in the capital cost of increasing the number of FTR hubs

(b) a reduction in the costs to integrate the FTR system with real time pricing[9]

(c) a reduction in participant's costs to forecast rentals to assess the risk of revenue inadequacy.

Impact on transmission customers

3.20 The Authority notes that there is a chance of a slight reduction in the average LCE available to transmission customers.

3.21 This is a wealth transfer from transmission customers to FTR purchasers. An assessment of the value of the transfer has not been conducted, however we do not expect this wealth transfer to have a material impact on the cost benefit analysis results.

3.22 To illustrate this, we re-calculated the amount of LCE that would have been paid to transmission customers between June 2018 (FTR market shifted to 8 FTR hubs) and February 2020. Over this time the LCE payments to transmission customers would have dropped by 1.3 per cent.[10]

8 To the nearest $1,000. A more detailed breakdown in available in Appendix C. Where applicable NPV has been calculated over 10 years using a discount rate of 1.06

9 Only if the decision to remove the rentals calculation is made prior to the delivery of the real time pricing integration specification and subsequent software changes

10 LCE payments to transmission customers (a combination of LCE reserved under Schedule 14.3 and residual LCE from the FTR market) over this time were $101,817,319. If the FTR manager used all LCE to settle the FTR market the LCE payments to transmission customers would have been $100,487,268. This $1,330,051 difference is solely due to the November 2018 event of revenue inadequacy.

Q3. Do you agree the benefits of the proposed amendment outweigh its costs?

The Authority has identified one alternative for addressing the objectives

3.23 The objective is to reduce the complexity of LCE calculations, as we determine the benefits of no longer running the Schedule 14.3 calculation exceeds the benefits this calculation provides.

3.24 An alternative to removing the calculation would be to specify the percentage of LCE to be made available for the settlement of FTRs. This alternative would provide certainty as to the proportion of LCE that will be available to transmission customers.

3.25 The Authority considers this alternative is undesirable because it will reduce the LCE available for FTR settlement in some months, unnecessarily increasing the risk of revenue inadequacy. For example, referring to Figure 1, in November 2018 and January 2019 over 90 per cent of the LCE was available for FTR settlement and yet revenue inadequacy still occurred. Limiting LCE allocation to 90 per cent would have exacerbated the issue.

3.26 The Authority has not explicitly quantified the costs and benefits but expects a fixed percentage LCE allocation would have similar quantified financial costs and benefits to removing Schedule 14.3, with some minor additional costs to operate and maintain this fixed percentage LCE allocation.

The proposed amendment is preferred to other options

3.27 The Authority has evaluated the other means for addressing the objectives and prefers the proposal.

3.28 Removing Schedule 14.3 is expected to deliver a net benefit of $354,000 NPV over 10 years if implemented in conjunction with a system upgrade.

Q4. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

The proposed amendment complies with section 32(1) of the Act

3.29 The Authority's objective under section 15 of the Act is to promote competition in, reliable supply by, and efficient operation of, the electricity industry for the long-term benefit of consumers.

3.30 Section 32(1) of the Act says that the Code may contain any provisions that are consistent with the Authority's objective and is necessary or desirable to promote one or all of the following:

Table 3: How proposal complies with section 32(1) of the Act

(a) competition in the electricity industry;	The proposed amendment would not affect competition in the electricity industry.

(b) the reliable supply of electricity to consumers;	The proposed amendment would not affect the reliable supply of electricity to consumers in the electricity industry.
(c) the efficient operation of the electricity industry;	The proposed amendment will support the efficient operation of the electricity industry by removing complexity and reducing the costs to operate the FTR market.
(d) the performance by the Authority of its functions;	The proposed amendment will not materially affect the performance of the Authority
(e) any other matter specifically referred to in this Act as a matter for inclusion in the Code.	The proposed amendment will not materially affect any other matter specifically referred to in the Act for inclusion in the Code

Q5. Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?

The Authority has given regard to the Code amendment principles

3.31 When considering amendments to the Code, the Authority is required by its Consultation Charter[11] to have regard to the following Code amendment principles, to the extent that the Authority considers that they are applicable. Table 2 (below) describes the Authority's regard for the Code amendment principles in the preparation of the proposal.

Table 4: Regard for Code amendment principles

Principle	Comment
1. Lawful	The proposal is lawful and is consistent with the statutory objective (see sections 2.4 – 2.7) and with the empowering provisions of the Act.
2. Provides clearly identified efficiency gains or addresses market or regulatory failure	The efficiency gains are set out in the evaluation of the costs and benefits (section 3.4 – 3.11). The proposal will improve efficiency by reducing the cost to run the FTR market.
3. Net benefits are quantified	The extent to which the Authority has been able to estimate the efficiency gains is set out in the evaluation of the costs and benefits (section 3.4 – 3.11).

11 The consultation charter is one of the Authority's foundation document and is available at:: http://www.ea.govt.nz/about-us/documents-publications/foundation-documents/

Principle	Comment
4. Preference for small-scale ‘trial and error’ options	Principles 4 to 9 apply only if it is unclear which option is best (refer clause 2.5 of the Consultation Charter) We regard the preferred option as superior to the alternatives.
5. Preference for greater competition	We regard the preferred option as clearly superior to the alternatives.
6. Preference for market solutions	We regard the preferred option as clearly superior to the alternatives.
7. Preference for flexibility to allow innovation	We regard the preferred option as clearly superior to the alternatives.
8. Preference for non-prescriptive options	We regard the preferred option as clearly superior to the alternatives.
9. Risk reporting	We regard the preferred option as clearly superior to the alternatives.

Appendix A Proposed amendment

~~**Schedule 14.3 Calculation of amount of loss and constraint excess to be applied to the settlement of FTRs**~~

14.16 Calculation of loss and constraint excess

(1) A **loss and constraint excess** accrues for a **billing period** when the total of the amounts owing by the **clearing manager** to **generators** for that **billing period** for the **electricity** sold and purchased in accordance with clause 14.3 is less than the total amount owing to the **clearing manager** for that **billing period** for the **electricity** sold and purchased in accordance with clause 14.6.

(2) The ~~**FTR**~~ **clearing manager** must—

~~(a)~~ determine the amount of **loss and constraint excess** for a **billing period**~~ that must be applied to the settlement of **FTRs** in accordance with Schedule 14.3; and~~

~~(b) advise the **clearing manager** of that amount~~ no later than~~—~~

(a~~i~~) 1600 hours on the ~~7~~9th **business day** of the month following the~~ relevant~~ **billing period**; or

(b~~ii~~) if **publication** of **final prices** is delayed for any **trading period** in the ~~relevant~~ **billing period**, so that **final prices** for a **trading period** in the **billing period** are **published** later than 1600 hours on the ~~6~~9th **business day** of the month following the relevant **billing period**, 1 **business day** after all **final prices** for the **billing period** are **published**.

~~(3) Each **grid owner** and the **pricing manager** must provide information to the **FTR manager** in accordance with Schedule 14.3.~~

(4) Subject to subpart 8, the **clearing manager** must apply the **loss and constraint excess** ~~amount advised~~ determined under subclause (2) to the settlement of the **FTRs** that relate to the **billing period**.

(5) Subject to subpart 8, if the amount required for the settlement of the **FTRs** that relate to a **billing period** ~~that the **FTR manager** advises the **clearing manager** under subclause (2)~~ exceeds the amount of the **loss and constraint excess** for the **billing period**, the **clearing manager** must apply all of the **loss and constraint excess** to the settlement of the **FTRs**.

(6) If there is more than one **grid owner:**

(a) the **Authority** must advise the **clearing manager** of the proportion of any~~the **loss and constraint excess** and~~ **residual loss and constraint excess** that may be owing for a **billing period** to each **grid owner; and**

(b) the clearing manager must calculate that proportion of the **residual loss and constraint excess** for each **grid owner** and owes the relevant amount to each **grid owner**.

(7) If there is only one **grid owner**, the **clearing manager** owes that **grid owner** the full amount of any **residual loss and constraint excess** in respect of a **billing period**~~Unless the **Authority** has directed otherwise under this clause, the amount owing to each **grid owner** in the proportions advised under subclause (6) is—~~

(a) ~~the amount of any **loss and constraint excess** less the amount to be applied to the settlement of **FTRs** under subclause (4) or (5); and~~

(b) ~~the amount of any residual loss and constraint excess~~.

14.20 Amounts owing by clearing manager to participant

(1) When advising a **participant** of amounts owing under clause 14.18(1)(b), the **clearing manager** must specify any amount owing by the **clearing manager** to the **participant** for—

(a) the relevant **billing period**, to the extent that the **clearing manager** has received the necessary information; and

(b) any prior **billing period**, if the **clearing manager** receives the necessary information for that **billing period** after the date that amounts owing for that **billing period** were required to be advised by the **clearing manager**.

(2) The **clearing manager** must specify any amount owing by the **clearing manager** to the **participant** in respect of the periods referred to in subclause (1) for the following:

(a) **electricity** sold under clauses 14.2 to 14.7:

(b) **constrained off compensation** under clause 13.201A:

(c) **constrained on compensation** under clause 13.212:

(d) a **washup** amount and any interest on that amount under subpart 6:

(e) **auction revenue** under clause 13.112:

(f) **ancillary services** under clause 8.55(a):

(fa) **extended reserve** under clause 8.68(4):

(g) payment of an amount under any **hedge settlement agreement**:

(h) for each **FTR** in respect of which the **participant** is registered as the holder of the **FTR**, the net amount of the **FTR hedge value** for the **FTR** minus the **FTR acquisition cost** for the **FTR**, if that net amount is positive:

(i) any amount owing in respect of the assignment of any **FTR** under clause 13.249(7):

(j) **GST**:

(k) ~~**loss and constraint excess** and~~ any **residual loss and constraint excess** ~~under clause 14.16(7)~~.

(3) The **clearing manager** must specify the sum of the amounts referred to in subclause (2).

….

Schedule 14.3

Calculation of amount of loss and constraint excess to be applied to the settlement of FTRs [revoked]

Q6. Do you have any comments on the drafting of the proposed amendment?

Appendix B Format for submissions

Submitter	

Question		Comment
Q1.	Do you agree the issue identified by the Authority is worthy of attention?	
Q2.	Do you agree with the objectives of the proposed amendment? If not, why not?	
Q3.	Do you agree the benefits of the proposed amendment outweigh its costs?	
Q4.	Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	
Q5.	Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?	
Q6.	Do you have any comments on the drafting of the proposed amendment?	

Appendix C Cost benefit analysis

C.1 The Authority has quantified the immediate costs and benefits of removing Schedule 14.3.

C.2 The scenarios identified are listed in Table 1 and repeated below.

C.3 Each option has used a discount rate of 6% over 10 years.

C.4 In order for the FTR market to operate efficiently, the FTR system will need to be upgraded by 31 March 2022. All net benefits have been quantified relative to *Option 3 - Only upgrade FTR system in 1 years' time* (base case).

C.5 We have included Option 1 (Only upgrade FTR system now) to demonstrate that the benefits of the preferred option, Option 2 (Upgrade FTR system and remove LCE calculation) are greater than solely upgrading the FTR system.

Table 5: Options for removing Schedule 14.3 with and without a system upgrade

	Upgrade FTR System		**Remove Schedule 14.3**	
	Now	In 1 year	Now	In 1 year
Option 1 - Only upgrade FTR system now	X			
Option 2 - Upgrade FTR system and remove LCE calculation now (preferred option)	X		X	
Option 3 - Only upgrade FTR system in 1 years' time (base case)		X		
Option 4 - Upgrade FTR system in 1 years' time and remove LCE calculation now		X	X	
Option 5 - Upgrade FTR system and remove LCE calculation in 1 years' time		X		X

Table 6: Capital costs and annual savings

C.6 The capital cost associated with making changes to the FTR system are:

Capital expenditure	
Upgrade FTR system (only)	$696,875
Upgrade FTR system and remove rentals (combined)	$637,185
Remove Rentals (only)	$258,166

Table 7: Annual savings

C.7 The annual operational expenditure (OPEX) savings associated with upgrading the FTR system and removing Schedule 14.3 are:

Annual OPEX savings	
Upgrade FTR system	$85,000
Remove Rentals	$31,848

Table 8: Capital expenditure for each option

C.8 Capital expenditure for each of the options:[12]

Capital Expenditure (NPV)	
Option 1 - Only upgrade FTR system now	$696,875
Option 2 - Upgrade FTR system and remove rentals now (preferred option)	$637,185
Option 3 - Only upgrade FTR system in 1 years' time (base case)	$657,429
Option 4 - Upgrade FTR system in 1 years' time and remove rentals now	$915,515
Option 5 - Upgrade FTR system and remove rentals in 1 years' time	$601,118

12 Where capital expenditure occurs in the future this has been discounted using discount rate of 6%.

Table 9: Annual OPEX savings over 10 years (NPV)

Annual savings (NPV)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	10 Year NPV total
Option 1 - Only upgrade FTR system now	$85,000	$80,189	$75,650	$71,368	$67,328	$63,517	$59,922	$56,530	$53,330	$50,311	$663,144
Option 2 - Upgrade FTR system and remove rentals now (preferred option)	$116,848	$110,234	$103,994	$98,108	$92,555	$87,316	$82,373	$77,711	$73,312	$69,162	$911,162
Option 3 - Only upgrade FTR system in 1 years' time (base case)	$0	$80,189	$75,650	$71,368	$67,328	$63,517	$69,922	$56,530	$53,330	$50,311	$578,144
Option 4 - Upgrade FTR system in 1 years' time and remove rentals now	$31,848	$110,234	$103,994	$98,108	$92,555	$87,316	$82,373	$77,711	$73,312	$69,162	$826,612
Option 5 - Upgrade FTR system and remove rentals in 1 years' time	$0	$110,234	$103,994	$98,108	$92,555	$87,316	$82,373	$77,711	$73,312	$69,162	$794,764

Table 10: Net benefits over 10 years, relative to the base case

Net benefits	CAPEX (NPV cost)	OPEX Savings over 10 years (NPV)	TOTAL	NPV TOTAL RELATIVE TO THE BASE CASE
Option 1 - Only upgrade FTR system now	$696,875	$663,144	-$33,731	$45,554
Option 2 - Upgrade FTR system and remove rentals now (preferred option)	$637,185	$911,612	$274,427	$353,713
Option 3 - Only upgrade FTR system in 1 years' time (base case)	$657,429	$578,144	-$79,285	$0
Option 4 - Upgrade FTR system in 1 years' time and remove rentals now	$915,595	$826,612	-$88,983	-$9,698
Option 5 - Upgrade FTR system and remove rentals in 1 years' time	$601,118	$794,764	$193,646	$282,629

Glossary of abbreviations and terms

Authority	Electricity Authority
Act	Electricity Industry Act 2010
Auction Income	Amount of money paid by participants to purchase FTRs. Used in the settlement of the FTR market.
Base Case	The scenario that is most likely to occur if no changes are made at this time.
Code	Electricity Industry Participation Code 2010
CAPEX	Capital expenditure, the costs of creating or upgrading assets like the FTR system.
FTR	Financial Transmission Right
FTR Rentals	The amount of LCE allocated to the settlement of the FTR market under Schedule 14.3
GIP	Grid injection point; a point of connection on the grid at which electricity predominantly flows into the grid.
GXP	Grid exit point, a point of connection on the grid at which electricity predominantly flows out of the grid.
LCE	Loss and Constraint Excess
NPV	Net Present Value
OPEX	Operational expenditure such as the ongoing costs associated with running the FTR system
Regulations	Electricity Industry (Enforcement) Regulations 2010
Rentals	The amount of LCE made available for settlement of the FTR market. Rentals are calculated in accordance with Schedule 14.3
Revenue Inadequacy	A situation that occurs when the amount of money available for the settlement of the FTR market (FTR rentals plus auction income) is less than the amount of money required to settle the FTR market.