

Proposed Scarcity pricing Code amendments

Consultation paper

Submissions close: 5:00pm, 7 June 2016

26 April 2016



Executive summary

The scarcity pricing regime is set out in Parts 8 and 13 of the Electricity Industry Participation Code 2010 (Code). Under that regime, if an electricity supply emergency causes forced power cuts (typically referred to as emergency load shedding) in one or both islands, the system operator triggers scarcity pricing. Once triggered, scarcity pricing sets a \$10,000 per megawatt hour (MWh) price floor and a \$20,000 per MWh price cap for the island generation weighted average spot price (GWAP) in the trading periods affected by the emergency.

Forced power cuts suppress spot electricity prices as the remaining demand can be met with lower cost generation than would otherwise have been required. The scarcity pricing regime is intended to give investors in last-resort generation plant (and investors in demand response capability) confidence that emergency load shedding will not undermine the business case for investing in those resources. It is also intended to give more assurance to wholesale purchasers that spot prices in emergency load shedding will not settle well above the level expected in a workably competitive market, and to encourage them to carefully assess their spot market exposures and obtain sufficient hedge cover to achieve their desired risk levels.

This paper outlines the following six operational issues with the current scarcity pricing regime, and proposes Code amendments to resolve these issues:

- (a) the regime is unclear regarding which trading periods the system operator should specify in a notice relating to an event or an island-wide instruction to disconnect demand
- (b) the regime does not allow the pricing manager enough time to publish notice of and resolve an infeasibility or metering situation that, by coincidence, exists at the same time as a shortage situation, before subsequently giving notice of the shortage situation
- (c) the regime does not allow for any delays (which can occur due to reasons outside the pricing manager's control) in the pricing manager resolving provisional price situations
- (d) if interim prices change after the pricing manager publishes them, the regime does not require the pricing manager to recalculate and republish interim prices using the scarcity pricing methodology in Schedule 13.3A of the Code
- (e) the regime's deadline for the pricing manager to calculate and publish interim prices using the scarcity pricing methodology under Schedule 13.3A is too tight
- (f) there is a typographical error in the Code's formula for calculating island GWAP.

The Code amendments that the paper proposes would correct and clarify these aspects of the scarcity pricing regime, and prevent unintended consequences in operating it. This would ensure that the scarcity pricing regime operates correctly and efficiently, which, consistent with the Authority's statutory objective, would promote an efficient level of reliable supply in the electricity industry for the long-term benefit of consumers.

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1 What you need to know to make a submission

1.1 What this consultation paper is about

- 1.1.1 The Authority proposes several amendments to particular procedural aspects of the scarcity pricing regime under the Code (proposed amendments). The proposed amendments are attached as Appendix A.
- 1.1.2 The purpose of this paper is to consult with participants and persons that the Authority thinks are representative of the interests of those likely to be affected by the proposed amendments.
- 1.1.3 Section 39(1)(c) of the Electricity Industry Act 2010 (Act) requires the Authority to consult on any proposed amendment to the Code and corresponding regulatory statement. Section 39(2) of the Act 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 for the proposed amendments is set out in section 4 of this paper.
- 1.1.4 The Authority invites you to make a submission on the regulatory statement and the proposed amendments.

1.2 How to make a submission

- 1.2.1 Please note we ordinarily publish all submissions we receive. If there is part of your submission you do not want us to publish, please tell us which part, why we should not publish it, and provide a version we can publish (if we agree not to publish the full submission).
- 1.2.2 If you ask us not to publish part of your submission, we will normally talk to you before deciding what we will publish.
- 1.2.3 Also note that if a submission is requested under the Official Information Act 1982, we would be required to release it unless good reason exists to withhold it. We will normally consult you before releasing any material that you asked us not to publish.
- 1.2.4 We prefer to receive submissions in electronic format (Microsoft Word) in the format shown in Appendix B. Submissions in electronic form should be emailed to submissions@ea.govt.nz with "Consultation Paper—Proposed scarcity pricing Code amendments" in the subject line.
- 1.2.5 Do not send us hard copies of your submission unless it is not possible to do so electronically. If you cannot or do not wish to send your submission electronically, you should post one hard copy of the submission to either of the addresses provided below or you can fax it to 04 460 8879. You can call 04 460 8860 if you have any questions.

Postal address

Submissions
Electricity Authority
PO Box 10041
Wellington 6143

Physical address

Submissions
Electricity Authority
Level 7, ASB Bank Tower
2 Hunter Street
Wellington

1.3 Deadline for receiving a submission

- 1.3.1 Submissions should be received by **5pm** on **7 June 2016**. The Authority 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 The scarcity pricing regime provides a price floor and a price cap in an electricity supply emergency

- 2.1.1 The Code's current scarcity pricing regime came into force in June 2013 (original scarcity pricing amendment).¹ Under the regime, if an electricity supply emergency causes emergency load shedding on one or both islands, the system operator triggers scarcity pricing. Once triggered, scarcity pricing sets a \$10,000 per MWh price floor and a \$20,000 per MWh price cap for the island GWAP in the trading periods affected by the emergency.²
- 2.1.2 The price floor has been set at the level roughly equivalent to the price required to cover the costs of a last-resort generation station. Setting a price floor at this level should give investors in last- resort resources increased confidence that emergency load shedding will not undermine the business case for investing in those resources.
- 2.1.3 The price cap reflects an upper estimate of the value of forgone consumption during emergency load shedding. It has been adopted to address consumer concerns that imposing a price floor for emergency load shedding situations may embolden providers of last-resort plant to charge prices above what would occur in a workably competitive market.
- 2.1.4 The scarcity pricing regime also emphasises for all parties exposed to spot market prices the importance of carefully assessing their exposure to changes in price, and obtaining sufficient hedge cover to achieve their desired levels of risk. More information on the regime and its purpose is available at <http://www.ea.govt.nz/operations/wholesale/spot-pricing/scarcity-pricing/>.

¹ The Electricity Industry Participation (Scarcity Pricing) Code Amendment 2011 is available at <http://www.ea.govt.nz/code-and-compliance/the-code/amendments/2011-code-amendments/>.

² The pricing manager calculates the island GWAP for the affected island(s) and scales the island GWAP to the \$10,000 per MWh price floor if GWAP is less than \$10,000, or to the \$20,000 per MWh price cap if GWAP is greater than \$20,000. The pricing manager then applies the scaling factor to all nodal prices in the affected island(s). Consequently, it is possible to have nodal prices that sit above or below the price cap and the price floor.

3 The scarcity pricing regime has six operational issues that the Authority would like to resolve

- 3.1.1 The Authority has identified six operational issues with the current scarcity pricing regime. These issues, and the Code amendments the Authority proposes to resolve them, are outlined below.
- 3.1.2 The Authority would like to address these issues to ensure that the scarcity pricing regime operates correctly and according to the Authority's original policy intent.³ This in turn would reduce the likelihood of a dispute arising in the event of a scarcity pricing situation.
- 3.1.3 The Authority considers that the proposed amendments are consistent with its statutory objective under section 15 of the Act. This is because the proposed amendments promote the efficient operation of the electricity industry for the long-term benefit of consumers.
- 3.1.4 Under section 32(1)(c) of the Act, the proposed amendments are desirable to promote the efficient operation of the industry.

3.2 Issue 1: the Code is unclear regarding which trading periods the system operator should specify in a notice relating to an event or an island-wide instruction to disconnect demand

- 3.2.1 Technical Code B of Schedule 8.3 of the Code requires the system operator to issue a notice to all participants if:
- a) an event listed in clause 5(1) of Technical Code B (event) occurs;⁴ or
 - b) the system operator issues, amends, or revokes an island wide instruction to disconnect demand (disconnect demand instruction) under clause 5(1A) of Technical Code B.
- 3.2.2 Under clause 5(2)(d) of Technical Code B, the system operator must include the trading periods to which the notice applies in the notice issued under clauses 5(1) or 5(1A).
- 3.2.3 However, clause 5(2)(d) is unclear as to exactly which trading periods the notice applies to. An example of this is if the system operator issued a disconnect demand instruction at 0915 hours and then revoked this instruction at 1015 hours. In this example, the system operator could interpret the trading periods to which the notice applied as either those beginning at:
- a) 0900, 0930, and 1000 hours; or
 - b) 0900 and 0930 hours; or

³ The Authority's consultation paper of 28 March 2011 for the original scarcity pricing amendment outlines the Authority's policy intent for the scarcity pricing regime. The consultation paper is available at: <http://www.ea.govt.nz/development/work-programme/wholesale/scarcity-pricing/consultations/#c13856>.

⁴ An event under clause 5(1) of Technical Code B of Schedule 8.3 occurs when:

- the ability of the system operator to plan to comply, and to comply, with the principal performance obligations is at risk or is compromised (as set out in the policy statement):
- public safety is at risk:
- there is a risk of significant damage to assets:
- independent action has been taken in accordance with Technical Code B to restore the system operator's principal performance obligations.

- c) 0930 and 1000 hours only.
- 3.2.4 This uncertainty has consequential effects on the pricing manager. Clause 13.144 requires the pricing manager to publish a notice of the shortage situation, and the trading periods affected by the shortage situation, in the event it receives notice of the situation from the system operator under clause 5(1A) of Technical Code B. Clause 13.144 does not give the pricing manager the ability to determine the trading periods for which the shortage situation applies, so it also becomes uncertain which trading periods will have their final price influenced by the situation.
- 3.2.5 In the above example, the Authority considers that trading periods to which the notice (and scarcity pricing) should apply are only those beginning at 0930 and 1000 hours. The notice should not include the trading period beginning at 0900 because the disconnect demand instruction was not in effect at the start of that trading period. For the same reason, the system operator should also include the trading period from 1000 to 1030 hours in the notice.
- 3.2.6 The advantage of this approach is that the conditions that applied at the start of the trading periods beginning at 0900 and 1000 hours that would impact on final prices would not retrospectively change. The decisions that purchasers had made on the information available at the start of the relevant trading periods would not be affected by the retrospective application of scarcity prices. This approach is also consistent with the pricing processes applied in all other circumstances.
- 3.2.7 The disadvantage of this approach is that investors in last-resort resources may not receive the benefit of the scarcity prices for the first part of a trading period in which a shortage situation existed.
- 3.2.8 The Authority considers that on balance, the advantage of clarifying the trading periods to which the notice under clauses 5(1) or 5(1A) of Technical Code B applies (to be consistent with the approach described in paragraphs 3.2.4 to 3.2.5) will outweigh the disadvantage described in paragraph 3.2.7.

Proposed amendment

- 3.2.9 To resolve this issue, the Authority proposes amending:
- a) clause 5(2)(d) of Technical Code B of Schedule 8.3 so that the system operator's notice is required to specify the start and end times of the situation to which the notice applies, rather than the trading periods
 - b) clause 13.144 to require the pricing manager to specify in the notice it publishes under clause 13.144(1)(a), only those trading periods in respect of which the infeasibility, metering, high spring washer price, or shortage situation was in effect at the start of the relevant trading period(s).
- 3.3 Issue 2: the Code does not allow the pricing manager enough time to publish notice of and resolve an infeasibility or metering situation that exists at the same time as a shortage situation, before subsequently giving notice of the shortage situation**
- 3.3.1 The scarcity pricing regime only applies if the pricing manager gives notice of a shortage situation under clause 13.144.
- 3.3.2 Clause 13.144 applies if the pricing manager receives information that yields an infeasibility, metering or high spring washer situation, or receives notice of a shortage

situation from the system operator under clause 5(1A) of Technical Code B of Schedule 8.3. Under clause 5(1A) of Technical Code B, the system operator must notify all participants whenever, or as soon as practicable after, the system operator issues, amends or revokes an island wide instruction to disconnect demand. Clause 5(1C) of Technical Code B requires that the system operator to provide the notice issued under clause 5(1A) to the pricing manager by 7:30am on the trading day following the relevant event (under clause 5(1) of Technical Code B).

- 3.3.3 If clause 13.144(1) applies, the pricing manager must publish notice of the relevant situation by 0900 on the date of receiving the information or notice. However, clause 13.144(2) prevents the pricing manager from publishing notice of a shortage situation in relation to a trading period if an infeasibility, metering or SCADA situation exists in that trading period that is unresolved.
- 3.3.4 This is problematic if both an infeasibility (or metering) situation and a shortage situation occur at the same time. If this occurred, under clause 13.144(1) and (2), the pricing manager would only have until 0900 hours to publish notice of and resolve the infeasibility (or metering) situation. The Authority considers this an unrealistically tight deadline for the pricing manager to meet these obligations. If the infeasibility (or metering) situation continued unresolved after 0900 hours on the day the pricing manager received the information or notice, clause 13.144(2) would prevent the pricing manager from giving notice of the shortage situation. This in turn would put the pricing manager in breach of the requirement under clause 13.144(1) to publish notice of the shortage situation by 0900 hours on the day the pricing manager received the information or notice.
- 3.3.5 If an infeasibility or metering situation exists at the same time as a shortage situation, the Authority considers that the deadline under clause 13.144 should allow the pricing manager adequate time to:
 - a) first, publish notice of, and resolve, the infeasibility or metering situation
 - b) subsequently publish notice of the shortage situation.

Proposed amendment

- 3.3.6 The Authority proposes amending clause 13.144 to clarify that if a shortage situation exists at the same time as an infeasibility, metering or SCADA situation:
 - a) the 0900 deadline (on the date the pricing manager receives the input information or notice) for publishing notice of the shortage situation does not apply
 - b) the pricing manager must publish notice of the shortage situation as soon as possible after the pricing manager resolves the infeasibility, metering or SCADA situation.

3.4 Issue 3: the Code does not allow for delays in the pricing manager resolving provisional price situations

- 3.4.1 If the pricing manager gives notice under clause 13.144(1) that a shortage situation exists, clauses 13.135A(1) and (2) require the pricing manager to determine whether a scarcity pricing situation exists in the relevant trading period. If a scarcity pricing situation does exist, clause 13.135B requires the pricing manager to calculate and publish interim prices and interim reserve prices for the relevant trading period using the scarcity pricing methodology under Schedule 13.3A.

- 3.4.2 However, under clause 13.135C, clause 13.135B does not apply:
- a) in the case of an island scarcity pricing situation, if the average island GWAP in the previous 336 trading periods in the island affected by the scarcity pricing situation exceeds \$1,000 per MWh; or
 - b) in the case of a national scarcity pricing situation, if the average island GWAP in the previous 336 trading periods in either island exceeds \$1,000 per MWh.
- 3.4.3 The Code is not clear on what the pricing manager should do if a provisional price situation exists in the 336 trading periods preceding the relevant trading period. A provisional price is a price that has yet to become interim or final (for example, because of metering or infeasibility situation) and so is subject to potential change.
- 3.4.4 Before determining whether a scarcity pricing situation exists for the relevant trading period, the pricing manager must resolve any provisional price situation that exists in the 336 trading periods preceding the relevant trading period. This is because the pricing manager must resolve any provisional price situations in order to calculate interim prices under Schedule 13.3A. The “initial” interim prices for the 336 trading periods preceding the relevant trading period are needed to calculate the island GWAP for the relevant trading period.⁵
- 3.4.5 In a scarcity pricing situation, for reasons outside the pricing manager’s control, it may take several days for the pricing manager to resolve all provisional price situations.
- 3.4.6 Any such delays in resolving provisional price situations and calculating interim prices and interim reserve prices:
- a) can put the pricing manager in breach of the relevant deadline for publishing interim prices under clause 13.135B(b)
 - b) prevent the pricing manager from determining whether the limitations on the scarcity pricing regime under clause 13.135C apply. This occurs because calculating the average island GWAP under clause 13.135C for the previous 336 trading periods requires “initial” interim prices.
- 3.4.7 The Authority considers that the Code should enable the pricing manager to:
- a) avoid the difficulties noted at paragraph 3.4.6
 - b) resolve any provisional price situation before determining whether a scarcity pricing situation exists for a particular trading period.

Proposed amendment

- 3.4.8 To provide for this, the Authority proposes amending clause 13.135A to require the pricing manager to resolve all provisional price situations for the 336 trading periods preceding the relevant trading period, before determining whether a scarcity pricing situation exists. This would mean that the requirement to resolve provisional price situations would no longer have to be completed within the deadline for publishing interim prices under clause 13.135B(b).

⁵ The ‘initial’ interim prices will be replaced by the interim prices reflecting the scarcity pricing event once the GWAP has been calculated and applied.

3.5 Issue 4: if interim prices change after the pricing manager publishes them, the Code does not require the pricing manager to recalculate and republish interim prices using the scarcity pricing methodology

- 3.5.1 If a scarcity pricing situation exists in a trading period, clause 13.135B requires the pricing manager to:
- a) calculate interim prices and interim reserve prices in the affected island or islands for the relevant trading period using the scarcity pricing methodology under Schedule 13.3A
 - b) publish the interim prices and interim reserve prices for the relevant trading period within set deadlines, depending on whether a provisional price situation is notified.
- 3.5.2 Interim prices for a trading period can change after the pricing manager publishes them under clause 13.135B. This can occur if the Authority upholds a pricing error claim under clause 13.175, or, under clause 13.166A, if an infeasibility situation arising from a shortage of instantaneous reserve is resolved. If, after the pricing manager has calculated and published interim prices under clause 13.135B, interim prices for any of the 336 trading periods preceding the relevant trading period are changed, this would change the island GWAP calculated under Schedule 13.3A. This in turn would make the interim prices published under clause 13.135B incorrect, and could change whether the limitations under clause 13.135C on the scarcity pricing regime apply.
- 3.5.3 If interim prices change in such circumstances, the Code does not currently require the pricing manager to recalculate and republish the interim prices for the relevant trading period using the scarcity pricing methodology under Schedule 13.3A.

Proposed amendment

- 3.5.4 If interim prices change after the pricing manager has calculated and published them under clause 13.135B, clause 13.135B should require the pricing manager to recalculate and republish the interim prices for the relevant trading period using the scarcity pricing methodology under Schedule 13.3A.

3.6 Issue 5: in a provisional price situation, the Code's deadline for the pricing manager to calculate and publish interim prices using the scarcity pricing methodology under Schedule 13.3A is too tight

- 3.6.1 If a scarcity pricing situation exists in a trading period and a provisional price situation is notified, clause 13.135B(b)(ii) gives the pricing manager 2.5 hours after the provisional price situation is resolved to:
- a) calculate interim prices and interim reserve prices for the relevant trading period using the scarcity pricing methodology under Schedule 13.3A
 - b) publish the interim prices and interim reserve prices for the relevant trading period.
- 3.6.2 Calculating interim prices using the scarcity pricing methodology under Schedule 13.3A requires the pricing manager to calculate both initial interim prices and island GWAP for the relevant trading period, before calculating interim prices.
- 3.6.3 The calculations under Schedule 13.3A are complex, and the pricing manager must ensure they are done accurately so that it can test whether the limitations under clause 13.135C on the scarcity pricing regime apply.

- 3.6.4 Given their complexity and the importance for the scarcity pricing regime of ensuring that the calculations are accurate, the Authority considers that the 2.5 hour deadline under clause 13.135B(b)(ii) is too short.

Proposed amendment

- 3.6.5 The Authority proposes revising the deadline under clause 13.135B(b)(ii) from 2.5 hours to 4 hours. This revised deadline would provide enough time for the pricing manager to calculate and publish interim prices under clause 13.135B(b)(ii), but would not unduly delay the scarcity pricing regime process.

3.7 Issue 6: there is a typographical error in the Code's formula for calculating the island GWAP

- 3.7.1 Clause 1(2) of Schedule 13.3A sets out a formula that the pricing manager must use to calculate the island GWAP in a scarcity pricing situation.

- 3.7.2 However, the formula incorrectly uses the interim price at the node where the relevant generator injects electricity in the island. This is incorrect because after calculating GWAP, clause 2(1) of Schedule 13.3A requires the pricing manager to calculate interim prices using GWAP.

Proposed amendment

- 3.7.3 Replacing the reference to “**interim price**” in the formula with “**initial interim price**” (which is the correct reference used in related clauses 1(1) and 2(1) of Schedule 13.3A) would resolve this issue.

Q1. Do you agree that the Authority should address the six identified issues with the scarcity pricing regime? If not, why not?

Q2. Do you agree that the Authority's proposed amendments address these issues with the scarcity pricing regime? If not, why not?

Q3. Do you consider that there are other issues with the scarcity pricing regime that the proposed amendments do not address? If so please provide details of these other issues and any suggestions you have for resolving them.

4 Regulatory Statement for the proposed amendments

4.1 Objective of the proposed amendments

- 4.1.1 The objective of the proposed amendments is to clarify and correct particular operational aspects of the existing scarcity pricing regime to ensure the regime operates correctly, according to the Authority's policy intent for the original scarcity pricing amendment.

4.2 The proposed Code amendments

- 4.2.1 The proposed amendments are described in sections 3.2 to 3.7, above. The drafting of the proposed Code amendments is set out in Appendix A.
- 4.2.2 The proposed amendments would assist in delivering the positive net benefits identified in the original scarcity pricing amendment

4.3 The cost-benefit analysis for the original scarcity pricing amendment identified positive net benefits

- 4.3.1 The proposed amendments correct and clarify particular operational aspects of the existing scarcity pricing regime, without imposing additional material Code obligations on participants. This will assist with delivering the positive net benefits identified in the cost-benefit analysis for the Code amendment that introduced the scarcity pricing regime in June 2013.⁶
- 4.3.2 Specifically, this cost-benefit analysis found that:⁷

When assessed against the counter-factual, scarcity pricing is expected to yield potential net economic gains of approximately \$95 million to \$114 million, depending on the phase in period for benefits. Even if a more conservative counter-factual is assumed (with less price suppression), the expected potential net benefit range remains positive at \$19 million to \$24 million.

4.4 The proposed amendments do not affect the substance or durability of the existing scarcity pricing regime and do not impose additional costs on the market

- 4.4.1 The cost-benefit analysis for the original scarcity pricing amendment noted that the positive net economic gains identified were sensitive to the input assumptions behind the analysis, which included a number of uncertain variables.
- 4.4.2 In particular, these results were based on an assumption that the scarcity pricing regime is durable and is perceived as such by participants. The analysis noted that to the extent that this assumption did not hold, the net benefits of the regime would decline and could even be negative. In this regard, the Authority emphasises that the proposed amendments do not change the substance of the scarcity pricing regime.
- 4.4.3 The proposed amendments instead correct and clarify particular operational aspects of the regime, ensuring that it operates correctly and as originally intended. The amendments proposed in this consultation paper can be considered to support the

⁶ The cost-benefit analysis for the Code amendment that introduced the scarcity pricing regime in June 2013 is set out at Appendix F of the consultation paper on this amendment, which is available at: <http://www.ea.govt.nz/development/work-programme/wholesale/scarcity-pricing/consultations/#c13856>.

⁷ Ibid, at paragraph 240.

original cost benefit analysis as they should help to ensure that the regime is durable, by ensuring that it functions as intended.

- 4.4.4 The proposed amendments should also reduce the costs associated with processing any scarcity pricing events that would otherwise have been affected by the issues identified in this paper. These costs could include the additional resources that would likely need to be applied by the pricing manager, system operator, Authority and affected participants to work through the consequences of the event, including potential litigation costs.

4.5 Costs and benefits of the proposed amendments

Costs

- 4.5.1 The proposed amendments may impose costs on the pricing manager and system operator in requiring them to amend their processes and documentation for scarcity pricing.
- 4.5.2 However, the Authority considers that any such costs are likely to be minor and insignificant because the proposed amendments do not change the substance of the scarcity pricing regime or the functions of the pricing manager or system operator under the regime.

Benefits

- 1.2 The benefits of the proposed amendments include their
- a) enabling the pricing manager to more effectively operate by allowing it to:
 - (i) resolve an infeasibility or metering situation that exists at the same time as a shortage situation, without breaching clause 13.144(1) for failing to publish notice of a shortage situation by 0900 hours
 - (ii) if a scarcity pricing situation exists, resolve all provisional price situations without breaching the relevant deadline for publishing interim prices under clause 13.135B(b)
 - b) ensuring the Code is clear regarding which trading periods a notice under clauses 5(1) or 5(1A) of Technical Code B of Schedule 8.3 (or a notice of shortage situation under clause 13.144) should specify. This increases certainty for affected participants and will reduce the potential scope and cost of any litigation that might be initiated in the event that shortage situation occurs.
- 4.5.3 The value of the benefits is difficult to estimate and could vary significantly depending on whether or not a scarcity event occurs, and the duration of the event. However, in the event of any one shortage situation, the Authority expects that the benefits of reduced or avoided litigation and of avoiding the costs associated with delays to final pricing would be material.
- 4.5.4 The Authority considers that the
- a) benefits of the proposed amendments significantly outweigh the costs
 - b) proposed amendments will not add any costs for other participants beyond the costs the Authority identified and consulted on for the original scarcity pricing amendment.

Q4. Do you agree the benefits of the proposed amendments outweigh their costs?

4.6 There are no alternatives to the proposed amendments for resolving five of the six operational issues

- 4.6.1 The Authority considers that the only operational issue identified in this paper that might be resolved other than by the relevant proposed amendment is Issue 1 outlined at paragraph 3.2 of this paper. To clarify which trading periods the system operator should specify in a notice under clauses 5(1) and 5(1A) of Technical Code B of Schedule 8.3, it may be simpler and less prescriptive for the Authority to:
- a) work with the system operator and the pricing manager to ensure the system operator specifies the correct trading periods in its notice
 - b) publish written guidance on this.
- 4.6.2 Carrying out one or both of the alternative options in paragraph 4.6.1 might achieve the objective of the proposed amendments, which is to correct and clarify the operational issues with the current scarcity pricing regime. However, on balance, the Authority considers that the proposed amendment for this issue would provide greater clarity and certainty to the pricing manager and participants relying on the accuracy of the notice.
- 4.6.3 The Authority therefore considers that the proposed amendment relating to this issue would better achieve the objective of the proposed amendments than the alternatives noted above.

Q5. Do you agree with the Authority's assessment of alternatives for achieving the objective of the proposed amendments? If you disagree with the Authority's assessment, please explain your preferred alternative in terms consistent with the Authority's statutory objective under section 15 of the Act.

4.7 The proposed amendments comply with section 32(1) of the Act

- 4.7.1 Table 1 (below) demonstrates how the proposed amendments comply with section 32(1) of the Act.

Table 1: How the proposed amendments comply with section 32(1) of the Act

Requirement	Comment
The proposed amendments are consistent with the Authority's objective under section 15 of the Act, which is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.	The proposed amendments are consistent with the Authority's objective because they promote the efficient operation of the electricity industry for the long-term benefit of consumers. The proposed amendments achieve this by correcting and clarifying particular operational aspects of the existing scarcity pricing regime to ensure that it operates efficiently, and as intended.

Requirement	Comment
The proposed amendments are necessary or desirable to promote any or all of the following:	
(a) competition in the electricity industry;	The proposed amendments do not affect competition in the electricity industry.
(b) the reliable supply of electricity to consumers;	By correcting and clarifying particular operational aspects of the existing scarcity pricing regime, the proposed amendments primarily promote the efficient operation of the electricity industry. However, the core objective of the original scarcity pricing amendment was to improve the reliability of supply. Specifically: • because the scarcity pricing price floor improves certainty of revenue for providers of last-resort electricity resources (generation and demand-response), providers have a stronger incentive to provide the resources needed to achieve an efficient level of reliability • because scarcity price values are set through a public process and reviewed periodically, the scarcity price regime should reduce the likelihood of ad-hoc price intervention during an emergency. By ensuring the existing scarcity pricing regime operates correctly and according to the Authority's original policy intent, the proposed amendments indirectly promote reliability of supply.
(c) the efficient operation of the electricity industry;	By correcting and clarifying particular operational aspects of the existing scarcity pricing regime, the proposed amendments ensure the regime operates correctly and according to the Authority's original policy intent. This promotes the efficient operation of the electricity industry.
(d) the performance by the	The proposed amendments will not affect the Authority's performance of

Requirement	Comment
Authority of its functions;	its functions.
(e) any other matter specifically referred to in this Act as a matter for inclusion in the Code.	The proposed amendments will not affect any other matter specifically referred to in the Act for inclusion in the Code.

Q6. Do you agree the Authority's proposed amendments comply with section 32(1) of the Act?

4.8 The Authority has had regard to the Code amendment principles

4.8.1 When considering amendments to the Code, the Authority is required by its Consultation Charter⁸ 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 preparing the proposed amendments.

Table 2: Regard for Code amendment principles

Principle	Comment
1. Lawful	The proposed amendments are lawful, and are consistent with the statutory objective (see section 4.7 of this paper) and with the empowering provisions of the Act.
2. Provides clearly identified efficiency gains or addresses market or regulatory failure	As outlined at section 4.2.2 of this paper, the proposed amendments assist in delivering the positive net benefits identified in the consultation paper for the original scarcity pricing amendment.
3. Net benefits are quantified	The costs and benefits of the proposed amendment are set out in section 4.5

⁸ The consultation charter is one of the Authority's foundation documents and is available at: <http://www.ea.govt.nz/about-us/documents-publications/foundation-documents/>.

Appendix A Proposed amendments

Technical Code B of Schedule 8.3

5 Formal notices and responses

...

- (2) The **system operator** must ensure that a **formal notice** issued in accordance with subclause (1) or subclause (1A) includes the following:
- (a) the electrical or geographical region affected by the notice;
 - (b) the potential consequences of the situation;
 - (c) the responses requested of **participants**;
 - (d) the start time and end time of the situation ~~trading periods~~ to which the notice applies.

13.135A Notice of scarcity pricing situation

...

- (2A) The **pricing manager** must determine whether a **scarcity pricing situation** exists in the relevant **trading period** only after the **pricing manager** has—
- (a) resolved any **provisional price situation** that existed in any of the 336 **trading periods** before the relevant **trading period**; and
 - (b) under clause 13.166A, recalculated and **published interim prices** for the relevant **trading period** by adding a virtual provider of **fast instantaneous reserve** and **sustained instantaneous reserve**.

13.135B Methodology to prepare interim prices and interim reserve prices if scarcity pricing situation exists

- (1) Subject to clause 13.135C, if a **scarcity pricing situation** exists in a **trading period**, the **pricing manager** must—
- (a) calculate **interim prices** and **interim reserve prices** in the affected **island** or **islands** for that **trading period** in accordance with the methodology set out in Schedule 13.3A; and
 - (b) **publish interim prices** and **interim reserve prices** for the **trading period** by—
 - (i) if no **provisional price situation** is notified, 1200 hours in the following **trading day**;
or
 - (ii) if a **provisional price situation** is notified, ~~2.54~~ hours after the **provisional price situation** is resolved; and
- (2) Despite subclause (1), if a **scarcity pricing situation** exists in a **trading period**, and there is a change to **interim prices** or **interim reserve prices** calculated and **published** under subclause (1)(a) and (1)(b)(i), the **pricing manager** must—
- (a) recalculate **interim prices** and **interim reserve prices** in the affected **island** or **islands** for that **trading period** in accordance with the methodology set out in Schedule 13.3A; and
 - (b) **publish interim prices** and **interim reserve prices** for the **trading period** no later than 4 hours after the **provisional price situation** is resolved.

13.144 Pricing manager to give notice of infeasibility situation, metering situation, high spring washer price situation, or shortage situation

- (1) Subject to subclause (2), if the **pricing manager** receives **input information** that yields an **infeasibility situation**, or a **metering situation**, or a **high spring washer price situation**, or

receives notice of a **shortage situation** in accordance with clause 5(1A) of **Technical Code B** of Schedule 8.3, the **pricing manager** must, ~~no later than 0900 hours on the day that the pricing manager receives the input information or notice,~~—

- (a) **publish** notice of the **infeasibility situation**, or **metering situation**, or **high spring washer price situation**, or **shortage situation**; and
- (b) specify in the notice each **trading period** affected by the **infeasibility situation**, or **metering situation**, or **high spring washer price situation**, or **shortage situation**; and
- (c) in relation to each **trading period** affected by a **high spring washer price situation**, specify in the notice each **transmission security constraint** that has **bound** in the relevant **trading period** or **trading periods**; and
- (d) in relation to each **trading period** affected by a **shortage situation**, specify in the notice whether the **shortage situation** is an **island shortage situation** or a **national shortage situation**.

(1A) For the purposes of subclause (1)(b), the **pricing manager** must only specify in the notice under subclause (1)(a) the **trading periods** in respect of which the **infeasibility situation**, or **metering situation**, or **high spring washer price situation**, or **shortage situation** was in effect at the start of the relevant **trading period**.

(2) The **pricing manager** must not give notice of a **high spring washer price situation** or **shortage situation** in accordance with subclause (1) in relation to a **trading period** if an **infeasibility situation**, or a **metering situation**, or a **SCADA situation** exists in that **trading period** and has not been resolved.

(3) The **pricing manager** must **publish** notice of the **infeasibility situation**, **metering situation**, **high spring washer price situation**, or **shortage situation** under subclause (1)(a)—

- (a) ~~no later than 0900 hours on the day that the pricing manager receives the relevant input information or notice; or~~
- (b) if a **shortage situation** exists at the same time as an **infeasibility situation**, a **metering situation**, or a **SCADA situation**, the **pricing manager** must **publish** notice—
 - (i) of the **infeasibility situation**, the **metering situation**, or the **SCADA situation**, no later than 0900 hours on the day that the **pricing manager** receives the relevant **input information** or notice; and
 - (ii) of the **shortage situation** as soon as possible after the **pricing manager** resolves the **infeasibility situation**, or the **metering situation**, or the **SCADA situation**.

Schedule 13.3A Calculation of interim prices and interim reserve prices in scarcity pricing situation

1 Calculation of interim prices and interim reserve prices in island scarcity pricing situation

...

P_g is the initial interim price at the **node** where **generator g** injects **electricity** in the **island**

...

2 Calculation of interim prices in national scarcity pricing situation

...

P_g is the initial interim price at the **node** where **generator g** injects **electricity** in both **islands**

...

Schedule 13.3A Calculation of interim prices and interim reserve prices in scarcity pricing situation

1 Calculation of interim prices and interim reserve prices in island scarcity pricing situation.....

P_g is the initial interim price at the node where generator g injects electricity in the island.....

2 Calculation of interim prices in national scarcity pricing situation

P_g is the initial interim price at the node where generator g injects electricity in both islands

Q7. Do you have any comments on the drafting of the proposed amendments?

Appendix B Format for submissions

Submitter	
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Question	Comment
Q1. Do you agree that the Authority should address the six identified issues with the scarcity pricing regime? If not, why not?	
Q2. Do you agree that the Authority's proposed amendments address these issues with the scarcity pricing regime? If not, why not?	
Q3. Do you consider that there are other issues with the scarcity pricing regime that the proposed amendments do not address? If so please provide details of these other issues and any suggestions you have for resolving them.	
Q4. Do you agree the benefits of the proposed amendments outweigh their costs?	
Q5. Do you agree with the Authority's assessment of alternatives for achieving the objective of the proposed amendments? If you disagree with the Authority's assessment, please explain your preferred alternative in terms consistent with the Authority's statutory objective under section 15 of the Act.	
Q6. Do you agree the Authority's proposed amendments comply with section 32(1) of the Act?	
Q7. Do you have any comments on the drafting of the proposed amendments?	

Glossary of abbreviations and terms

Authority	Electricity Authority
Act	Electricity Industry Act 2010
Code	Electricity Industry Participation Code 2010