Review of the customer compensation scheme

Consultation paper

Submissions close: 5:00 pm on 29 November 2016

18 October 2016

Market Design

Executive summary

The customer compensation scheme (CCS) helps to manage the risk that a dry year could lead to energy shortage conditions. Under the CCS, retailers must pay compensation to their customers during an official conservation campaign (OCC). Importantly, the CCS arrangements also codify the role of the system operator in controlling OCCs, triggered once controlled storage in hydro lakes falls to levels that indicate an OCC is needed to avoid energy shortage. Alongside other mechanisms such as scarcity pricing and the stress test regime, the CCS forms part of the broader security of supply framework.[1]

The CCS was introduced to address two related problems

The Electricity Authority (Authority) introduced the CCS in 2011 to address two related problems. First, in dry years during the period 2000 to 2010, electricity retailers had an incentive to lobby government for conservation campaigns as a 'free option' to limit their exposure to high spot prices driven by falling hydro storage. When their customers responded to those campaigns and reduced electricity consumption, retailers that had not otherwise hedged their exposure benefited through reduced purchases in the wholesale market. Second, experience in 2001, 2003, and 2008 indicated that conservation campaigns had been over-used, and that customers were beginning to suffer from 'campaign fatigue'.

The CCS established two principal incentives to address those problems

The CCS addresses those problems by establishing two principal incentives. Frist, requiring retailers to compensate their customers for their savings effort establishes an incentive for retailers to more appropriately manage spot price risk (because they wish to avoid paying compensation), such as through financial or physical hedges. Increased hedging in turn acts to increase the overall level of energy reserve available by underwriting investment in generation and demand response capacity—conservation campaigns then become less likely. Second, as conservation campaigns will still be needed in future under some dry year conditions, compensation payments encourage customers to conserve energy when they are called. The CCS further encourages the major hydro generators to more prudently manage lake levels in a dry year, preserving the option of using that water later in the season.

Recent developments led the Authority to review the CCS to ensure it remains fit for purpose

Recent developments in the market raised concerns that the security of supply outlook may be deteriorating. Total supply declined, with the withdrawal of thermal generation at Otahuhu B (400 MW) and Southdown (140 MW). In August 2015 Genesis also announced its intention to close the two remaining Huntly Rankine units (totalling 500 MW). At the same time, the unclear future of the Tiwai aluminium smelter makes electricity demand growth uncertain, potentially reducing market participants' willingness to forward contract for new investment. Modelling by the system operator suggested an elevated risk of energy shortage conditions in the event of a dry year in 2019.

While closely monitoring these concerns and other unfolding structural shifts in the market—most notably the potential uptake of emerging technologies such as electric vehicles, solar photovoltaic (PV) generation, and battery storage, as well as evolving business models—we decided to review the CCS and the stress test regime. While we were conducting these reviews,

[1] See *The security of supply framework* information paper at http://www.ea.govt.nz/development/work-programme/risk-management/review-of-the-customer-compensation-scheme-ccs/consultation/#c16203.

Genesis announced that it had entered into commercial arrangements with other participants that will keep the two Huntly Rankine units operational until 2022.

Despite Genesis announcing it would prolong the life of the Rankine units, we decided to complete the review of the CCS.

The objectives of the CCS remain valid and its current design is fit for purpose in evolving market conditions

The Authority considers that the objectives of the CCS remain valid, and that its current design is fit for purpose in current and evolving market conditions. We do not propose to modify the CCS at this time.

Our review considered the objectives of the CCS and the form of its design. We identified a set of options to modify the CCS, with the aim of strengthening the retailer incentive to hedge. We also re-affirmed the design principle that the scheme should be simple, blunt in the incentives applied to retailers, and provide compensation that is easy to communicate to customers.

On balance, we found that the options identified may undermine the customer incentive to save electricity if an OCC is called, hence weakening the effectiveness of future conservation campaigns; or they may introduce unjustified complexity and administrative costs, act as barriers to entry and expansion in the retail market, or otherwise inappropriately modify established effective security of supply arrangements. Many of the options identified were also poorly aligned with the principle of a design that is simple, blunt, and easy to communicate.

We will establish a new project to consider whether CCS obligations should be extended to type 2 retailers

Type 2 retailers (who buy electricity from a trader) are not currently required to compensate their customers during an OCC. This is because of persistent difficulties in identifying these parties, not because the CCS was not intended to apply to them. We will establish a new project to assess these difficulties in depth and identify options to resolve them. We intend to release a consultation paper in early calendar 2017.

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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 review of the CCS.

1.2 We are not proposing to make changes to the Code in this instance. Accordingly, this paper does not include a regulatory statement under Section 39(2) of the Act.

1.3 However, we welcome feedback regarding the issues examined in this paper and the basis of our conclusion that no change to the CCS is currently warranted.

How to make a submission

1.4 Your submission is likely to be made available to the general public on the Authority's website. If necessary, please indicate any documents attached in support of your submission and any information that is provided to the Authority on a confidential basis. However, you should be aware that all information provided to the Authority is subject to the Official Information Act 1982.

1.5 The Authority's preference is to receive submissions in electronic format (Microsoft Word) in the format shown in Appendix C. Submissions in electronic form should be emailed to submissions@ea.govt.nz with "Consultation Paper—Review of the customer compensation scheme" 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, ASB Bank 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 with you before deciding whether to not publish that part of your submission.

1.9 However, please not 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 **29 November 2016**.

1.11 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 customer compensation scheme helps manage dry-year risk within the security of supply framework

2.1 The customer compensation scheme (CCS), and the official conservation campaigns (OCC) that trigger it, help manage the risk that energy shortage conditions will develop during a dry year. The CCS is one of the mechanisms that facilitate an efficient security of supply:

(a) The CCS provides an incentive for retailers to hedge their exposure to the high spot prices that are likely to arise in dry year conditions.

(b) Purchasing hedge cover in turn helps underwrite investment in generation and demand response capacity.

(c) This added capacity increases the overall level of energy reserve available, reducing the probability that energy shortage conditions will occur in a dry year.

2.2 The CCS further encourages the major hydro generators to manage lake levels more prudently in the lead up to winter. Using water more conservatively better reflects the value of water in dry year conditions, preserving the option of using that water over longer periods. Higher spot prices then signal that other capacity (especially thermal generation) should be used earlier than may otherwise be the case, helping to manage the risk that energy shortage will occur.

2.3 The Authority has also released a companion paper titled *The security of supply framework*.[2] The companion paper discusses energy and capacity shortage risks in New Zealand, and how those risks are managed by mechanisms such as the CCS, scarcity pricing, and the stress test regime as part of the security of supply framework.

The CCS obliges retailers to pay compensation to their qualifying customers during an OCC

2.4 The CCS was introduced to comply with section 42 of the Electricity Industry Act 2010, which stipulated new matters that the Authority must address in the Electricity Industry Participation Code 2010 (Code) in its first year of operation. Clause 42(2)(a) required 'provision of compensation by retailers to consumers during public conservation campaigns'.[3]

2.5 The CCS came into force in April 2011 following two rounds of consultation in 2010,[4] and is set out in subpart 4 of Part 9 of the Code. The CCS arrangements remain as they were originally codified, other than minor clarifying amendments.

2.6 Under the CCS retailers are obliged to pay their qualifying customers a default minimum weekly amount (MWA) each week for every week that an OCC operates. Appendix A details the methodology used to calculate the MWA. The Authority determined the MWA to be $10.50 per week per installation control point (ICP) when we introduced the CCS in

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2 See *The security of supply framework* information paper at http://www.ea.govt.nz/development/work-programme/risk-management/review-of-the-customer-compensation-scheme-ccs/consultation/#c16203.

3 Note that the previously used term 'public conservation campaign' became 'official conservation campaign' in the Code changes the CCS introduced.

4 The Electricity Industry Participation (Customer Compensation Schemes) Code Amendment 2011 is available at http://www.ea.govt.nz/code-and-compliance/the-code/amendments/2011-code-amendments/. The first consultation paper is available at http://www.ea.govt.nz/dmsdocument/8138 and the second at http://www.ea.govt.nz/dmsdocument/9611.

2011. Our first triennial review published in 2014 found the MWA should be held at $10.50.

2.7 Qualifying customers are those with a contract for the supply of electricity at an ICP with a category 1 or category 2 metering installation who consume at least 3000 kWh over the preceding twelve months. Importantly, those customers with all of their supply priced by reference to the final price at a grid exit point (GXP)—ie, the applicable spot price—do not qualify for compensation.[5]

2.8 Retailers may also choose to develop more targeted compensation schemes that better reflect their individual circumstances under clause 9.26 of the Code. Customers can then choose to be covered by any such 'additional customer compensation schemes' instead of the default scheme. However, retailers must continue to offer the default scheme.

2.9 Importantly, the CCS also codified when OCCs are called and how they are run:

(a) The system operator coordinates OCCs under clause 9.23 of the Code, taking account of the Emergency Management Policy (EMP) and Security of Supply Forecasting and Information Policy (SOSFIP).[6]

(b) The risk of energy shortage is tracked by the hydro risk curves (HRCs),[7] maintained by the system operator. Each curve indicates the level of controlled hydro storage at which, under the stated proportion of historical inflow sequences (the *x*% HRC), storage would fall to zero later in the season. Importantly, the HRCs do not include the substantial volumes of water held in contingent hydro storage, which become available under emergency conditions specified for each lake.[8]

(c) OCCs are triggered if controlled hydro storage is forecast to fall below the 10% HRC threshold for 1 week or more (for New Zealand as a whole, or for the South Island); ie, once controlled storage is forecast to fall to zero in one in ten of the historical hydro inflow sequences.[9]

(d) OCCs are ended once controlled hydro storage returns to the 8% HRC exit threshold; ie, the risk that controlled storage will fall to zero has eased to 8% or less.

The CCS targets two problems that arose in dry years before it was introduced

2.10 Spot prices are likely to be high in a dry year as controlled hydro storage falls and the risk of energy shortage rises—potentially very high. Electricity retailers therefore have an

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5 The exemption under clause 9.21(2) of the Code is detailed in Option 8 of Appendix B.

6 The EMP and SOSFIP are published by the system operator at http://www.systemoperator.co.nz/security-supply/security-supply-policies.

7 HRCs are defined in the SOSFIP. For further explanation see http://www.systemoperator.co.nz/security-supply/hydro-risk-curves-explanation; current HRCs are available from the system operator at http://www.systemoperator.co.nz/security-supply/sos-weekly-reporting/hydro-risk-curves, and on EMI at http://www.emi.ea.govt.nz/r/eyz5v.

8 Further details are given in *The security of supply framework* information paper at http://www.ea.govt.nz/development/work-programme/risk-management/review-of-the-customer-compensation-scheme-ccs/consultation/#c16203, and also discussed in Appendix B.

9 The 2010 consultation papers included detailed and specific evaluation of the HRC threshold. The 10% HRC trigger was further supported by additional analysis provided in Appendix A of the advice to the SPDBTG: Electricity Authority, Customer compensation scheme: *SPDBTG advice post consultation*, 9 November 2010, http://www.ea.govt.nz/dmsdocument/8783.

incentive to encourage their customers to reduce how much electricity they use, because this reduces how much electricity the retailer must buy. Consumers exposed to the spot price directly benefit from their own conservation efforts in the same way. However, retail customers on fixed price, variable volume (FPVV) contracts do not face this price signal to reduce their electricity use: high spot prices are not visible to them and so do not provide any incentive to conserve.[10] Under tight supply conditions in a dry year, spot-exposed retailers with FPVV customers will therefore be selling potentially significant quantities of electricity below cost.

2.11 Conservation campaigns help to reduce the risk that energy shortage will occur, by asking consumers to save electricity. Their main purpose is to encourage residential and small commercial customers to reduce consumption. If retailers are not otherwise hedged, they benefit from their FPVV customers' reduced consumption in two main ways:

(a) First, the direct benefit from the reduced amount of electricity they are required to buy at high spot prices (reduced quantity).

(b) Second, this reduced demand produces a secondary effect by acting to suppress the spot price itself (reduced total quantity leads to a lower price).

2.12 The CCS was introduced to address two related problems observed in the 2001, 2003, and 2008 conservation campaigns:

(a) The incentive for retailers to lobby for conservation campaigns as a risk management tool to limit their exposure to high spot prices during a dry year; ie, conservation campaigns were called too early and too often.[11] In doing so, retailers received a windfall gain by capturing the direct benefit of their customers' savings effort during periods of high spot prices.

(b) Customers did not directly benefit by reducing their use during a conservation campaign, and were not compensated for the electricity they saved.[12] They may also have suffered from 'campaign fatigue' from campaigns being called too often. These influences over consumer response risked weakening the effectiveness of conservation campaigns when one is needed.

2.13 The two consultation papers on the CCS in 2010 described the significant concerns that arose from experience of the 2001, 2003, and 2008 conservation campaigns.[13] The Authority's analysis found that the 2008 campaign resulted in no discernible net electricity savings, highlighting the apparent erosion of consumers' willingness to save.

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10 However, some FPVV customers might participate in explicit demand response schemes (provided by their retailer or a third party). These customers would receive a payment or some other benefit if they reduce their consumption or their load is controlled directly.

11 Until their role was codified by the CCS provisions, conservation campaigns could be initiated by the government, providing an incentive for retailers to lobby for political intervention. Further, conservation campaigns were historically called before controlled storage had fallen to the equivalent of the 10% HRC level.

12 While customers will have lower electricity bills, the consumption they have foregone is likely to be more valuable to them than the money they saved.

13 The first consultation paper is available at http://www.ea.govt.nz/dmsdocument/8138 and the second at http://www.ea.govt.nz/dmsdocument/9611.

The scheme has three objectives

2.14 The purpose of the scheme is to address the two problems described above: compensate customers for their savings efforts, helping to ensure OCCs are effective; and prevent retailers abusing conservation campaigns as a 'free option' to manage dry-year risk.

2.15 To do this, the scheme has three objectives:

(a) Limit the retailer incentive to lobby the Minister of Energy to call a conservation campaign. Under the CCS, OCCs are now commenced, ended, and coordinated by the system operator according to specific criteria.[14] This process uses explicit rules that set out the conditions when an OCC is needed and how it should be run. The obligation for retailers to pay compensation to their customers also limits the 'attractiveness' of OCCs, because retailers no longer receive the windfall gain of having to buy less electricity from the wholesale market.

(b) Create an incentive for retailers to prudently manage their exposure to high spot prices in a dry year, especially through hedging arrangements.[15] The CCS creates this incentive by requiring retailers to pay compensation to their customers during an OCC. The requirement to pay compensation can be avoided if retailers manage their dry-year risk by supporting investment in new generation or demand response capacity. Retailers that own hydro generation are also encouraged to manage lake levels more prudently, retaining the option to use that water later in the season when it will be more valuable. These incentives therefore help reduce the probability that an OCC will be called.

(c) Encourage customers on FPVV tariffs to voluntarily save electricity when an OCC is needed.[16] Paying compensation rewards individual customers for their saving effort, though under the default scheme they will be paid regardless of how much electricity they save.[17] However, customers did save electricity without compensation during previous campaigns—codifying the OCC trigger reduces the risk that they will perceive campaigns as being called too often. This minimises the risk of campaign fatigue, helping support the general incentive for customers to save.

Compensation is designed to be cost neutral to retailers

2.16 Compensation is not designed to penalise retailers: compensation payments represent the average value to retailers of their customers' savings effort through reduced wholesale market purchases, assessed in aggregate.

2.17 Without compensation, customers must bear the costs of their reduced consumption while retailers capture the benefit of reduced purchases in the spot market. That is, by paying compensation retailers now bear the cost of this reduced consumption during an

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14 The OCC thresholds are detailed in paragraph 2.9.

15 Hedging may take a number of forms, including investment in physical equipment, financial derivative products in the hedge market, or contracts for physical delivery.

16 Customers on FPVV tariffs are the principal focus as they are not exposed to the spot price signal. Although, with appropriate notice, retailers may be able to raise fixed prices under their contract terms, this will not provide an equivalent price signal.

17 Importantly, retailers can create more targeted additional compensation schemes and offer these to their customers.

OCC, rather than their customers. The MWA of the default scheme is calculated to estimate the value of this saved electricity, as detailed in Appendix A.

2.18 In this way, compensation is designed to be broadly cost-neutral to the retailer. In fact, the secondary price-suppressing effect of reduced demand driven by an OCC provides a further benefit to retailers that are not fully hedged (and all other purchasers at the spot price) that is not reflected in the compensation payment.

3 New concerns about security of supply led us to review the CCS

A number of factors raised concerns around security of supply

3.1 Recent developments in the market created an outlook of heightened security of supply risk (ie, risk of supply being insufficient to meet demand). These developments included:

(a) withdrawal of thermal generation at Otahuhu B (400 MW) and Southdown (140 MW) and Genesis' announcement it would decommission the two remaining dual fuel (coal and gas) Huntly Rankine units (250 MW each). The announcements reduced the margin by which available capacity exceeds typical demand levels

(b) uncertainty around demand growth and the future of the New Zealand Aluminium Smelter at Tiwai Point. This uncertainty could reduce forward contracting activity and new capacity investment.

3.2 Modelling undertaken by the system operator as part of a specific investigation into the impacts of decommissioning thermal plant indicated heightened risk that the country could experience energy shortage conditions should a dry year occur in 2019.[18]

3.3 At the same time, some participants have suggested that demand for electricity is rising again after many years of limited or no growth. The uptake of evolving technologies such as electric vehicles, solar PV, and battery storage could add to (electric vehicles) or soften (solar PV) this growth.

3.4 The magnitude and timing of these developments create the potential for New Zealand to move rapidly from the recent history of flat demand and over supply to a reduced supply margin as generating capacity is withdrawn from the market and demand growth returns.

3.5 These developments also increase uncertainty about future spot prices. This uncertainty may make it harder for market participants to justify long-term investments in new generation or demand response capacity or hedging arrangements with other suppliers. While deferred or shelved investment may be a prudent strategy under the present circumstances, decisions around the future of significant capacity—most notably the two remaining Rankine units at Huntly (totalling 500 MW)—take on greater importance. Such decisions have the potential for sizeable regrets, which could then lead to attempts to shift blame and request political intervention.

3.6 The Authority had been closely monitoring these developments. While we consider that the security of supply framework is effective, we decided that it would be prudent to review these arrangements in the circumstances. In particular, we decided to review the CCS and stress test regime to ensure that these mechanisms remain effective in this developing market environment.

[18] See http://www.systemoperator.co.nz/activites/current-projects/impact-thermal-generator-decommissioning.

We reviewed the CCS as a component of the security of supply framework

3.7 We decided to complete the review of the CCS despite Genesis' announcement that it would prolong the life of the Huntly Rankine units until 2022. No OCCs have been required in the five years since the CCS entered force, and so the CCS has never been triggered. However, the incentives for retailers to hedge their spot price exposure that the CCS is intended to create are relevant to the security of supply concerns articulated above. It is therefore appropriate for the Authority to review the CCS arrangements to ensure they remain effective and fit for these evolving market conditions.

3.8 This paper reviews the CCS on that basis, in concert with the companion review of the stress test regime.[19] The two reviews are accompanied by an explanation of how each of these mechanisms contributes to security of supply.[20]

[19] See the *Review of the stress test regime* at http://www.ea.govt.nz/development/work-programme/risk-management/review-of-stress-testing-regime/consultation/#c16205.

[20] See *The security of supply framework* information paper at http://www.ea.govt.nz/development/work-programme/risk-management/review-of-the-customer-compensation-scheme-ccs/consultation/#c16203.

4 The CCS remains fit for purpose as a component of the security of supply framework

The electricity markets have evolved and retail competition has continued to increase since the CCS was introduced

4.1 Conditions in the electricity markets continue to change, driven by the growing influence of evolving technologies, new business models, and increased consumer participation. At the same time, market participants have also learned and modified their behaviour and will continue to do so.

4.2 Nonetheless, it might appear that the CCS could reduce retail competition by acting as a barrier to retailer entry and expansion. That is, the obligation to compensate customers during an OCC may appear to impose additional costs and risks on market participants.

4.3 In practice, however, there is no evidence that retail competition has reduced. In fact, indicators concerning the retail and hedge markets have continued to improve since the CCS was introduced in 2011. In particular:[21]

(a) The Herfindahl-Hirschman index (HHI), a measure of market concentration, has continued its long-term downward trend in the retail market, nationally and in all regions.

(b) Competition in the retail market is intense and is acting to constrain price rises.

(c) Over the last five years, the number of new retail parent companies has increased from 12 to over 20, and the number of retail brands has increased from 17 to over 30.

(d) The number of small and medium-sized retailers has continued to grow strongly.

(e) Concentration in the hedge market is low, indicating a competitive market structure, and activity continues to increase.

4.4 In particular, innovative retail pricing plans have been introduced or grown in prominence, with rapid growth in pre-pay products, and more bundled offerings. Notably, some retailers now offer tariff plans that pass through the wholesale spot price to residential and small commercial consumers—plans of this type were foreseen when the CCS was designed but did not yet exist.[22]

4.5 Examples of retail product innovation include:

(a) Powershop offers a form of dynamic pricing that reflects seasonal changes in spot price. From the perspective of the CCS, this type of price plan is a variation on traditional FPVV products.

(b) Flick Electric offers a fully transparent product based on passing all costs through to the customer. In particular, this includes passing through the full wholesale electricity spot price. The price of all electricity provided under a Flick Electric

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21 The Authority's 2015 *Year in Review* report details these trends, available at http://www.ea.govt.nz/monitoring/year-in-review/2015/.

22 Spot price retail plans were seen as a plausible new business model when the CCS was developed, but did not then exist. The 100% 'on-spot' exemption was included to accommodate them. The incentives to customers to change their consumption in response to such price signals are examined in Appendix B in the discussion under Option 8 and Option 9.

contract is therefore determined by reference to the final price at a GXP and hence exempt from CCS compensation under clause 9.21(2) of the Code.

(c) Paua to the People offers a *Cheap As* price plan that is functionally equivalent to Flick Electric's offer, but with a different form of administration charging.

4.6 Further innovation is also occurring in the hedge market, such as the new financial exchange-traded price cap products, planned for listing in mid calendar 2017. The price cap tool will provide new opportunities for retailers to offer insurance products to their customers, as well as make it easier for retailers, generators, and larger direct-purchase consumers to manage their spot price exposure. The energy cap product is expected to be well-suited to reduce the risks of sustained high prices—the conditions likely to prevail during and in the lead-up to an OCC.

4.7 As an example, a retailer could use an energy cap product to offer a capped price plan to otherwise spot-exposed customers for a premium—a form of insurance. The customer would then keep the benefits of directly purchasing at the spot price, but limit its maximum price exposure if the spot price rises to the cap strike price. The 100% 'on spot' exemption will apply to such a scenario: even though spot purchases are capped, the price paid by the customer can only be determined by reference to the final price at their GXP.

4.8 While it is not possible to isolate the influence of the CCS on any of these trends, we do not consider that the CCS unduly limits retail competition. Moreover, the blunt nature of the CCS means that all retailers are treated equally. Efficient new retailers will not rely on the windfall gain of their customers' savings efforts during conservation campaigns and so should not be deterred from entering the market. That is, the cost-neutral approach to compensation payments (described in paragraph 2.16) is only a deterrent to inefficient retailers that rely on socialising the costs of high spot prices to their customers during an OCC. The evidence of retailer activity since introducing the CCS presented above supports this conclusion.

The objectives of the CCS remain valid and help to ensure efficient security of supply

4.9 The Authority has reviewed the CCS objectives laid out in paragraph 2.15 and their rationale and considers that they remain valid in this evolving context. Ensuring retailers have appropriate incentives to hedge their spot price exposure during a dry year will continue to play an important role in achieving an efficient security of supply—again, forward contracting helps underwrite investment in generation and demand response capacity. Similarly, encouraging consumers to save energy when OCCs are called will continue to be necessary to manage the risk that energy shortage will occur once controlled hydro storage falls to the 10% HRC level.

4.10 In fulfilling these objectives as part of the security of supply framework the CCS therefore promotes the Authority's statutory objective by supporting better risk management decisions, which leads to a more efficient level of reliability.

4.11 To illustrate the continued validity of the CCS objectives, it is useful to consider what might happen if it were removed. Without the obligation for retailers to compensate their qualifying customers during an OCC, conservation campaigns would again become more attractive to retailers as they would again receive the windfall gain of their customers' savings effort. This would be the case even though the ability to lobby for OCCs as a political hedge was limited by codifying the HRC trigger threshold. In fact,

while the explicit OCC trigger makes it much harder to successfully lobby for political intervention to initiate conservation campaigns, the incentive for retailers to lobby for some form of relief may be restored to a substantial degree.

4.12 Further, removing the compensation obligation may materially affect the probability of an OCC being required by acting to reduce the level of energy reserve over time. If an OCC becomes largely beneficial for retailers, their incentive to hedge in order to avoid one (to avoid compensation payments) is reduced. This may lead to less hedging and consequently less investment in generation and demand response capacity.

4.13 At the same time, removing the CCS may again compromise the effectiveness of OCCs when they are needed, in turn raising the likelihood that energy shortage occurs and rolling outages must be used. That is, removing the CCS may increase the probability that controlled hydro storage falls to zero in a dry year.[23]

(a) First, if OCCs are called more often as a result of reduced retailer hedging leading to a reduced level of energy reserve, the problems of campaign fatigue and the lack of compensation for avoided electricity consumption could resurface—the willingness of mass-market consumers to conserve electricity may be eroded.

(b) Second, if OCCs are less effective as a consequence, conservation efforts could then be insufficient to prevent energy shortage from occurring. As OCCs will continue to be called when the risk of energy shortage may be greater than when campaigns were called in the past (ie, prior to the CCS codifying the 10% HRC trigger), the consequences of an OCC failing to work when called are now arguably more serious.[24]

4.14 These dynamics would threaten the long term security of supply, undermining reliability to the detriment of consumers. The obligation for retailers to compensate their customers complements the OCC in a fundamental manner. It is a necessary mechanism within the security of supply framework, working to support the reliability limb of the Authority's statutory objective.

4.15 Indeed, the Authority considers the experience of 2012 is instructive; ie, after the CCS, scarcity pricing, and the stress test regime were introduced, coupled with an increasingly active and liquid hedge market. South Island hydro storage lake inflows were the lowest on record in 2012;[25] yet the market was able to manage these conditions effectively, without the need for an OCC and without disruption to consumers. In fact, the Authority is not aware of any lobbying for political intervention at all. While this outcome cannot be attributed to any one factor, we consider the incentives put in place through the CCS were likely to be an important influence on market behaviour.

Q1. Do you agree that the objectives of the CCS remain valid and contribute to an efficient security of supply?

23 See detailed discussion of this probability in Appendix B.

24 This is complicated by the role of contingent hydro storage, noted in paragraph 2.9. As discussed in Appendix B, the contingent storage category did not exist until after the CCS was introduced. The substantial volumes of water available in contingent storage are likely to be used before rolling outages are needed. Nonetheless, making OCCs less effective raises the overall risk of exhausting water in hydro storage lakes in a dry year.

25 Electricity Authority, Electricity market performance: *A review of 2012*, March 2013, p. 33.

The Authority has decided not to change the existing design

4.16 The Authority has concluded that there is no compelling reason to modify the CCS, and that the considerations and analysis underpinning the original design remain valid.

4.17 We developed a set of options to revise the CCS in order to strengthen retailer incentives to manage spot price risk during dry years—a strengthened retailer incentive could be expected to help address the concerns over security of supply discussed in section 3. However, as discussed above, it is important that in doing this the incentive for customers to save energy during an OCC is not materially weakened. Again, OCCs are now called when controlled hydro storage has fallen to levels that indicate action should be taken to mitigate the risk that energy shortage will occur, regardless of any inappropriate use of conservation campaigns in the past.

4.18 Further, when developing the original CCS, the Authority identified an important design principle: the scheme should be simple, blunt in the incentives it applies to retailers, and oblige straightforward compensation payments that are easy to communicate to customers. This principle guided the final design choices made when the CCS was introduced, such as no payment differentiation between islands, no requirement to demonstrate savings had occurred, and that customers should choose to take up any additional compensation schemes offered by their retailer (rather than the retailer have a single alternative scheme approved by the Authority using complex assessment criteria and mandated for all their customers).

4.19 The Authority has reviewed this principle and considers that it continues to provide a robust basis for scheme design.

4.20 Accordingly, in evaluating each option for modifying the CCS design we considered the following factors:

(a) the impact on both the retailer and customer incentives[26]

(b) any risks, limitations, or other issues for implementation that may arise, including any outcomes that are not aligned with the Authority's statutory objective

(c) how well the option holds to the principle of simple, blunt, and easily communicated design.

4.21 A summary of our assessment is given in Table 1 below, and the full evaluation of the options for modifying the CCS design is detailed in Appendix B.

4.22 On balance, we consider these options may undermine the customer incentive to save electricity when an OCC is called, hence weakening the effectiveness of future conservation campaigns; or they may introduce unjustified complexity and administrative costs, act as barriers to entry and expansion in the retail market, or otherwise inappropriately modify established effective security of supply arrangements.

4.23 We have therefore determined that the current CCS design continues to provide the necessary retailer and customer incentives and remains suited to evolving market conditions. The compensation mechanism is simple, blunt in its application, and easily communicated to customers in the event of an OCC. Retailers also have flexibility to

[26] To reiterate, individual customers are paid compensation under the default scheme regardless of how much electricity they save. The customer incentive of the default scheme is then a general form of encouragement, while retailers may offer stronger and more targeted incentives through additional compensation schemes.

engage with their customers in more sophisticated ways by offering additional compensation schemes that their customers can choose to adopt.

4.24 However, we have determined the discrepancy discussed in Option 10 should be investigated further. The current lack of compensation obligation for type 2 retailers stems from complex technical and legal issues around identifying them, rather than the policy intent of the CCS or its design. We will establish a new project to assess these difficulties in depth and identify options to resolve them. We intend to release a consultation paper in early calendar 2017.

4.25 In summary, the Authority considers the current design of the CCS is fit for purpose, even in the face of changing market conditions, and should not be modified at this time.

Q2. Do you agree with the Authority's conclusion that we should not modify the CCS at this time? If you disagree, please explain your reasoning in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

We have identified a potential anomaly in the Code and will investigate further

4.26 The CCS applies when OCCs are called to manage the risk of energy shortage in a dry year, as detailed in section 2. However, the Code also specifies that the CCS will be triggered by rolling outages in conditions that have no relation to hydro storage. This is because the CCS is triggered by 'public conservation periods' under clause 9.24(1)(b); only the South Island-specific trigger in clause 9.24(1)(a) directly and explicitly refers to OCCs. Public conservation periods are defined in Part 1 as periods of either OCCs, or 'supply shortage declarations' that last at least one week—supply shortage declarations in turn trigger rolling outages under clause 9.14. Further, the system operator rolling outage plan (SOROP) states that prolonged capacity shortfalls can be declared (energy) supply shortages if the system operator believes rolling outages can better manage the grid emergency.[27] Prolonged capacity shortages can therefore trigger the CCS.

4.27 We will investigate this potential anomaly further to determine if this non-OCC trigger is appropriate. We will consult later if we determine that any changes are necessary to better support the Authority's statutory objective.

[27] See http://www.systemoperator.co.nz/security-supply/security-supply-policies/rolling-outage-plans/.

Table 1: Summary of assessment of options to modify the CCS

Option	Description	Effect on the retailer incentive to hedge	Effect on the customer incentive to save	Major impediment or risk to implementation	Pursue further?
Option 1: Improve the methodology used to calculate the default MWA	The methodology used to determine a value for the MWA is improved.	Correlates with direction of change in MWA (eg, an increase in MWA increases the incentive to hedge).	Correlates with direction of change in MWA.	There is no new information available on which to base an alternative methodology.	No.
Option 2: Set retailer obligations by net position	Retailer obligations to compensate customers are differentiated by their net spot price exposure (or 'net position').	Strengthened on the basis that greater hedging reduces compensation payments during an OCC.	Degraded, possibly removed, due to differences in compensation between retailers that are not transparent to their customers, and potential for wider perception that OCC and CCS arrangements are arbitrary.	Undermines the primary function of the CCS and reduces effectiveness of OCCs. Significant difficulty in estimation, may be gamed, may discourage other legitimate means of risk management (such as demand-side response).	No.

Option	Description	Effect on the retailer incentive to hedge	Effect on the customer incentive to save	Major impediment or risk to implementation	Pursue further?
Option 3: Set retailer obligations by net position via central compensation pool	Retailer obligations to fund compensation are differentiated by their net spot price exposure, but qualifying customers continue to be compensated as per current arrangements (regardless of retailer position). Payment is made via a central pool on a net basis, where retailers pay into or receive from the pool the balance of their customer outlays subtracted from their fund obligation.	Non-deterministic due to risk of perverse 'arms race' outcome.	Preserved, provided total compensation payments to qualifying customers are maintained.	High potential for hedging 'arms race'. Likely barrier to smaller entrants. Significant complexity required to implement.	No.
Option 4: Set customer compensation payments based on actual savings	Compensation payments to qualifying customers are set according to each customer's actual measured savings, rather than being simply the default MWA.	Weakened on balance as compensation payments more accurately reflect the value of savings to the retailer for individual customers.	Likely strengthened, if effective and efficient terms can be developed.	Difficult if not impossible to design in practice as no meaningful baseline of energy consumption to compare with.	No.
Option 5: Impose prudential obligations on retailers	Retailers are required to lodge prudential security to cover their compensation obligations under the default scheme that would apply if an OCC is called.	Strengthened on the basis that retailers will wish to avoid the prudential security obligation that will occur earlier than actual compensation payments.	Preserved as not directly affected.	Adds additional financial burden to retailers that may act as a barrier to entry.	No.

Option	Description	Effect on the retailer incentive to hedge	Effect on the customer incentive to save	Major impediment or risk to implementation	Pursue further?
Option 6: Include commercial and industrial consumers as qualifying customers	The definition of qualifying customers to be paid compensation is expanded to include consumers on category 3 metering installations (eg, office buildings, factories, warehouses, cool stores, industrial premises, larger retirement villages, and hospitals).	Strengthened due to the larger base of qualifying customers.	Minor potential for increased incentive for customers with category 3 metering installations, who now receive compensation.	Requires necessarily complex arrangements, and extending compensation to non-mass market customers poorly aligns with the CCS policy intent.	No.
Option 7: Impose compensation obligations on large consumers	Large consumers, principally industrial and commercial, are also obliged to pay customer compensation during an OCC. Payment would be via a central pool.	May be reduced due to offsetting payments, or reduced probability of an OCC being called. Large industrial and commercial consumers now have a strengthened (or newly introduced) incentive to hedge.	Preserved for currently-qualifying customers.	Likely unworkable in practice as no obvious way to set payment obligations, and unable to determine where payments are directed.	No.
Option 8: Remove the exemption for customers 'on spot'	Remove the current exemption for customers fully supplied at the spot price (ie, 'on spot').	Complex; may establish a weak incentive for 'spot retailers'.	Minor potential to strengthen incentive for customers on spot price contracts; other, currently-qualifying customers unaffected.	No basis on which to compensate fully spot-exposed customers.	No.

Option	Description	Effect on the retailer incentive to hedge	Effect on the customer incentive to save	Major impediment or risk to implementation	Pursue further?
Option 9: Exempt the spot-priced component of retail tariffs from customer compensation	The qualifying criteria are modified such that compensation is now paid for the proportion of total consumption that is not priced by reference to the spot price.	May decline over time as new part-spot-exposed tariffs are offered.	Unaffected for existing FPVV customers; 100% spot customers remain exempt. Responses from customers on (hypothetical) part-spot tariffs, or demand response schemes, may vary widely.	Difficulty in determining non-spot component of consumption. Potential for unintended negative consequences.	No.
Option 10: Extend the definition of qualifying customer to capture type 2 retailers	Update the definition of qualifying customers to bring type 2 retailers into the CCS.	Unaffected for existing (type 1) retailers. Type 2 retailers now have a strengthened (or newly introduced) incentive to hedge.	Preserved for currently-qualifying customers (and limits risk of perception of unfairness). Now established for customers of type 2 retailers.	Significant difficulties in identifying type 2 retailers and establishing obligations on them.	Establish a new project to resolve these challenges; release a further consultation paper in early calendar 2017.

Appendix A The current MWA methodology

The MWA estimates the value of consumer savings

A.1 The MWA methodology uses aggregate, average consumption data from a readily available source (MBIE's energy data file) to estimate the quantity of electricity saved by customers on FPVV contracts in response to an OCC. That amount is then multiplied by the spot market purchase cost that a typical retailer avoids. The outcome is then an estimate of the value to retailers of their customers' conservation efforts.

A.2 More formally, the MWA is the product of the factors EC × SR × VS:

(a) The mean electricity consumption (EC) is the expected pre-campaign weekly demand averaged over qualifying ICPs (a component of quantity).

(b) The savings rate (SR) is the percentage of total qualifying ICP demand expected to be saved during an OCC (a component of quantity).

(c) The value of savings (VS) is the expected average value of savings to a retailer, assessed as the difference between the expected spot price a retailer avoids paying and the energy price embedded in a retailer's fixed-price tariff (price).

A.3 A number of broad-based assumptions are used to estimate the quantity of electricity saved, and the value of those savings to the retailer. These relate to:

(a) the number of customers in each customer segment (residential, commercial)

(b) the proportion of customers in each segment on FPVV contracts

(c) the average pre-OCC consumption of each customer in each segment in winter (the season when an OCC is most likely to be called)

(d) the rate of savings that qualifying customers are able to achieve

(e) the value of those savings to the retailer.

The first triennial review of the MWA retained $10.50

A.4 The Authority is required to review the MWA once every three years under clause 9.25(2)(b)(ii) of the Code, and to provide at least 3 months' notice of any change to the MWA under clause 9.25(2)(c). This is known as the triennial review of the MWA. The next (second) triennial review must be undertaken by the end of December 2016.

A.5 The first triennial review of the MWA in 2014 estimated:[28]

(a) EC of 273 kWh per week per ICP, based on category 1 and 2 metering installations covering a total of 1.885 million ICPs (1.714 million residential, 0.171 million commercial), accounting for the estimated proportion not supplied by an FPVV tariff.

(b) SR of 7.8%, unchanged from the value determined by analysis of previous conservation campaigns undertaken during the 2010 consultations on the CCS.

(c) VS of $500/MWh, based on a spot price of $600/MWh and an embedded energy price of $100/MWh.

[28] The Authority announced the result of that review in the 25 February 2014 *Market Brief*, http://www.ea.govt.nz/dmsdocument/17478#mctoc2.

A.6 These factors produced an MWA estimate of $10.65 per week, or $1.52 per day.

A.7 The review maintained a simple approach to rounding, to avoid suggesting an unrealistically high level of precision in this estimate. Rounding to the nearest $0.10 per day resulted in the MWA remaining at $10.50 per week per ICP.

Appendix B Assessment of options to modify the CCS

B.1 The sections that follow present our assessment of options to modify the CCS with the principal aim to increase the retailer incentive to hedge.

B.2 Each option introduces the proposed change in the Description subsection, phrased as a *hypothetical* statement of the main elements that have been modified, and lays out the reasoning leading to that proposal (ie, explains the way in which current arrangements could perhaps be sub-optimal).

B.3 Note that individual options should not be taken as necessarily possible in practice or appropriate in principle. Indeed, in a number of cases our assessment finds that an option cannot realistically be achieved or that the reasons suggesting it are not valid.

B.4 Next, the option is evaluated for its likely influence on the retailer and customer incentives; any risks and limitations for implementation; and the extent to which it adheres to the principle of blunt, simple, and easily communicated design. In performing this evaluation, every option is tested against all three limbs of the Authority's statutory objective.

B.5 The final subsection gives our determination as to whether we should pursue the option further.

The probability that an OCC will occur

B.6 A number of options refer to the probability than an OCC will occur during a dry year.

B.7 This section explains the link between the HRC threshold that triggers an OCC, and the resulting incentive for retailers to hedge. The explanation is simplified to highlight the chain connecting the OCC threshold (the 10% HRC), the probability of an OCC being called, how the level of energy reserve affects that probability, and how hedging affects the level of energy reserve. Many other influences also affect these factors, but the chain presented here allows us to consider the overall effect on retailers of the OCC threshold.

B.8 Two probabilities describe the general relationship between controlled hydro storage and the HRCs:

(a) First, the *x*% HRC itself represents, by definition, the probability that controlled storage will fall to zero in a dry year given the distribution of historical inflow sequences, assuming full availability of installed transmission and generation and that market behaviour minimises use of hydro storage. The 10% HRC means that controlled storage falls to zero in 10% of historical inflow sequences. Contingent storage is not included when calculating the HRCs.[29]

(b) Second, the probability that controlled storage will reach any particular HRC during a dry year—this is mainly driven by the position of that *x*% HRC in relation to mean controlled storage.

B.9 The maximum potential energy reserve available, relative to expected demand,[30] is therefore a major factor determining this second probability. That is, if we assume the

[29] The contingent storage category did not yet exist when the CCS was introduced. More recent (and ongoing) changes in lake-specific conditions such as resource consents and engineering works have further increased capacity—significant volumes of water are likely to become available to hydro generators after an OCC is called.

[30] The HRCs assume an overall 2% reduction in demand as loads respond to high spot prices.

market manages hydro storage carefully and that all transmission and generation capacity is available, the level of energy reserve (generation and demand response capacity) strongly affects the position of each HRC: the greater the level of energy reserve, the lower the vertical position of all risk curves and therefore the smaller the probability that controlled storage will fall to any particular curve in a dry year.[31]

B.10 The level of hedge cover is in turn a major driver of the level of energy reserve—again, hedging acts to underwrite investment in generation and demand response capacity. All else being equal, more hedging should result in greater investment, increasing the level of energy reserve.

B.11 Drawing all of these influences together: achieving some target probability that controlled hydro storage will fall to any particular HRC requires a certain level of energy reserve; hedge cover must then be sufficient to support that required level of energy reserve. In seeking to avoid paying compensation during an OCC, retailers in effect buy hedge cover to reduce the probability that an OCC will occur. The probability of an OCC occurring in a dry year therefore reflects retailers' collective willingness to hedge to avoid the CCS.

[31] The details of this relationship are complex and responses will not be linear. For example, because the 10% HRC represents a more 'severe' risk than the 8% HRC (and spot prices are then likely to be higher at 10%), participants will act more conservatively to avoid reaching it.

Option 1 Improve the methodology used to calculate the default MWA

Description

O1.1 The current methodology used to calculate the MWA value is improved.

Potential issues with the status quo

O1.2 The MWA methodology is detailed in Appendix A. Its purpose is to quantify adequate compensation that a retailer must pay to its qualifying customers under the default compensation scheme during an OCC.

O1.3 The methodology makes a number of assumptions. Some important aspects may be missed or obscured by averaging aggregate consumption data. Other assumptions include estimated values that are difficult to assess without having recent experience of actual OCCs; eg, the level that spot prices would likely rise to.

O1.4 As a result, the MWA as currently calculated may not reasonably reflect the value to the retailer of their qualifying customers' average savings during an OCC.

O1.5 If so, the retailer incentive to hedge and the customer incentive to save electricity may not be optimal. These incentives could therefore be improved if a better methodology can be found to more accurately calculate the MWA.

Considerations and assessment

Retailer incentive to hedge

O1.6 The retailer incentive to hedge is, in general, correlated with the size of the MWA. If the improved methodology produces a larger MWA, retailer incentives to hedge should be strengthened on the basis that the cost of an OCC is now greater. Conversely, if the MWA is reduced, retailer incentives to hedge are lessened.

Customer incentive to save energy

O1.7 The customer incentive to save energy during an OCC is also likely to be correlated with the size of the MWA, to the extent that customers' conservation efforts are generally influenced by the compensation payment.

Risks and limitations

O1.8 The principal limitation is that the Authority has no additional information available and has not identified any viable alternative methodology.

Other considerations

O1.9 The first triennial review of the MWA under clause 9.25(2)(b)(ii) of the Code assessed the original methodology and considered there was no basis for a change to the MWA at that time.

O1.10 Experience of an actual OCC and the CCS it triggers will provide a significantly more robust basis for reviewing the MWA than the qualitative assessment currently possible. An OCC will provide up-to-date, quantitative information regarding:

(a) spot prices prevailing under energy shortage conditions during a dry year

(b) spot price response to an OCC (ie, the price-suppression effect of reduced demand)

(c) retailer behaviour in the lead up to and during an OCC

(d) retailer behaviour in meeting their obligations under the CCS

(e) customer conservation efforts (ie, the rate of energy savings).

O1.11 Clause 9.25(2)(b)(i) of the Code also requires that the Authority review the MWA whenever an OCC occurs (ie, separate to the review required at least once every three years by clause 9.25(b)(2)(ii)).

Simple, blunt, easily communicated

O1.12 A change in the MWA itself may not affect the principle of simple, blunt, and easily communicated design. However a significant shift could lead to a perception of arbitrariness or lack of accuracy; or indeed the opposite, suggesting an unwarranted degree of accuracy.

Pursue further?

O1.13 No. As a methodology that assesses the aggregate value to retailers of their qualifying customers' energy savings, the factors identified in Appendix A are appropriate.

Next steps

O1.14 A future OCC and the CCS it triggers will provide updated information that will allow the Authority to revisit the methodology when reviewing the MWA, as required by clause 9.25(2)(b)(i) of the Code.

Option 2 Set retailer obligations by net position

Description

O2.1 Retailer obligations to compensate customers are differentiated by the retailer's net exposure to spot prices occurring during a dry year. Net exposure is the difference between the quantity of electricity purchased from the spot market— consumed by a retailer's customers—and the volume of hedge cover the retailer has purchased. If this difference is positive, the retailer is short hedge cover and is exposed to high spot prices.[32] A retailer short hedge cover is also known as being in a short 'net position'.

O2.2 Compensation payments are then differentiated according to each retailer's net position. Possible options include:

(a) a scaled multiplier against the default MWA, in the range between 0 (fully unhedged) and 1 (fully hedged)

(b) some derivation of this incorporating minimum and maximum thresholds.

O2.3 Retailers may continue to offer their customers additional compensation schemes. However, the characteristics of these schemes can be expected to vary in line with each retailer's net position.[33]

O2.4 Retailers with net exposure of zero (fully hedged net position) could in effect have no obligation to compensate customers.

Potential issues with the status quo

O2.5 The uniform nature of current obligations means that all retailers must pay the same compensation to their qualifying customers no matter what steps they have taken to hedge their dry-year risk.

(a) A prudent retailer[34] that purchases hedge cover nonetheless pays compensation to their customers, despite having 'done the right thing'. That is, prudent retailers bear the burden of their less-prudent competitors' lack of hedge cover and consequent insufficient energy reserve, leading to high spot prices and ultimately an OCC.

(b) Conversely, less-prudent retailers enjoy the benefit of avoiding an OCC by virtue of their more-prudent competitors' hedge purchases (though this assumes the hedged capacity is non-excludable); ie, less-prudent retailers 'free ride' on the efforts of their more-prudent competitors.

O2.6 These factors may combine to result in systematic under-hedging.

O2.7 By differentiating compensation obligations during an OCC, more-prudent retailers will derive additional benefit from reduced compensation outlays.

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32 Short retailers selling to FPVV customers therefore lose money in periods of high spot prices.

33 If a retailer's net position means that their compensation obligation under the default scheme is reduced, any additional scheme they choose to offer would be modified accordingly. Customers may still opt in to these schemes, as they will assess them against the default.

34 Those that sell to customers on FPVV tariffs.

Considerations and assessment

Retailer incentive to hedge

O2.8 The retailer incentive to hedge is strengthened on the basis that greater hedging (lower net exposure) results in decreased obligations during an OCC. However this critically depends on the mechanism for adjusting compensation obligations: it is possible to create an 'arms race' situation such as described below for Option 3.

Customer incentive to save energy

O2.9 The customer incentive to save energy during an OCC is degraded by the combination of two effects:

(a) the compensation mechanism is inherently harder to communicate (net exposure is unlikely to be readily understood)

(b) differentiation between retailers is not transparent to their customers (customers likely have no information on their retailer's net position).

O2.10 For example, individual customers of retailer A receive little compensation but learn that customers of retailer B receive much more. Customers of retailer A may regard this as unfair and be reluctant to conserve energy, even (or especially) in comparison to previous campaigns where no-one was compensated at all. Further, a widespread perception of unfair or arbitrary arrangements could lead to the conservation effort being regarded as illegitimate (even, say, by customers of retailer B), compounding these dynamics to seriously weaken the OCC when it is needed.

Risks and limitations

O2.11 Many difficulties arise in relation to the timing and manner for assessing net position, such as:

(a) not all hedges are of the same quality (some may have suspension clauses, some may not perfectly match the natural position (basis risk))

(b) hedges may have a range of strike prices

(c) retailers may hold hedges for single or multiple nodes

(d) some retailers may prefer to manage price risk through non-financial mechanisms such as demand response, and these schemes vary widely in their application.

O2.12 Any method to calculate net position may allow retailers to game their obligations in such a way that minimises their payments but actually leads to reduced hedging. For example, if net exposure is assessed at the time an OCC is called, retailers have an incentive to optimise their position specifically for that point in time, not prudently manage dry-year risk itself. Calculating net position ex-post does not appear to materially address these problems.

O2.13 Assessing net position necessarily requires value judgements on risk management approach and the form and appropriate level of hedge cover. Such judgements could unintentionally stifle or outright preclude innovation.

(a) This risk can be mitigated if it is possible to directly leverage the stress test regime, on the basis that the energy shortage scenario is accepted by participants as reasonable.

(b) However, the energy shortage scenario represents conditions without an OCC, and average prices of $250/MWh for three months are unlikely to be representative.

(c) Further, stress tests are performed for the next quarter, which may not be far enough in advance to appropriately capture net position for dry-year events that may be years in the future.

O2.14 The ability to free ride remains. A given retailer can continue to gamble that their competitors increase hedge cover sufficient to reduce the probability of an OCC, to the extent they are willing to risk paying full compensation if one is called.

Simple, blunt, easily communicated

O2.15 Setting compensation obligations by retailer net position is necessarily complex, with likely substantial administrative burden. Sharpening the targeting of retailer incentives is the explicit intent. Effectively communicating the resulting range of differentiated and non-transparent compensation payments to customers will be a difficult challenge, and risks damaging the effectiveness of OCCs.

Pursue further?

O2.16 No. Calculating net position is unavoidably complex, likely open to gaming, and may have unintended negative consequences for retail competition. The potential to significantly weaken and confuse customer conservation signals during an OCC is a critical flaw.

Option 3 Set retailer obligations by net position via central compensation pool

Description

O3.1 Retailer obligations to fund customer compensation are differentiated by their net position, but actual compensation payments remain as under current arrangements.

(a) Retailers assess their compensation payment obligations per current practice, but rather than paying their customers instead pay that amount into a central pool.

(b) The amount each retailer must pay is adjusted by their ranked position in the set of all retailers' net position (assessed as described in Option 2)

(c) The retailer with the highest exposure (short position) pays the most in proportion to total compensation outlay across all retailers, where that outlay remains set by the total number of qualifying customers.

(d) The central compensation pool manager disburses funds back to retailers for amounts equivalent to their standard compensation obligations.

O3.2 In practice, such arrangements would be constructed on a net payments basis. Retailers pay into or receive from the compensation pool the balance of their compensation outlays subtracted from their fund obligation.

O3.3 Those with net exposure of zero (fully hedged) could have no payment outlays into the pool, but their customers' compensation is preserved.

O3.4 The fundamental principle is that compensation payments to a retailer's customers are now separated from the retailer's obligation to fund them.

Potential issues with the status quo

O3.5 As per Option 2.

O3.6 The extra layer of the compensation pool addresses the distorting effect of differentiating compensation payments to customers that occurs in Option 2 (paragraph O2.9).

Considerations and assessment

Retailer incentive to hedge

O3.7 The retailer incentive to hedge is strengthened on the basis that greater hedging (lower net exposure) results in decreased net outlays during an OCC, provided a given retailer's net position is long relative to competitors. However, the risks discussed below are significant and could negate this outcome entirely.

Customer incentive to save energy

O3.8 The customer incentive to save energy during an OCC is preserved, provided total payments are maintained regardless of the distribution of retailer net positions.

Risks and limitations

O3.9 Calculating net payments to the compensation pool ex post could lead to issues around insolvency or prudential security.

O3.10 Maintaining the total compensation outlay to customers requires that retailer net positions are ranked and normalised. The amount each retailer must pay into the pool

is then determined by their place in the ranked order. That is, the most-hedged retailer pays the least, possibly zero, and the least-hedged pays the most.

(a) It therefore follows that a retailer can only benefit (avoid compensation payments) from changing their ranking, not from their hedge cover itself—a retailer could have hedge cover of, say, 95%, but still be the least-covered and therefore burdened with a large proportion of the payment obligation. Indeed, payments could be financially crippling.

(b) Setting compensation obligations by relative exposure to spot prices in this way thus creates an 'arms race' effect that is unlikely to be efficient: every retailer wants to be more hedged than every other retailer to minimise their payment burden. Retailers could be pushed to over-hedge (go long), which is in itself a further risk to their financial viability.

(i) That effect could be softened by setting thresholds, but doing so means the Authority decides what an appropriate level of cover is. Worse, the arms race effect may simply continue within the threshold range.

(ii) An ameliorating effect does also apply in that the greater hedging activity induced will serve to increase the energy reserve and therefore reduce the probability of an OCC being called.[35] Reducing the probability of an OCC reduces the chance the compensation obligation will apply. However, this may result in a level of energy reserve in excess of any reasonable estimate of the efficient quantity.

Simple, blunt, easily communicated

O3.11 The central pool adds further complexity and associated costs to those under Option 2. While the pool funding model should improve ease of communication by resolving the crucial problem of differentiated compensation payments affecting the customer incentive, the risk of unexpected and negative outcomes appears high (not simple, not blunt).

Pursue further?

O3.12 No. The risk of an arms race and associated barrier to entry, as well as potential to trigger insolvency during an OCC, are critical flaws.

[35] See the discussion of the probability of an OCC in paragraph B.6 at the start of this Appendix.

Option 4 Set customer compensation payments based on actual savings

Description

O4.1 Compensation payments to qualifying customers are set according to each customer's actual measured savings. That is, compensation is no longer based on the MWA and the payment amount varies with each customer.

O4.2 Assuming that electricity savings can be measured accurately, the amount of compensation paid by the retailer to each customer can be calculated directly because:

(a) the quantity saved is known, by definition

(b) the spot price for each relevant trading interval is known; ie, the interval where the measured saving occurred

(c) compensation paid to each customer is then simply the product of these two terms, which is the value to the retailer of that customer's avoided purchases in the spot market.

O4.3 A more refined form of targeted compensation would also account for the price suppressing effect of reduced consumption (ie, account for the spot price being less than it would otherwise be without the OCC).

Potential issues with the status quo

O4.4 The default CCS treats customers in aggregate and calculates a simple value of weekly compensation that a retailer is obliged to pay to each of its qualifying customers. The weekly payment under the default CCS is designed to be cost-neutral on average, reflecting the value of energy savings to retailers.[36] The methodology used to calculate the default MWA is set out in Appendix A.

O4.5 However, during an OCC individual customers will actually save more or less energy than the average assessed amount, depending on their individual circumstances and willingness to participate in conservation.

O4.6 Compensation payments that reflect an individual customer's actual measured savings effort will therefore reward those that save more energy, while reducing compensation payments for those that save relatively little.

Considerations and assessment

Retailer incentive to hedge

O4.7 The retailer incentive to hedge is unclear, but may on balance be weakened:

(a) In general, the retailer incentive to hedge under the current CCS arrangements relates to the bluntness of the compensation obligation. A given retailer's set of customers—which is constantly changing—may save more or less energy than the aggregate average during an OCC, but the retailer must pay the default MWA to each customer regardless. Because a retailer cannot know their customers' aggregate saving rate in advance, they therefore have an incentive to avoid compensation obligations through hedging; ie, to avoid paying total

[36] As explained in paragraphs 2.15(b) and 2.16.

compensation that exceeds the value they obtain from their customers' saving efforts.

(b) Alternatively, if in aggregate a retailer's customers save more energy due to targeted compensation payments, that retailer will pay out a greater total amount than under current arrangements. To the extent that the retailer wants to avoid that greater outlay, the incentive to hedge may be increased. However, these payments now accurately reflect the value of savings to the retailer,[37] and therefore the retailer may be indifferent. Hence because the retailer's compensation payments are cost-neutral no matter what their customers' actual saving effort, their incentive to hedge to avoid compensation payments may be less than under current arrangements.

(c) Further, if a retailer's customers save less energy, that retailer pays out a smaller total amount. Reduced total payment obligations may then also reduce the incentive to hedge; although the retailer must continue to purchase consumed energy at prevailing high spot prices (ie, energy not conserved), which could act to counter this reduced incentive.

Customer incentive to save energy

O4.8 The customer incentive to save energy during an OCC is strengthened as they receive direct financial reward proportional to the quantity of energy saved (on the assumption that saving can be measured).

Risks and limitations

O4.9 The principal limitation is that it is not possible to robustly measure actual energy savings during an OCC. There is no accurate basis on which to establish a baseline; the counterfactual consumption is unknown and largely unknowable. Indeed, the original CCS design considered an option to target actual savings, but we did not pursue it for this reason.

O4.10 Even with a prerequisite that a customer's consumption is measured in half-hourly trading periods by an advanced metering system (AMS), it is not possible to confidently determine the reduction in consumption attributable to an individual customer's conservation efforts. Any methodology that sought to do this would need to rely on broad assumptions. It would accordingly be controversial with individual customers and raise potentially significant transaction costs for retailers in addressing customer concerns.

O4.11 If an AMS is used at an ICP and has been in use for a suitable period of time, it is possible to compare actual consumption during an OCC with the consumption recorded during some historical period; ie, to establish a historical baseline. However, there are many reasons why consumption might change both over time and during an OCC:

(a) more, fewer, or different residents occupying the premises during an OCC

(b) more, fewer, or different (eg, more efficient) appliances in use during an OCC

(c) higher or lower outside air temperature, which would lead to greater or lesser use of electric heating

(d) more or less ability to switch to alternative energy forms.

[37] The value of savings to the retailer will actually be somewhat greater than this amount, unless the secondary price suppression effect is also included.

O4.12 Assessing genuine conservation requires deriving a customer's purposeful conservation intent from ICP-level consumption, and the actual outcome of acting on that intent. Any such scheme is likely to over- or under-compensate the conservation efforts of individual customers.

Other considerations

O4.13 The Authority considers that options that claim to measure actual savings are better developed by individual retailers as additional compensation schemes. If retailers can develop a suitable method, they can benefit from a real-savings model to the extent that their outlays more accurately reflect the value of savings. Their customers' conservation could be the same, more, or less than the savings levels used in the default scheme.

O4.14 Presumably, a rational customer would only opt-in to a savings-based scheme if they thought they could derive a net benefit, and they could be bothered to do so. The customer then carries the risk of reduced payment relative to the guaranteed compensation of the default scheme (paid whether they conserve or not).

Simple, blunt, easily communicated

O4.15 Compensation payments targeted to actual savings would be less blunt. They are presumably more complex, assuming a legitimate means to identify savings can be found. Ease of communication may be increased, in that payments for what you save are intuitively attractive.

Pursue further?

O4.16 No. Conservation schemes that equitably target measurable savings are very difficult to design, if not impossible.

O4.17 Nevertheless, some retailers may seek to develop additional compensation schemes on this model. They are able to do so under current arrangements, if their customers perceive these additional schemes are superior to the default.

Option 5 Impose prudential obligations on retailers

Description

O5.1 Retailers are required to lodge prudential security to cover their compensation obligations under the default CSS.

O5.2 In the same manner as the OCC trigger itself, the prudential requirement would come into effect only once controlled storage falls below some HRC threshold. This prudential threshold could be triggered at, say the 6% or 8% HRC, lifted once storage returns above an exit threshold.

O5.3 Compensation obligations are assessed at the time the requirement is triggered. Payment is calculated as the MWA multiplied by the total number of qualifying customers at the assessment date. This amount can be modified over some reasonable period while the prudential requirement remains in effect; eg, updated weekly or monthly.

O5.4 Possible refinements include:

(a) The prudential requirement ramps up according to the position of controlled storage referenced to the HRCs. For example, 50% at 6% HRC, 75% at 8% HRC, etc.

(b) The prudential requirement is scaled to the retailer's net position (refer to Option 2), based on their relative score in the recent energy shortage stress test (or some rolling weighted average of these).[38]

(c) The prudential requirement only applies to retailers that are unhedged, or to some gradation of retailer net positions in a similar manner to Option 2 and Option 3. However, similar risks identified for those options also apply here.

Potential issues with the status quo

O5.5 Activating a prudential security requirement at a lower HRC threshold than the OCC itself (which is unchanged at 10%) increases the probability of triggering retailer obligations for a given level of energy reserve. That is, the prudential security requirement is more likely to be triggered than the CCS itself.

O5.6 Making an obligation more likely should in turn increase the incentive to hedge so as to avoid it. More specifically, a greater quantity of energy reserve would now be needed for a given probability of triggering the prudential security obligation.[39]

Considerations and assessment

Retailer incentive to hedge

O5.7 The retailer incentive to hedge is strengthened as the prudential requirement (i) will occur earlier and therefore likely more often than an actual OCC, and (ii) is avoidable by increasing energy reserve through additional hedging.

O5.8 Incentives are further strengthened if the prudential requirement is differentiated by retailer net position in some way. The risk of an 'arms race' effect as described for Option 3 does not appear substantial, as retailers' prudential requirement is only

[38] Detailed implementation would have to account for existing arrangements that allow hedges to be lodged as a form of security.

[39] See the discussion of the probability of an OCC in paragraph B.6 at the start of this Appendix.

determined by their own net position, not relative to their competitors. To be clear, actual compensation payments are not affected by this additional prudential mechanism.

O5.9 The prudential security itself does not represent an additional cost to retailers when viewed over a reasonable time period:

(a) Security represents outlay obligations under an actual OCC, which would have to be paid if one is called.

(b) Security is returned to the retailer once the probability of an OCC eases (controlled storage rises above the exit threshold HRC).

Customer incentive to save energy

O5.10 The customer incentive to save energy during an OCC is unlikely to be affected.

Risks and limitations

O5.11 Transaction costs may be non-trivial, and retailer capital or financing requirements may be increased, acting as a barrier to entry.

O5.12 Retailers may experience financial distress in meeting the new prudential security requirement in any given year, but they would otherwise escape any financial burden if an OCC is not triggered. A hypothetical retailer whose business model relies on exiting the market during an OCC may be prevented from operating, or may be driven to exit earlier than without the new prudential security requirement.

Simple, blunt, easily communicated

O5.13 Prudential security obligations are necessarily more complex. Complexity is greater still if differentiated by net position, which also sharpens incentives by design. However, ease of communication is not affected, as customers have no need to be directly informed of this mechanism.

Pursue further?

O5.14 No. The complexity, transaction costs, and potential barriers to retailer entry do not justify introducing a prudential security obligation.

Option 6 Include commercial and industrial consumers as qualifying customers

Description

O6.1 Compensation is now also paid to large consumers, principally industrial and commercial.

O6.2 Specifically, the criteria for qualifying customers are expanded to include category 3 metering installations, in addition to the existing category 1 and 2. This will capture larger installations such as office buildings, factories, warehouses, cool stores, industrial premises, larger retirement villages, and hospitals.

Potential issues with the status quo

O6.3 Clause 9.21(1) of the Code defines qualifying customers as those supplied electricity at an ICP with a category 1 or category 2 metering installation. This definition captures residential and small commercial consumers, as well as some larger sites.

O6.4 Metering installation categories 1 through 3 as defined in the Code include the following selected characteristics:[40]

Table 2: Select metering installation category characteristics

Metering installation category	Primary voltage (V)	Primary current (I)	Measuring transformers	Metering installation certification type
1	V < 1 kV	I ≤ 160 A	None	NHH or HHR
2	V < 1 kV	I ≤ 500 A	CT	NHH or HHR
3	V < 1kV	500 A < I ≤ 1200 A	CT	HHR only
	1 kV ≤ V ≤ 11 kV	I ≤ 100 A	VT & CT	
	11 kV < V ≤ 22 kV	I ≤ 50 A		

Source: Table 1 of Schedule 10.1 of the Code.

O6.5 Customers with category 1 and 2 metering installations are therefore 230 V (1-phase) or 400 V (3-phase) supplies at up to 500 A and can be fitted with either half-hour (HHR) or non-half-hour (NHH) meters. The largest capacity these installations can supply is 346 kVA—such a supply would comfortably service all residential and the vast majority of small commercial and small industrial customers in New Zealand.[41]

O6.6 Customers with category 3 metering installations, such as those described in paragraph O6.2 above, have a supply capacity greater than about 300 kVA. All such installations must be fitted with HHR meters.

[40] Category 4 and 5 metering installations are not shown here.

[41] December 2015 MBIE energy data indicates a total of 1.898 million category 1 and 2 ICPs (1.729 million residential, 0.169 million smaller commercial and small industrial).

O6.7 While the majority of customers on FPVV retail tariffs will be category 1 or 2 metering installations, there may be a non-trivial number of customers on FPVV retail tariffs that are category 3 metering installations. Retailers will then capture the benefit of reduced purchases in the spot market from any conservation made by such category 3 customers in response to an OCC. As a result, retailers will retain some incentive to lobby for conservation campaigns.

O6.8 Further, the objectives of the CCS suggest these customers should also be compensated for their savings effort. Given the large quantities these industrial and commercial customers consume relative to category 1 and 2 customers, their conservation is valuable and should be encouraged.

Considerations and assessment

Retailer incentive to hedge

O6.9 The retailer incentive to hedge would be strengthened on the basis that their compensation obligations now apply to a larger set of qualifying customers. Note that unless compensation is scaled to consumption in some way, the much greater energy volumes now captured do not affect incentives directly, only the number of customers to which compensation applies.

Customer incentive to save energy

O6.10 The customer incentive to save energy during an OCC is not affected for existing qualifying customers. The financial incentive is introduced for category 3 metering installation customers, to the extent that the MWA payment influences their conservation decisions.

Risks and limitations

O6.11 The option to extend the CCS to category 3 metering installation customers was evaluated during the original consultation process. We considered they should not be included because:

(a) Retailers informed the Authority that these customers were highly contestable, individually account managed, with specific supply needs, and directly marketed to.

(b) Such customers have both negotiating power and a range of tariff pricing options available, including variable pricing (ie, spot price exposed) by virtue of their half-hourly metering.

(c) Retailers have far stronger incentive to tailor effective conservation arrangements directly with such customers (given their exposure to the spot price for substantial energy volumes).

(d) The default MWA would significantly under-compensate such customers—tailoring a payment to the size of the risk would be essential.

O6.12 The potential for significant variation and complexity in pricing structures means that the current definition of qualifying customer would unintentionally capture large customers with non-FPVV arrangements. Compensation would then be paid even though such customers may directly benefit from reducing consumption at times of high spot prices.

Simple, blunt, easily communicated

O6.13 Extending the CCS to large industrial and commercial customers on category 3 metering installations will make the mechanism more complex in order to deal with the

range of pricing structures. While doing so may strengthen retailer incentives to hedge—though, notably, not if such customers are already hedged—it is poorly aligned with the intent to compensate principally FPVV-consumers for their savings effort. Ease of communication may be weakened if mass-market consumers perceive compensating large consumers as inappropriate, even unfair.

Pursue further?

O6.14 No. Category 1 and 2 metering installations cover all residential ICPs in New Zealand and, to our knowledge, the vast majority of mass-market commercial and industrial customers. These customers are the intended target of the CCS, as explained in section 2.

O6.15 A conservation incentive scheme is more appropriately developed directly by retailers and their category 3 metering installation customers.

Option 7 Impose compensation obligations on large consumers

Description

O7.1 Large consumers, principally industrial and commercial, are also obliged to pay compensation to other consumers during an OCC.

O7.2 Target consumers with the obligation to pay compensation are those using category 3 and higher metering installations. Note this approximates the converse of Option 6, wherein large consumers would themselves be compensated, but here includes category 4 and above metering installations.

O7.3 Payment obligations are devised to reflect the benefit these large consumers receive from the spot price-suppressing effect of other consumers' conservation. Payment may be differentiated by each large consumer's net position, similar to Option 2 and Option 3.

O7.4 Payments are made to a central pool and those funds then distributed to other consumers. A key design question is how these additional funds affect the existing compensation obligations of retailers (ie, those with obligations under current arrangements).

Potential issues with the status quo

O7.5 Large industrial and commercial consumers may not currently take adequate steps to avoid OCCs through hedging and other risk management.[42] Instead their risk of exposure to high spot prices is reduced both because the hedge cover of other participants reduces the probability of an OCC, and because the conservation efforts of other consumers suppress the spot price if one is called.

O7.6 Imposing a financial burden on this customer segment in the event of an OCC would reflect the value they obtain from these effects. Greater hedging behaviour should therefore be induced as they seek to avoid those payments.

Considerations and assessment

Retailer incentive to hedge

O7.7 The retailer incentive to hedge may not be affected directly, though this depends on the nature of the additional payment mechanism. If additional compensation paid by large consumers is used to offset current retailer obligations, retailer incentives are reduced accordingly.

O7.8 Further, retailers may perceive the probability of an OCC is reduced through the strengthened hedging behaviour of large consumers. Retailers may then opt to reduce their own hedge cover. In this way, overall hedging may not be increased, but rather redistributed across a larger set of parties.

Customer incentive to save energy

O7.9 The customer incentive to save energy during an OCC is preserved for currently-qualifying customers.

[42] The stress test regime provides information to these consumers about the level of price risk they may be exposed to.

Risks and limitations

O7.10 A major impediment is determining the set of large consumers now required to pay compensation:

(a) Those directly exposed to the spot price (either direct purchasers or through retail contract) already face the price signal and have existing incentives to hedge their exposure on that basis. The additional compensation burden is on top of the increased costs experienced during these periods of sustained high prices—costs from continued spot purchases, or the consumption foregone through voluntary curtailment. Making such consumers pay compensation to others will raise the same difficulties around calculating their net position discussed in Option 2 and Option 3.

(b) Those with retailer contracts incorporating fixed price terms[43] have a degree of negotiating power, and retailers already have an incentive to find ways to reduce their consumption. A parallel compensation obligation is then contradictory: retailers are seeking to reduce the electricity use of large consumers (and may offer financial or other incentives to do so); yet the CCS simultaneously requires these large consumers to compensate other consumers for doing the same thing. Moreover, those with fixed price terms have no logical existing reason to purchase hedge cover, by definition.

O7.11 There is no obvious basis to determine the level of compensation to be paid. Large consumers will be on a range of contract terms (or no contract at all); they will respond in different ways to the market conditions during and in the lead up to an OCC. Determining obligations based on parameters such as net position, total consumption, and the like will be arbitrary and contentious. Retailer compensation under current CCS arrangements, though blunt, reflects the aggregate value of their customers' energy savings, on average—there is no equivalent directly-attributable benefit to large consumers.

O7.12 Further, if payment obligations are differentiated by net position, the additional cost acts to prescribe consumers' risk tolerance by in effect penalising certain risk management decisions—yet any level of hedge cover, including full exposure to the spot price, is a legitimate risk position. However, the converse would mean that all large consumers are required to pay the same rate of compensation (eg, per total volume of consumption), regardless of their level of hedging.

O7.13 There is no obvious set of recipients to which this additional compensation should be paid.

(a) The most plausible recipients are currently-qualifying retail customers, where the additional funds are distributed uniformly.

(i) However, if this is in addition to compensation paid by retailers, those customers are arguably now overcompensated; ie, on average they receive compensation greater than the assessed value of energy savings calculated for the MWA.

(ii) Alternatively, funds could offset the compensation obligation of retailers. Customers still receive the same amount (the MWA or equivalent under an additional compensation scheme), but the cost to retailers is reduced by the

[43] The parallel of FPVV customers in the mass market.

redistributed funds obtained from large consumers. However, as noted above, that would in turn weaken the retailer incentive to hedge.

(b) Large industrial and commercial consumers could perhaps compensate each other, based on the relative ranking of their net spot price exposure. Again, this raises the same issues examined in Option 2 and especially Option 3.

Other considerations

O7.14 Managing the central pool necessarily introduces additional complexity and raises administrative and transaction costs.

O7.15 Such an arrangement stretches the concept of customer compensation to breaking point. If the intention is to strengthen large consumers' incentive to hedge, a more targeted mechanism may be better suited rather than distorting a scheme designed to compensate for energy savings.

Simple, blunt, easily communicated

O7.16 Requiring large consumers to themselves fund compensation to other consumers is clearly neither simple, blunt, or easily communicated. Indeed, such an obligation is likely to be substantially contested.

Pursue further?

O7.17 No. Requiring large consumers to compensate other consumers is difficult to sustain in principle, and the inherent design challenges likely make it unworkable in practice.

Option 8 Remove the exemption for customers 'on spot'

Description

O8.1 The current exemption for customers fully supplied by reference to the spot price is removed. Such customers now qualify for compensation during an OCC in the same manner as existing qualifying customers.

Potential issues with the status quo

O8.2 Clause 9.21(2) of the Code, reproduced below, exempts fully spot price-exposed customers from the definition of qualifying customer under the current CCS:

> Despite subclause (1), a person is not a **qualifying customer** if the price of all of the **electricity** provided under the person's contract with the **retailer** for the supply of **electricity** is determined by reference to the **final price** at a **GXP**.

O8.3 Two key elements set this exemption:

(a) 'the price of all of the electricity' means that 100% of consumption must be priced in this way

(b) 'by reference to the final price' means that the price the customers pays must be a function of the spot price, but importantly is not required to be the spot price exactly.[44]

O8.4 No 'on spot' retail price plan was available when the CCS came into force in 2011; today, multiple retailers serving the mass market offer such plans. For the purpose of discussion, retailers offering a spot-referenced price plan are hereafter referred to as 'spot retailers'.

O8.5 Spot retailers sell electricity to their customers:

(a) priced by reference to the final price set for the relevant trading period at the customer's GXP

(b) for quantities measured by the customer's ICP metering installation in each trading period (ie, half-hourly metering).

O8.6 The product of these two values in each trading period constitutes both the spot retailer's purchase cost from the spot market (at the relevant GXP) and the basis of its per-unit charge to the customer (at the customer's ICP). Additional charges to the customer (either fixed daily or per-unit) recover the costs of delivery, metering, retail operations, the Authority levy, and applicable taxes.

O8.7 Unlike FPVV-type retailers, the CCS does not give spot retailers an incentive to hedge. Because the 'on spot' exemption means spot retailers are not required to compensate their customers during an OCC, they have no need to hedge their customers' consumption to avoid those payments. Spot retailers also take no direct spot price risk themselves, as the cost of spot market purchases are directly borne by their customers.

[44] See for example the discussion of energy caps in paragraph 4.7.

Considerations and assessment

Retailer incentive to hedge

O8.8 The incentive to hedge for spot retailers will be established for the first time by now requiring them to compensate their customers.[45] However, this incentive is of a different form than the incentive faced by FPVV retailers, because spot retailers would not actually benefit from an OCC. Where FPVV retailers directly benefit from hedging their customers' consumption—as well as from avoiding compensation payments—spot retailers simply pass all price risk through to their customers. A spot retailer's incentive to hedge driven by the CCS is then primarily based on the extent to which their hedge cover acts to reduce the probability of an OCC.[46] The cost of buying hedges to avoid compensation payments during an OCC must be weighed against the expected cost of those compensation outlays (but not any benefit from reduced purchases). If the spot retailer's expected net benefit from avoiding an OCC is not significant, this incentive will be quite weak.

O8.9 It should be noted that spot retailers have other reasons to hedge beyond and separate to the need to pay compensation under the CCS:

(a) They could profit from financial hedges when the spot price exceeds the strike price. Although the converse also applies: a spot retailer may suffer significant losses during periods of low prices (eg, from futures contracts), because their customers only pay the underlying low spot price.

(b) They can develop hedge-based products to broaden the appeal of their retail offer; eg, provide their customers a form of insurance using cap products.

(c) Spot retailers will lose revenue when their customers reduce consumption, if that revenue comes from per-unit charges added to the passed-through spot price. This loss of revenue is likely to occur as spot prices rise in the lead up to an OCC; revenue will decline more if customers also further reduce their consumption in response to the OCC itself. Buying hedges that act to increase the level of energy reserve and reduce the risk of energy shortage is then of benefit to spot retailers in the longer term.

Customer incentive to save energy

O8.10 The customer incentive to save energy during an OCC may be strengthened for customers on spot-based contracts, as they would now receive additional compensation beyond the direct benefit of their avoided purchases at high spot prices.

O8.11 However, this incentive may be weak, if not effectively zero. Indeed, compensation is not justified if it induces no further reduction in consumption beyond those savings the customer has already made in response to the direct price signal. Payment for any additional saving should instead come through other mechanisms such as demand response schemes; eg, where the spot retailer or a third party pays the customer for the ability to control their consumption, offering that service to the spot market.

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45 Any retailer offering spot plans alongside other (non-exempt) plans will now have the pre-existing incentive extended to their 'on spot' customers, which will now qualify for compensation.

46 See the discussion of the probability of an OCC in paragraph B.6 at the start of this Appendix.

Risks and limitations

O8.12 A spot retailer's business model is at risk if its customers:

(a) terminate their contracts when spot prices go high and stay high (ie, switch retailers)

(b) default on payment.

O8.13 A spot retailer therefore has a more nuanced relationship with OCCs. Where FPVV-type retailers benefit from reduced purchases in the spot market, spot retailers could lose revenue during an OCC, as highlighted in paragraph O8.9.

O8.14 If spot prices were to go high and stay high for a sustained period (weeks rather than days) it is likely that price-sensitive customers would consider switching to another retailer.[47] At customer-specific points of pain, customers may seek to switch to a retailer offering a FPVV price plan (representing a price 'safe harbour' in a sustained but likely transient market storm). A stampede of departing customers could credibly arise if the spot retail contract allows them to readily switch retailers.

O8.15 Whether or not other retailers would continue to accept switching customers is an untested situation under recent market conditions.[48] Other retailers exposed to high spot prices (even if partially hedged but exposed at the margin) would have quite strong incentives to refuse to take on more (short term, costly) customers on FPVV contracts. Further, they would be required to pay compensation to any customers added prior to the final day of the OCC. Whatever the specific circumstances that eventuate, this would represent a publicly prominent, high-stress situation for some customers and retailers—and for the market as a whole.

O8.16 A spot retailer's business model could conceivably unravel quite quickly if material numbers of its customers:

(a) successfully switched away to other retailers; or

(b) defaulted on invoice payments while continuing to consume electricity; and/or

(c) publicly raised concerns about price fairness and market integrity, notwithstanding the fact they had voluntarily entered into spot-exposed contracts in the first place.

O8.17 Spot retailers could develop contingency plans to mitigate these risks, possibly including:

(a) offering a form of insurance to high spot prices (eg, in the form of a spot price cap)

(b) lobbying for conservation campaigns, on behalf of their customers

(c) if no other retailers remain open to taking in departing customers, alleging that market failure has occurred and lobbying the Electricity Authority or the Government for urgent relief.

O8.18 These possible contingency plans remain untested in the market at this time.

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47 Although it is also quite possible that other spot-price customers will be willing to accept high spot prices and not seek to switch retailers during an OCC.

48 The most recent OCC was called in the winter of 2008. We understand that no retailers closed their doors to switching or new customers. The time to implement a customer switch has also significantly shortened since 2008.

Simple, blunt, easily communicated

O8.19 Removing the current exemption for 100% spot customers would, arguably, simplify the CCS in the sense of reducing complexity. It would also further blunt the targeting of retailer obligations. Communication may be easier in general because there is no need to distinguish particular customer segments, some of whom may not fully appreciate the nature of their retail contract (although by the time an OCC is called, they almost certainly will). However, communication could be markedly harder for spot retailers as compensation is fundamentally inconsistent with the spot price pass-through basis of their retail plans. Communicating the purpose and form of compensation could be difficult indeed if spot retailers also simply pass through the cost of compensation itself, in the same manner as any other charge.

Pursue further?

O8.20 We conclude there is no justification to compensate customers fully exposed to the spot price, as they receive the direct benefit of their savings effort during an OCC. Any additional payments to customers to reduce their consumption in excess of their response to high spot prices should be provided through demand response schemes.

O8.21 For the same reason, imposing the compensation obligation on spot retailers does not reflect the policy intent of the CCS or the costs and benefits they face when OCCs are called.

Next steps

O8.22 We recommend continuing to monitor the situation, in particular:

(a) further relevant business model and product development by current and new spot retailers

(b) the rate of uptake of spot-exposed customer offers

(c) retail market behaviour during any future period of sustained high spot prices, such as

(i) whether FPVV retailers remain open to accepting new or switching customers

(ii) whether spot retailers introduce hedge or insurance options into their products

(iii) whether spot retailers lobby for conservation (earlier in the lead-up to the point at which an OCC would be triggered under the CCS).

O8.23 We expect to consider these issues and related matters in the Authority's *Spot prices and risks for consumers* project in the 2016/17 Consumer choice and competition work programme.

Option 9 Exempt the spot-priced component of retail tariffs from customer compensation

Description

O9.1 The qualifying criteria are modified such that compensation is now paid for the proportion of total consumption that is not priced by reference to the spot price.

O9.2 Under the default scheme, customers will be compensated pro rata at the MWA rate for their qualifying consumption. That is, compensation applies to qualifying consumption as a percentage, multiplied by the MWA.[49]

(a) For FPVV customers, qualifying consumption is 100% and hence compensation remains the full MWA.

(b) For customers on 100%-spot-exposed tariffs, compensation is zero (as under current arrangements).

Potential issues with the status quo

O9.3 As detailed in Option 8, customers that have 100% of their electricity supply priced by reference to the final price at a GXP do not qualify for compensation under clause 9.21(2) of the Code.

O9.4 The binary nature of the 100%-spot exemption means that other forms of variable price tariff will be subject to compensation obligations during an OCC: any customer on a contract where some component of their consumption is priced by reference to the spot price would receive the full MWA under the default scheme.[50] Such customers are then compensated despite facing the spot price signal to some extent, hence obtaining the direct benefit of their avoided consumption. And retailers must pay that compensation despite not benefitting from reduced spot market purchases themselves (the cost of those purchases are passed through to the customer, as detailed in Option 8).

O9.5 Retailers that would otherwise offer other forms of variable price tariff may therefore be discouraged from doing so—retail innovation and competition could be stifled as a result.

O9.6 The basis of the 100% threshold exemption is laid out in Option 8. During consultation on the original CCS design, it became apparent that choosing any spot-exposure threshold is arbitrary and requires a necessarily complex exemption, possibly open to manipulation. We therefore decided on a 100% threshold, reflecting the fact that a retailer offering a 100%-spot tariff has no spot price risk for their customers' consumption. That is, the customer carries the full risk of high prices,[51] and is likely to reduce consumption in response to that price signal regardless of any OCC.

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49 Equivalently, compensation is: MWA × (1 – (consumption priced at spot / total consumption)).

50 For example, a percentage proportion of their consumption, or discretionary consumption above a fixed or initial volume at a fixed-price.

51 However, as noted in Option 8, spot retailers relying on per-unit charges do lose revenue if their customers reduce consumption in response to high prices.

O9.7 But 100% is also arbitrary. Exempting only fully-spot-exposed retail tariffs may act to restrain further innovation or competition in retail offers, to the extent that the requirement to compensate all consumption during an OCC modifies retailer behaviour:

(a) A customer on a hypothetical tariff where, for example, 90% of their supply is priced at spot will be fully compensated under the current default scheme. There is no compelling reason why this should be the case. First, 90% exposure should be a strong enough price signal to reduce consumption; yet the customer receives the full MWA even though they directly benefit from reducing their consumption for that 90%. Second and for the same reason, the retailer does not benefit from reduced purchases for this spot-exposed component.[52] Third, compensation could create a perverse effect by acting to somewhat weaken customer response to the spot price signal during an OCC, though this will depend on when compensation is actually paid.[53]

(b) Some types of demand response scheme could be discouraged. For example, a retail plan coupled with a separate payment for controllable demand response will be subject to full compensation under the default scheme. Critically, the 100%-spot exemption is unlikely to apply under these circumstances: even a full spot pricing plan may no longer supply all of the electricity by reference to the spot price, because some consumption is moderated by the demand response scheme. This compensation will therefore not accurately reflect the value of savings to the retailer. While such plans might still be worthwhile for the retailer, the CCS could be hindering innovation that encourages greater participation by consumers.[54]

Considerations and assessment

Retailer incentive to hedge

O9.8 The retailer incentive to hedge may decline over time if part-exposed retail tariffs are offered. The increasing proportion of electricity now sold at the spot price necessarily reduces the retailer's exposure to high spot prices, as these are now directly passed through to customers. A commensurate reduction in retailer hedging under such circumstances is to be expected, reflecting shifts in risk exposure.

O9.9 However, it should be noted that this situation already exists today for 100%-spot retail offerings. The consequences of this are being considered in the Authority's *Spot prices and risks for consumers* project in the Authority's 2016/17 Consumer choice and competition work programme.

Customer incentive to save energy

O9.10 The customer incentive to save energy during an OCC is now more complex, depending on the nature of their retail contract:

(a) Customers on FPVV tariffs are not affected; their compensation remains as it is under current arrangements.

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52 Purchases for the 90% component are paid in full by passing through the spot price. However, the retailer would benefit from any incremental decrease in the spot price due to this reduced consumption.

53 Clause 9.24(1)(c)(ii) requires the retailer to pay the MWA 'no later than the end of 2 billing periods after the qualifying date'.

54 The retailer could offer it as an additional compensation scheme under the CCS, but this is at least more complex.

(b) Customers on 100% spot tariffs are not affected; they continue to receive no compensation for their savings, instead obtaining the direct benefit of reduced purchases at high spot prices (ie, they already face the full price signal).

(c) The response of customers on (hypothetical) part-exposed tariffs could vary widely. Most importantly, depending on the details of their tariff arrangements, these customers have likely already reduced their spot-exposed consumption by the time an OCC is called; ie, responding to the rising spot price. Any further reduction in electricity use might be because of compensation, even-higher spot prices, or both. It is extremely difficult to predict any general effect a reduced compensation amount might have on this additional potential conservation during an OCC.[55] Even billing arrangements could affect the outcome for otherwise equivalent tariffs; eg, paying compensation in a weekly bill during the OCC itself, versus up to two billing periods later.

(d) The response of customers on retail plans that incorporate demand response schemes is also difficult to predict. Effects will be complex and depend on the details of the demand response mechanism, how that is remunerated, and how these elements interact both with the tariff and a revised compensation scheme. However, the incentives of retailers and their customers could align: retailers can benefit from encouraging greater demand response from their customers, and their customers would benefit from being paid to do so.

Risks and limitations

O9.11 The principal risk is in determining the spot-price-exposed proportion of consumption. Devising a way to calculate this could create unintended distortions or opportunities for manipulation.

(a) For example, if determined during or at the start of an OCC, individual customers have likely already reduced the spot-exposed component of their consumption, as explained above. The spot-exposed proportion of total consumption would then be unrepresentatively low relative to normal conditions.

(b) The level of compensation such customers receive would then be distorted (ie, generally biased upwards), though less than under current arrangements. This risk might be lessened by determining the proportion based on consumption over the previous year, but doing so will have its own challenges and could fail to reflect the market conditions experienced during and in the lead-up to an OCC.[56]

(c) A revised CCS exemption may not be able to account for the potential range of demand response schemes and related emerging technologies. Further unintentional distortions to compensation payments—or to the demand response schemes—could then occur.

Simple, blunt, easily communicated

O9.12 Refining the existing exemption to capture the spot-exposed component of consumption rather than the current binary framing is more complex, but perhaps intuitively reasonable. Similarly the compensation scheme is sharper, but on a generally first-principles basis. However, communication is likely more difficult given

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55 Compensation is reduced in comparison to the amount FPVV customers receive under the default scheme, which is likely to be widely publicised during the OCC.

56 This risk is closely related to the difficulties in determining a consumption baseline discussed in Option 4.

the need to tie now-variable compensation payments to what may not be a widely-understood aspect of electricity consumption (ie, the spot market price).

Pursue further?

O9.13 While the limitations of the current exemption for 100% spot-exposed tariffs noted above exist in principle, the Authority does not consider that available information indicates a problem currently exists in practice. Retail offers priced by reference to the spot price are relatively new for residential customers, and still represent a small—though clearly growing—share of the market. Similarly, we are not aware of any restraints on demand response schemes to date.

O9.14 We therefore conclude that the necessary complexity and risk of unintended consequences of this option currently outweighs the potential benefit of more sophisticated qualification criteria.

O9.15 However, new forms of retail pricing and ways to enable demand response are a fast developing area. It is important that the CCS design is broad but also neutral—it should not discriminate against or favour particular types of retail product, or otherwise distort decision making. We consider this is an area where further development of market arrangements is possible. We will consult on these issues again if we determine that changes can be made to further facilitate consumer participation and efficient response to price signals.

Q3. Are there ways in which the CCS hinders new forms of retail pricing or demand response schemes that could otherwise promote the Authority's statutory objective?

Option 10 Extend the definition of qualifying customer to capture type 2 retailers

Description

O10.1 Update the definition of qualifying customers to bring type 2 retailers into the CCS.

O10.2 Type 2 retailers are now obliged to pay compensation to their customers in the same manner as all other retailers; their customers will now receive compensation per the default and any additional schemes if an OCC is called.

Potential issues with the status quo

O10.3 Type 2 retailers are defined as those that purchase their electricity from a trader for resale to their customers; ie, they do not purchase directly from the clearing manager.

O10.4 Type 2 retailers can be further separated into two sub-categories:

(a) Type 2A retailers:

(i) purchase electricity from a trader at an ICP that is directly supplied by a local network, an embedded network, or a network extension

(ii) sell electricity to the customer at the ICP described in (i)

(b) Type 2B retailers:

(i) purchase electricity from a trader at an ICP that supplies a customer network

(ii) sell electricity to the customers connected to that customer network; while their consumption is likely metered by the type 2B retailer, these customers do not have individual ICPs on the customer network (no record in the registry) and are not able to switch their retailer.

O10.5 Customers of type 2B retailers are usually tenants that are effectively captive to the retailer (typically their landlord) for as long as they choose to retain a tenancy relationship with the landlord. Electricity supply to these customers is part of a package of services that the landlord (as retailer) provides to the tenant (as the customer) for a fee (eg, a monthly tenancy services fee). Examples include retirement villages, apartment buildings, city commercial buildings, and shopping malls.

O10.6 Critically, Part 1 of the Code defines the retailer for whom CCS obligations apply as the retailer recorded by the registry manager as responsible for the qualifying customer's ICP. However, the registry only records the *purchaser* responsible for the ICP, and this is in fact the trader from which the type 2 retailer purchases. That is, type 2 retailers have the contractual relationship with the end customer but are not recorded in the registry as responsible for the relevant ICP(s); traders are recorded in the registry but do not have the retailer contractual relationship with the end customer and may not necessarily know they supply a type 2 retailer.

O10.7 Type 2 retailers are therefore not captured by the relevant CCS definitions and hence their customers will not receive compensation payments in the event of an OCC. This discrepancy does not reflect the policy intent of the CCS. Moreover, the lack of compensation could cause confusion and frustration amongst customers of type 2 retailers, as they may not fully understand the implications of their supply situation. We

expect that media would pick up the anomaly if an OCC occurred, resulting in difficult questions regarding the CCS design.

Considerations and assessment

Retailer incentive to hedge

O10.8 The retailer incentive to hedge would not be affected for type 1 retailers with existing obligations under current arrangements. However, extending obligations to type 2 retailers should act to strengthen the incentive to hedge for those parties, and thereby increase the overall level of hedge cover. Although the nature of the relationship between type 2 retailers and their traders may affect that outcome.

Customer incentive to save energy

O10.9 The customer incentive to save energy during an OCC would not be directly affected for existing qualifying customers of type 1 retailers. However, extending compensation to a larger set of customers (ie, those of type 2 retailers) will introduce the financial incentive to that group; notably, this will include many businesses, although the MWA payment may not represent a substantial proportion of their weekly bill. In turn, this should better preserve the incentives of other consumers, as compensation payments should broadly be perceived as fairly provided to all.

Risks and limitations

O10.10 A number of initiatives have shown that type 2 retailers are difficult to reliably identify. Type 2 retailers have no current visibility within the registry and consequently their numbers and identities are not known with any certainty. Total customers are estimated to be on the order of 50,000 to 100,000.

O10.11 In 2012, the Authority consulted on a proposal to amend the definition of retailer in Part 1 of the Code to place an obligation on the relevant trader to compensate the customers of type 2 retailers.[57] The relatively small number of submissions received generally agreed that there was a problem but most did not support the Authority's proposed solution.

O10.12 Similar and related difficulties also arose during consultations on a proposal to establish a retailer default regime in 2014.[58] As a result, the Authority decided not to proceed with a requirement that traders populate type 2 retailer information in the registry.

O10.13 The practical inability to identify type 2 retailers remains a significant barrier to establishing effective obligations under the Code.

Other considerations

O10.14 Additional related work addressing issues around secondary networks is also ongoing with the Retail Advisory Group[59] (RAG)—the outcome may help us adequately identify type 2 retailers.

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57 Electricity Authority, Consultation Paper: *Miscellaneous Code Amendments*, 9 March 2012.

58 See http://www.ea.govt.nz/development/work-programme/risk-management/managing-retailer-default-situations/consultations/#c13823.

59 See http://www.ea.govt.nz/development/work-programme/consumer-choice-competition/competition-and-efficiency-on-secondary-networks.

Simple, blunt, easily communicated

O10.15 Extending the relevant definitions to include type 2 retailers would enhance the simplicity, bluntness, and ease of communication for compensation payments during an OCC, by virtue of capturing the fullest set of customers.

Pursue further?

O10.16 The Authority considers that type 2 retailers should be subject to the compensation obligation during an OCC, in line with the policy intent of the CCS.

O10.17 We will establish a new project to investigate the difficulties raised above in depth, and identify workable solutions to address them. This project will incorporate the outcome of the Retail Advisory Group's work on secondary networks.

O10.18 We intend to release a consultation paper, which may include a proposal to amend the Code, in early calendar 2017.

B.12 We seek stakeholder views on the following aspects of the assessment given above.

Q4. Have we considered all plausible options to increase the retailer incentive to hedge?

Q5. Are there any other material factors that might affect our assessment of the options above?

Q6. Do you agree with our assessment of the options above? If not, why not?

Appendix C Format for submissions

Submitter	

Question		Comment
Q1.	Do you agree that the objectives of the CCS remain valid and contribute to an efficient security of supply?	
Q2.	Do you agree with the Authority's conclusion that we should not modify the CCS at this time? If you disagree, please explain your reasoning in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	
Q3.	Are there ways in which the CCS hinders new forms of retail pricing or demand response schemes that could otherwise promote the Authority's statutory objective?	
Q4.	Have we considered all plausible options to increase the retailer incentive to hedge?	
Q5.	Are there any other material factors that might affect our assessment of the options above?	
Q6.	Do you agree with our assessment of the options above? If not, why not?	

Glossary of abbreviations and terms

Act	Electricity Industry Act 2010
AMS	Advanced metering system (at least half-hourly)
Authority	Electricity Authority
CCS	Customer compensation scheme
Code	Electricity Industry Participation Code 2010
FPVV	Fixed price, variable volume
GXP	Transmission grid exit point
HRC	Hydro risk curve
ICP	Installation control point
MWA	Minimum weekly amount of the default CCS
OCC	Official conservation campaign
Regulations	Electricity Industry (Enforcement) Regulations 2010
SOSFIP	Security of Supply Forecasting and Information Policy