Security and Reliability Council

Security of supply risks

Assessing security of supply risks being considered for policy development by the Electricity Authority

10 February 2014

Note: This paper has been prepared for the purpose of the Security and Reliability Council. Content should not be interpreted as representing the views or policy of the Electricity Authority.

Contents

Tables

Figures

1 Purpose of this paper

1.1.1 In mid-2013, the system operator reviewed its Security of Supply Forecasting and Information Policy (SOSFIP) and submitted a draft SOSFIP to the Electricity Authority (Authority) for approval.

1.1.2 In the course of the system operator's review of the SOSFIP, the Authority identified nine potential security of supply risk areas that cannot be addressed through changes to the SOSFIP alone, but could potentially be addressed in other ways (e.g. amendments to the Electricity Industry Participation Code 2010 (Code)).

1.1.3 The Authority is now considering how and when to address these nine issues.

1.1.4 This paper:

a) lists the nine risk areas identified

b) provides the Authority's assessment of the likelihood and impact of each risk

c) seeks SRC comment on the Authority's assessment of each risk.

1.1.5 SRC feedback on the materiality of the nine risk areas will enable the Authority to make informed choices about how to prioritise these issues in future workplans.

2 Background

2.1 The SOSFIP

2.1.1 The Code requires the system operator to prepare and publish a SOSFIP, as part of its function of providing information and short- to medium-term forecasting on all aspects of security of supply.

2.1.2 The SOSFIP requires the system operator to:

a) publish an annual security of supply assessment (ASA), focusing on comparisons of the Winter Energy Margin (WEM) and Winter Capacity Margin (WCM) with the security of supply standards set out in Part 7 of the Code

b) publish a weekly security of supply report, including a comparison between actual hydro lake storage and the Hydro Risk Curves (HRCs).

2.1.3 Under Part 7 of the Code, the system operator can submit a draft SOSFIP to the Authority for approval. Following consultation with stakeholders, the system operator submitted a draft SOSFIP to the Authority on 21 August 2013. The Authority Board approved the draft SOSFIP on 14 October 2013. It came into effect on 16 December 2013.

2.1.4 In the process of reviewing the SOSFIP, the most substantive issue that has been dealt with by the system operator has been the treatment of contingent storage in the HRC framework.

2.1.5 Contingent storage is hydro lake storage that:

a) is in any of the six lakes[1] that are included in the calculation of "actual storage" for reference against the HRCs

b) according to the conditions of the relevant resource consent or the relevant water plan, can be accessed only under conditions of shortage.

2.1.6 The current contingent storages are listed in Table 1.

[1] Lakes Taupo, Tekapo, Pukaki, Hawea, Te Anau and Manapouri.

Table 1: Lakes with contingent storage

Lake	Stored energy	Mechanism that triggers availability	Effective trigger	Seasonal availability	Generator	Consenting authority
Tekapo	28 GWh	Reserve supply determination	4% HRC	1 Oct to 31 Mar	Genesis	Environment Canterbury
Hawea	65 GWh	Reserve supply determination	4% HRC	Year-round	Contact	Otago Regional Council
Pukaki	545 GWh[2]	System operator declaring an official conservation campaign	10% HRC[3]	Year-round	Meridian	Environment Canterbury

2.1.7 The previous SOSFIP did not discuss contingent storage. This omission created uncertainty about how the HRCs (and hence the triggers for accessing contingent storage and for beginning and ending an official conservation campaign) would work in practice.

2.1.8 The approved SOSFIP is an improvement, in that it sets out how the system operator proposes to handle contingent storage in the HRC framework. The SOSFIP requires that:

a) the HRCs will be calculated as if contingent storage was unavailable

b) any draw-down of contingent storage will not reduce the level of "actual storage" shown on the HRC graph, but will instead be shown on a separate graph.

2.1.9 The approach in the approved SOSFIP creates a clear and easily understood distinction between controlled and contingent storage.

2.2 Official conservation campaigns

2.2.1 Several of the risk areas identified relate to the conditions for beginning and ending an official conservation campaign (OCC). An OCC is triggered when storage has reached a point where voluntary demand reductions are required to alleviate the risk that planned outages will be needed should the shortage conditions persist.

2.2.2 Under Part 9 of the Code:

a) the system operator must begin an OCC when hydro lake storage falls below the 10% HRC[4] and is expected to remain there for at least a week

b) the system operator must end an OCC when hydro lake storage rises above the 8% HRC

[2] This is a maximum figure. The Authority understands that Meridian is confident of being able to access up to 178 GWh of this storage from September 2014 and that access to the remaining 367 GWh will be subject to engineering and operational constraints.

[3] In late 2013, Environment Canterbury intended to consult on a proposed change to the Waitaki Catchment Water Allocation Regional Plan that would, if resource consent changes were also made at some future date, enable Meridian to access ~331.5 GWh of Lake Pukaki contingent storage at the 4% HRC.

[4] Where both 'storage' and 'HRCs' are as defined in the SOSFIP.

c) the system operator can begin or end an OCC on a different date, by agreement with the Authority

d) OCCs can be called for the South Island, or for New Zealand as a whole

e) during an OCC, each retailer must pay compensation to qualifying customers, under its default customer compensation scheme.

2.3 Rolling outages

2.3.1 In the event a shortage situation persists, planned outages may be required to manage the remaining storage. These outages are called 'rolling outages' as they are applied to different consumers at different times, in order to manage the impacts of electricity being unavailable to the affected consumers.

2.3.2 Under Part 9 of the Code:

a) the system operator may make a supply shortage declaration if there is a shortage such that the system operator considers "that, if planned outages are not implemented, unplanned outages are likely"

b) the supply shortage declaration can apply to the whole of New Zealand or to a specified region

c) while a supply shortage declaration is in force, the system operator can direct participants to implement rolling outages

d) participants must comply with these directions.

3 Security of supply risks

3.1 Nine risk areas have been identified

3.1.1 In the course of the system operator's review of the SOSFIP, the Authority identified nine potential areas of security of supply risk that cannot be addressed through changes to the SOSFIP alone, but could potentially be addressed in other ways (e.g. amendments to the Code).

3.1.2 The following nine sections set out the nine risk areas. Each risk area gives rise to one or more risks to security of supply, which have been rated by the Authority in terms of *likelihood* and *impact.* On this basis, each risk area has been categorised as overall high, medium or low risk. This initial evaluation of risk is summarised in Table 2.

3.1.3 The Authority has not yet decided how to resolve any of the nine risk areas. However, it considers it may be necessary to resolve some of the issues before others can be addressed. The Authority has formed an initial view of the dependencies between the nine risk areas (Figure 1).

Q1. Do you agree with the Authority's assessment of the likelihood and impact of these risks to security of supply? If not, how would you assess these risks?

Q2. Do you agree with the Authority's evaluation of the dependencies between these issues? (as set out in Figure 1) If not, what changes would you recommend?

Table 2: The Authority's initial evaluation of risks to security of supply

#	Risk area	Risk to security of supply	Initial evaluation: Likelihood	Initial evaluation: Impact	Initial evaluation: Overall rating
1	There is uncertainty about the energy supply potential of Lake Pukaki contingent storage.	There is uncertainty about when Lake Pukaki's contingent storage would be triggered, when it will become operationally available and the rates at which it may be able to generate.	**Medium**	**Low**	**Low**
2	The ability of the power system to operate with low and uneven hydro lake levels is not well understood	The HRC framework may overstate the ability of the power system to operate when one or more key hydro lakes are drawn down to a very low level. If so, then appropriate mitigating steps (such as an OCC) may not take place early enough.	**Very low** (it is very infrequent that lakes are drawn down to such low levels)	**High** (including increased risk of rolling outages)	**Medium**
3	Contingent storage may not be treated appropriately in the HRC framework	The system operator's HRC framework would not take into account the extent to which contingent storage had been drawn down. This might lead to an OCC beginning or ending at the wrong time, which would not best promote an efficient level of reliability.	**Low** (it is not expected that OCCs will be required often)	**Medium**	**Medium**

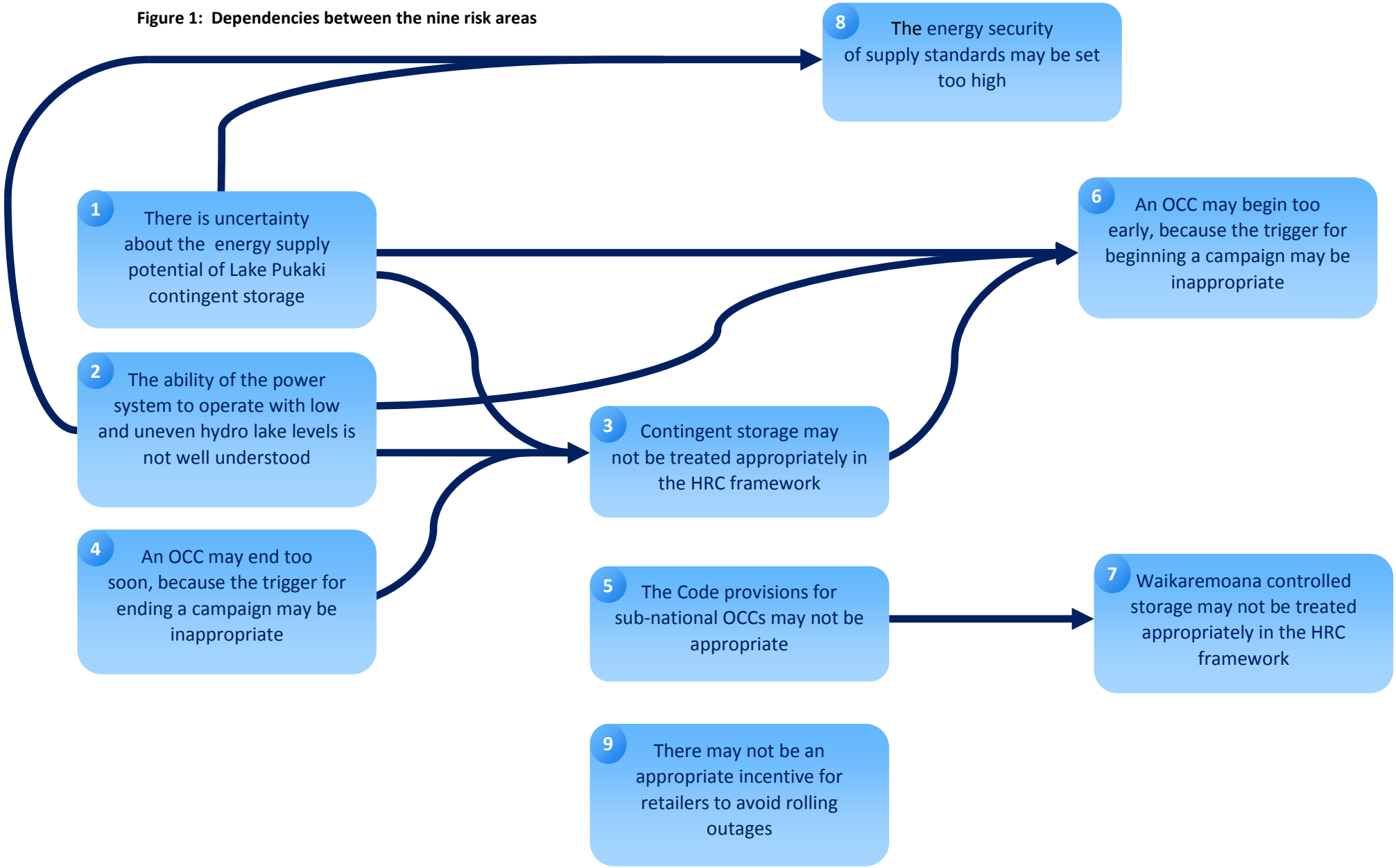
#	Risk area	Risk to security of supply	Initial evaluation: Likelihood	Initial evaluation: Impact	Initial evaluation: Overall rating
		The system operator's approach could incentivise participants to draw down contingent storage ahead of controlled storage. This could create a perception among consenting authorities that the privilege of access to contingent storage was being abused.	**Low** (it would seem reasonable to suppose that consenting authorities would usually tolerate the use of contingent storage under the agreed conditions)	**Medium**	
4	An OCC may end too soon, because the trigger for ending a campaign may be inappropriate	An OCC could end shortly after it began, if storage quickly rebounded from the 10% to the 8% HRC. Another OCC could start soon thereafter. Such 'flip-flopping' behaviour would undermine conservation efforts.	**Low** (it is not expected that OCCs will be required often)	**High**	**Medium**
5	The Code provisions for sub-national OCCs may not be appropriate	Running a South Island-only campaign could create additional complexity (particularly if it segued into a national campaign or vice versa). This might undermine conservation efforts, for instance, by prompting debate about whether it is perceived as fair that South Island consumers are 'left on their own when the going gets tough'. There may not be enough flexibility to run OCCs for arbitrary regions. This may make it difficult to launch appropriate conservation initiatives.	**Low** (it is not expected that OCCs will be required often)	**Medium**	**Medium**

#	Risk area	Risk to security of supply	Initial evaluation: Likelihood	Initial evaluation: Impact	Initial evaluation: Overall rating
6	An OCC may begin too early, because the trigger for beginning a campaign may be inappropriate	Since the 10% HRC was approved by the Authority Board as the appropriate trigger for OCCs, Meridian Energy's access to five metres of contingent storage at Lake Pukaki has been formalised by Environment Canterbury. This additional storage means there is now a greater 'buffer' between the triggering of an OCC and the need for rolling outages than was envisaged when the trigger was established. The current trigger may therefore lead to OCCs being called earlier, and therefore more often, than would be efficient.	**Low** (it is not expected that OCCs will be required often)	**Medium**	**Low**
7	Lake Waikaremoana controlled storage may not be treated appropriately in the HRC framework	Failing to model Waikaremoana storage explicitly in the HRC framework may lead to OCCs being called earlier or later than would be efficient.	**Medium**	**Very low** (Waikaremoana storage may not have a material impact on the security situation)	**Low**

#	Risk area	Risk to security of supply	Initial evaluation: Likelihood	Initial evaluation: Impact	Initial evaluation: Overall rating
8	The energy security of supply standards may be set too high	The WEM[5] security standards do not take into account the availability of contingent storage. Contingent storage is now more likely to be materially important to the security standards given the access arrangements for Lake Pukaki have been formalised since the WEM security standards were chosen. Therefore, the "efficient standards" may actually indicate a higher-than-efficient level of supply. This may provide misleading information for investment and policy development.	**High**	**Low** (WEMs for the South Island and New Zealand are likely to continue to exceed the efficient standards for the next few years, whether the standards are revised or not)	**Low**
9	There may not be an appropriate incentive for retailers to avoid rolling outages	The customer compensation scheme creates an incentive for retailers to act to avoid OCCs – but there is no equivalent measure to create an incentive for retailers to act to avoid rolling outages.	**Very low** (participants would be very reluctant to take steps that would materially increase the risk of rolling outages)	**High**	**Low**

[5] WEM = winter energy margin. This is the efficient level of energy required in excess of expected winter demand in order to mitigate the risk of shortage. The WEM is calculated for both New Zealand and the South Island.

Figure 1: Dependencies between the nine risk areas



3.2 'Risk' area 1: There is uncertainty about the energy supply potential of Lake Pukaki contingent storage

3.2.1 There is uncertainty about when Lake Pukaki's contingent storage would be triggered, when it will become operationally available and the rates at which it may be able to generate.

a) Meridian getting access to 178 GWh or 545 GWh of Lake Pukaki's contingent storage is dependent on further investigations and engineering work.

b) The system operator, in order to understand the value of Lake Pukaki's contingent storage to the power system, would prefer to understand the rates at which electricity could be produced under different circumstances.

c) Environment Canterbury's intended consultation to the Waitaki Catchment Water Allocation Regional Plan also creates uncertainty as to the trigger-point at which Lake Pukaki's contingent storage would become available.

3.2.2 This uncertainty will be minimised by further work by Meridian and further consultation by Environment Canterbury, rather than by any action from the Authority.

3.2.3 The Authority considers that it would be strongly preferable for Meridian's investigations and works to progress substantially before risk area 3 is developed in order to avoid a situation where the system operator is asked to value Lake Pukaki contingent storage as part of the high-stakes HRC framework. It would also be preferable for Environment Canterbury's consultation process to be concluded, as it would simplify the environment in which the Authority's consultation (if any) were conducted.

3.3 Risk area 2: The ability of the power system to operate with low and uneven hydro lake levels is not well understood

Overall rating: medium

3.3.1 The HRC approach effectively treats the controlled hydro lakes (Tekapo, Pukaki, Hawea, Te Anau, Manapouri, and Taupo for national analysis) as a single large reservoir. "Shortage" is interpreted as the point where the super-reservoir runs out of water (or would run out of water, if not for rolling outages).

3.3.2 In practice, a severe security emergency would likely result in some hydro lakes running low on water before others. The possible consequences are not well understood. For instance, there could be capacity shortages before total hydro lake storage was exhausted.

3.3.3 It is possible that the current security of supply framework overstates the ability of the power system to operate with very low and uneven lake levels. If so, then appropriate mitigating steps (such as accessing contingent storage, making standby generation available, or calling an OCC) may not take place early enough. This might increase the chance that rolling outages would be required.

3.3.4 The Authority has rated this risk as very low probability (because it is rare for hydro storage to reach such a low level) but high consequence (because of the severe consequences of rolling outages).

3.3.5 The best way to resolve the issue may be for Transpower to carry out analysis to better understand how the power system may operate with low and uneven hydro lake levels, and to

communicate the results to the industry. The Authority may have some role in instigating this work.

3.3.6 The Authority considers that it is important to carry out this work before addressing risk areas 3 (the treatment of contingent storage in the HRC framework) and 6 (the trigger for beginning an OCC). It would be difficult to determine how Lake Pukaki contingent shortage should be treated in the HRC framework, without first understanding how the power system might operate if there was a substantial amount of storage available in Pukaki but the other hydro lakes were very low.

3.4 Risk area 3: Contingent storage may not be treated appropriately in the HRC framework

Overall rating: medium

3.4.1 The system operator's approach to contingent storage in the SOSFIP is that:

a) the "actual storage" line includes controlled storage only (and contingent storage is shown on a separate plot)

b) the HRCs are calculated as if contingent storage was not available.

3.4.2 The approach is an improvement over the status quo, in that it provides clarity about how contingent storage is treated. However, it may have two disadvantages.

3.4.3 One disadvantage is that the approach does not take into account the extent to which contingent storage had been drawn down. This might lead to an OCC beginning or ending at the wrong time. In particular:

a) the trigger for beginning an OCC does not take into account whether Lake Hawea contingent storage has been drawn down or not

b) the trigger for ending an OCC does not take into account whether Lake Pukaki or Hawea contingent storage have been drawn down, or not.

3.4.4 The Authority has rated this risk as low probability (because OCCs are infrequent) but medium impact.

3.4.5 Another disadvantage is that the approach would incentivise participants to use contingent storage (once it became available) in preference to controlled storage. In particular:

a) at the 4% HRC, there would be an incentive to use Hawea contingent storage in preference to any controlled storage, in order to defer an OCC (though this would only be possible if Hawea controlled storage had been exhausted, and might be counterbalanced by other incentives faced by Contact Energy)

b) at the 10% HRC, there would be an incentive to use Pukaki contingent storage in preference to any controlled storage, in order to shorten an OCC (though this would only be possible if Pukaki controlled storage had been exhausted, and might be counterbalanced by other incentives faced by Meridian Energy).

3.4.6 The Authority perceives that:

a) having an HRC framework that treats the use of contingent storage as the equivalent of running a thermal generator may not best promote an efficient level of reliability

b) using contingent storage in preference to controlled storage could create a perception among consenting authorities that the privilege of access to contingent storage was being

abused. This might make it more difficult for generators to secure access to contingent storage in future.

3.4.7 The Authority has rated this risk as low probability (because OCCs are infrequent and it would seem reasonable to suppose that consenting authorities would usually tolerate the use of contingent storage under the agreed conditions) but medium impact.

3.4.8 The best way to resolve the issue may be to carry out a review of the treatment of contingent storage in the HRC framework.

3.4.9 In the course of the SOSFIP review, the Authority proposed an alternative approach, under which:

a) the "actual storage" line moves in response to the level of contingent storage remaining

b) the 8% and 10% HRCs are shifted downwards to reflect the potential for Lakes Hawea and Tekapo contingent storage to be used to defer an OCC.

3.4.10 This alternative approach would mitigate both of the risks identified above – it would mean that the HRC framework would take the level of contingent storage into account, and it would remove the incentive for participants to use contingent storage in preference to controlled storage.

3.4.11 The alternative approach, however, has a flaw. If, as has been proposed by Environment Canterbury, some Lake Pukaki contingent storage was made available at the 4% HRC, then, under the alternative approach, the 8% and 10% HRC would need to be shifted downwards to reflect the benefit of this storage. At this stage, the true value of Lake Pukaki contingent storage is not well enough understood to do this.

3.4.12 The Authority therefore considers that risk areas 1, 2 and 4 should be addressed before addressing risk area 3. This should ensure a better understanding of the benefit of Lake Pukaki contingent storage when lake levels are low and possibly uneven and that any alternative approach is compatible with the conditions for ending an OCC.

3.5 Risk area 4: An OCC may end too soon, because the trigger for ending a campaign may be inappropriate

Overall rating: medium

3.5.1 Under Part 9 of the Code, an OCC ends when hydro storage recovers to the 8% HRC (unless the Authority and system operator agree a different end time).

3.5.2 This trigger condition could lead to some undesirable outcomes. In particular:

a) an OCC could end shortly after it began, if storage quickly rebounded from the 10% to the 8% HRC (and note that at some times of year the two HRCs are very close together)

b) another OCC could start almost immediately thereafter, if storage fell to the 10% HRC again.

3.5.3 Such 'flip-flopping' behaviour would confuse stakeholders and undermine conservation efforts.

3.5.4 The Authority has rated this risk as low probability (because OCCs are infrequent) but medium impact.

3.5.5 The best way to resolve the issue may be for the Authority to review the Part 9 provisions for ending an OCC. One possible approach would be to redefine the trigger for ending an OCC in terms of the minimum amount of time until the conditions for beginning an OCC could again be met (assuming no unexpected changes to system conditions). For instance, an OCC might end

once storage had recovered to the point that hydro storage would be expected to remain above the 10% HRC for at least two weeks.

3.5.6 The Authority considers that it is important to carry out this work before addressing risk area 3 (the treatment of contingent storage in the HRC framework). Any alternative approach to contingent storage would need to be compatible with the revised OCC end condition.

3.6 Risk area 5: The Code provisions for sub-national OCCs may not be appropriate

Overall rating: medium

3.6.1 Under Part 9 of the Code, an OCC can be called for the South Island or for New Zealand as a whole, but not for any other regions.

3.6.2 On the one hand, it is not clear that the option of running a South Island-only campaign is still worthwhile.

a) With Pole 3 available, it may be the case that a national campaign is always a more effective way of addressing a South Island energy shortage.

b) A South Island-only campaign could raise equity issues (with North Island consumers receiving no compensation for any voluntary savings they made, or South Island consumers expected to shoulder the burden of reductions).

c) The current Part 9 provisions could also lead to a South Island OCC transforming into a national OCC, or vice versa – which could confuse North Island consumers ("do you want us to conserve power or not??") and hence undermine conservation efforts.

3.6.3 On the other hand, it may be the case that sub-national OCCs (at a regional or island level) *do* still add value. If this is the case, then the current Part 9 provisions may not provide sufficient flexibility. For instance, it might be desirable to run an OCC covering the lower South Island only – or the entire South Island plus the Wellington region – but Part 9 does not currently allow for this. This may make it difficult to launch appropriate conservation initiatives, in the event of a localised energy shortage.

3.6.4 The Authority has rated both these risks as low probability (because OCCs are infrequent) but medium impact.

3.6.5 The best way to resolve this issue may be for the Authority, in collaboration with the system operator, to review the need for OCCs at a sub-national scale. This could lead to amendments to Part 9 of the Code and/or the system operator's Emergency Management Plan.

3.6.6 The Authority considers that this work should be carried out before addressing risk area 7 (the treatment of Waikaremoana storage in the HRC framework). It would be difficult to assess the value of Waikaremoana storage without first understanding the extent to which future OCCs are likely to be South Island-only problems.

3.7 Risk area 6: An OCC may begin too early, because the trigger for beginning a campaign may be inappropriate

Overall rating: low

3.7.1 Under the HRC framework, an OCC begins when controlled hydro storage falls below the 10% HRC (unless the system operator and Authority agree a different date).

3.7.2 The original derivation of the trigger point reflected a trade-off:

a) beginning the campaign at an earlier HRC would result in OCCs occurring more often (sometimes unnecessarily), but

b) beginning the campaign at a later HRC would result in rolling outages being required more often (at considerable societal cost).

3.7.3 The selection of the 10% HRC as the trigger point was, in part, based on a calculation that this would generally result in a gap of at least five weeks between the beginning of an OCC and the need for rolling outages (barring unexpected events such as asset failures). The five-week gap would provide sufficient time to organise the rolling outages.

3.7.4 Since the 10% HRC was approved by the Authority Board as the appropriate trigger for OCCs, Meridian Energy's access to five metres of contingent storage at Lake Pukaki has been formalised by Environment Canterbury. The availability of Lake Pukaki contingent storage may change this trade-off. It may now be possible to shift the OCC trigger point to a later HRC, without materially increasing the risk of rolling outages.

3.7.5 Retaining the existing trigger point may therefore lead to OCCs being called earlier, and therefore more often, than would be efficient.

3.7.6 The Authority has rated this risk as low probability (because OCCs are infrequent) but medium impact.

3.7.7 The best way to resolve this issue may be for the Authority to review the OCC trigger condition set out in Part 9. It might turn out that it would be more efficient to set the trigger to some other percentage (for example, the 15% HRC), or to set it dynamically using some mathematical formula.

3.8 Risk area 7: Waikaremoana controlled storage may not be treated appropriately in the HRC framework

Overall rating: low

3.8.1 Under the HRC framework, the "actual storage" line represents the sum of Tekapo, Pukaki, Hawea, Manapouri, Te Anau, and (for national analyses) Taupo controlled storage.

3.8.2 The "actual storage" line does not include smaller storages such as Cobb, Coleridge or Waikaremoana. Of these, the biggest by some way is Waikaremoana (~180 GWh).

3.8.3 Failing to model Waikaremoana storage may lead to the true security risk level being:

a) overestimated, if Waikaremoana storage is high; or

b) underestimated, if Waikaremoana storage is low.

3.8.4 This may lead to an OCC being declared, or contingent storage being made available, too early or too late.

3.8.5 The Authority has rated this risk as medium probability, but low impact (because Waikaremoana only has a moderate amount of storage, it is not closely correlated with South Island reservoirs, and transmission constraints may prevent it from being able to be used to conserve South Island storage).

3.8.6 The best way to resolve this issue may be for the system operator to consider adding Waikaremoana to the national "actual storage" line when it next reviews the SOSFIP. The calculation of the national HRCs would need to change accordingly.

3.8.7 The Authority considers that risk area 5 should be addressed before addressing risk area 7, as it would be difficult to assess the appropriate treatment of Waikaremoana storage without first understanding how OCCs might be structured in future.

3.9 Risk area 8: The energy security of supply standards may be set too high

Overall rating: low

3.9.1 The system operator's annual security assessment (ASA) evaluates winter energy margins (WEM) for the South Island and NZ as a whole, and compares these WEM measures with the energy security standards set out in the Code. The security standards reflect an efficient level of supply:

a) if WEM exceeds the standard, then there is more generation than is required for the purpose of dry-year supply

b) if WEM is below the standard, then there is an inefficiently high risk of OCCs and rolling outages.

3.9.2 The Authority revised the security standards in 2012. Neither the original nor the revised energy security standards took into account the potential for contingent storage to be used to avoid OCCs or rolling outages. Contingent storage is now more likely to be materially important to the security standards given the access arrangements for Lake Pukaki have been formalised since the WEM security standards were chosen. Therefore, the supposedly 'efficient' standards may in fact be inefficiently high.

3.9.3 The Authority has rated this risk as high probability, but low impact. Recent ASAs have projected oversupply for the next few years. If the security standards were revised to reflect the availability of contingent storage, then this would simply increase the projected level of oversupply – with no change in the conclusion to be drawn.

3.9.4 The Authority therefore considers that this issue can wait until the security standards are next scheduled to be reviewed (unless WEM projections fall significantly in the interim).

3.10 Risk area 9: There may not be an appropriate incentive for retailers to avoid rolling outages

Overall rating: low

3.10.1 The customer compensation scheme provides a strong incentive for retailers to act to avoid the need for OCCs. There is no corresponding incentive for retailers to act to avoid the need for rolling outages.

3.10.2 It could be suggested that rolling outages might be perceived as a "get out of jail free card" by retailers in the right circumstances, such as being so 'deep' in an OCC that system operator is closer to triggering rolling outages than declaring the end of the OCC. Rolling outages have the potential to shorten the length of an OCC (and hence reduce the amount of compensation to be paid) and reduce the volume of purchasing obligations.

3.10.3 The Authority has rated this risk as high impact, but very low probability. The Authority considers that, regardless of financial incentives, participants would be very reluctant to take any steps that could be seen as increasing the risk of rolling outages. Reasons include:

a) their aversion to regulatory risk

b) their aversion to reputational risk

c) their sense of social responsibility.