Scarcity pricing – Summary of submissions and Authority response[1]

Q1	Do you agree with the problem definition?		
Ref.	**Issue**	**Submitter**	**Authority Response**
1.1	The report by Sapere identified the policy problem as being a missing market and proposed a short term forward market (STFM) to improve price formation.	MEUG	The Authority considered this proposal in its most recent Consultation Paper and commented that a forward commitment market might improve price formation in general but would be unlikely to have any material benefit during short term supply emergencies or for longer energy shortages. The key reasons are that demand bids and supply offers in a STFM (and hence the forward price) would reflect conditions before the emergency arose for sudden events, and would not necessarily address the incentive on hydro generators to suppress their offer prices in extended droughts. Both the Scarcity Pricing Technical Group (SPTG) and the Scarcity Pricing Forum agreed the STFM was not a satisfactory alternative and submissions have not provided any new information which alters this view.
1.2	There is concern that competition is not strong enough in the electricity market, and that the demand-side is not able to respond sufficiently to act as a discipline on prices.	DEUN Pan Pac	Competition and security of supply are both important priorities for the Authority, as is evident from the pro-competitive initiatives that are underway (e.g. hedge market development, introduction of financial transmission rights, the "what's my number" campaign, and provision of a dispatchable demand product). The Authority also notes that the problem definition statement in the Consultation Paper recognised that "purchasers are concerned about the prospect of paying an unduly high price in an emergency, knowing that competition is likely to be more limited when the system is under stress. Purchasers want to be assured that spot prices in emergency load shedding will not settle well above the level expected in a workably competitive market". The Authority's initial proposal (in March 2011) was modified in light of this perspective (for example the proposed addition of a cap mechanism when scarcity pricing is invoked).
1.3	The problem definition does not identify the root cause of the issues. Spot price suppression is likely to	Pan Pac Rio Tinto Alcan	See refs 1.1 and 1.2.

[1] A glossary of abbreviations appears at the end of this document

	be the symptom of a deeper issue of inefficient spot-price formation.		
1.4	Prices do not need to reach very high levels to justify investment in resources that are called upon very infrequently because there is more than enough demand willing to enter into emergency curtailment contracts at a lower cost than stand-by generation.	Norske Skog Tasman	It is not clear what is meant by "emergency curtailment contracts", but it may refer to an arrangement where the cost of resource provision is not recovered via spot prices but is instead paid from a broader levy. Such arrangements are not favoured as an ongoing mechanism because they distort incentives in the same way as the soon to be abolished reserve energy scheme. The basic problem is that these mechanisms provide insurance to buyers with unhedged spot market exposure, but the costs are socialised across a much wider group. This reduces the incentive for individual parties to prudently manage their risks, and can place a cost burden on parties that have no net exposure to spot price risk.
1.5	Now that the practice of cancelling the reserve market when supply is tight has been abolished, there does not appear to be any problem of price suppression.	Norske Skog Tasman	The change is an improvement but does not entirely address concerns about price suppression. The new procedures still determine a price for reserve based on the offers made by providers (generation and interruptible load) and it is unlikely it would reflect the appropriate economic value for any IR foregone. Also, the changes made in 2010 have no impact at all on spot price formation during forced load shedding. Lastly, the Authority's proposals provide greater assurance that prices in a curtailment situation will not settle well above the level expected in a workably competitive market. The changes to the IR market introduced in mid-2010 raised concerns in this area the Authority has proposed to address.
Q2	**Do you agree that the proposed narrowing of scarcity pricing (to be applied for short-term emergencies and not for extended shortages) would be more consistent with the Authority's statutory objective?**		
2.1	The scarcity pricing	Genesis	The Authority recognises that *energy* security remains an important issue for New Zealand.

	proposal does not address rolling outages or public conservation campaigns.	Transpower	However, it proposed the narrowing of scarcity pricing because it was not convinced that this mechanism would be appropriate to address sustained periods of tight energy supply. This is because: • imposing a price floor for an extended period of time would be very intrusive to market operations and accordingly raise concerns with its durability; • concerns associated with PCCs have already been addressed to a large degree by other measures, notably the adoption of pre-announced trigger points for PCCs, the introduction of the customer compensation scheme applying to electricity retailers, and the physical asset swaps between Meridian Energy and Genesis Energy and the virtual asset swaps involving the same two companies and Mighty River Power; • introducing price floors for PCCs risks creating perverse incentives for thermal generators to withhold supply in the lead up to PCCs to hasten the triggering of the price floor; • there is no international precedence for using scarcity pricing for energy scarcity situations, which means that New Zealand would be "going it alone" in introducing a very risky mechanism with potentially high negative impacts without the benefit of observing the effects of such a mechanism in other jurisdictions.
Q3	**Do you agree that scarcity pricing should be applied as a price floor and cap, rather than simply a price floor during emergency load shedding?**		
3.1	Applying a cap may suppress prices below the cost of non-supply.	Genesis Rio Tinto Alcan	Analysis indicates that the proposed scarcity price floor ($10,000/MWh in GWAP terms) should provide sufficient revenue to cover the expected costs of last resort plant. Setting a scarcity price cap at $20,000/GWh (in GWAP terms) should reduce the scope for any unintended dampening of demand response and supplier incentives.
3.2	It's not clear the benefit of setting a cap outweighs the dampening of incentives for innovation within the market to avert high	MEUG	The capping mechanism is expected to enhance certainty for participants and therefore improve policy durability and incentives. The scope for any dampening of incentives is limited by: - setting the cap at $20,000/MWh in GWAP terms - limiting the application of the cap to scarcity pricing events.

	uncapped prices.		
3.3	The terms “cap” and “collar” are technically one correct way of describing the pricing proposal, however it is likely to create confusion. The term “Administered price level” would be a more descriptive term.	Smart Power	The Authority prefers the floor and cap terms because they indicate the effect of the respective elements of the proposal.
3.4	The floor/cap levels should be reviewed on a regular basis.	TrustPower	The first scheduled review of scarcity pricing will commence in mid-2014. A decision will be made in that review on whether the floor/cap levels remain appropriate or should be altered.
3.5	A cap risks signalling in the normal market that any price short of the cap is acceptable to the regulator.	Rio Tinto Alcan Pan Pac	The proposed mechanism will not apply in ‘normal’ market conditions (i.e. no island or nation-wide shortage requiring involuntary load shedding), which will continue to have uncapped prices and offers. More generally, if parties raise their offers, this will reduce the likelihood of being dispatched and increase the likelihood of other competitive responses, such as increased voluntary demand response or the entry of new generation.
Q4	**Do you agree that scarcity pricing should include a stop-loss mechanism, at least on a transitional basis?**		
4.1	The stop-loss mechanism should be permanent rather than transitional.	Contact Mighty River Power TrustPower	The Authority intends to retain the stop-loss mechanism at least until the first scheduled review of scarcity pricing, which is proposed to commence in mid-2014. A decision will be made in that review on whether the mechanism should be retained, modified or discontinued in light of experience.
4.2	A stop-loss mechanism is unnecessary given the very narrow circumstances in which the Authority proposes	Genesis Pan Pac	Even if it is unlikely to be triggered, a stop-loss mechanism is useful because it reduces the risk (real or perceived) of unintended outcomes associated with the sustained application of scarcity pricing. Furthermore, the stop-loss mechanism does not directly constrain spot prices. Rather, it suspends the use of administered scarcity pricing beyond a predefined point, after which the normal spot price mechanisms would apply. The mechanism should

	to apply scarcity pricing.		therefore not carry a high risk of dampening incentives for prudent management of risk.
4.3	The stop-loss mechanism should be subject to review.	Transpower	See ref 4.1.
4.4	How do you decide on stop-loss settings.	Norske Skog Tasman	The settings were derived from analysis which considered the impact on expected revenue for a last resort provider of resources (demand-side response or generation), and the impact on risk. The proposed setting is not expected to materially affect revenue and hence incentives for resource provision, but would reduce the 'tail' of market risk.
Q5	**Do you agree that scarcity pricing should not apply for AUFLS per se?**		
5.1	The AUFLS issue might be better resolved using a small technical group.	Carter Holt Harvey	The issue has been already been discussed within the Scarcity Pricing Technical Group.
5.2	Scarcity pricing should not apply during a black start situation.	Norske Skog Tasman	Scarcity pricing would only be triggered in final pricing if all of the following criteria apply: - demand curtailment is instructed by the system operator - the shortage was notified as being island or nation-wide - there were no AC transmission constraints when final pricing is run - the stop-loss mechanism had not been triggered. It appears unlikely that a black start situation would meet all of these criteria as the system operator will not have instructed load to be curtailed.
5.3	The AUFLS element of the scarcity pricing design should be subject to regular review.	Transpower	This will be considered as part of the first review scheduled to take place in mid-2014.
Q6	**Do you agree with the proposed geographic threshold for initial application of scarcity pricing, and if not why?**		
6.1	Scarcity pricing should	Rio Tinto	There is potential for signalling inconsistencies to arise if boundaries are defined within

	follow the four regions used by Transpower for transmission pricing purposes.	Alcan	each island because electrical flows on an island's AC network can differ from the pattern that is implicit in setting scarcity regions. This difficulty does not arise with the proposed island threshold as the Cook Strait link is a DC connector.
6.2	A nodal threshold would be more efficient.	Contact Genesis	A nodal threshold would trigger scarcity pricing even if a shortage was limited to a single node and arose from a local transmission failure. As discussed in the Consultation Paper, it is not clear that a scarcity price signal would necessarily improve economic efficiency in this case and was therefore judged to be too risky an option to adopt at the outset.
6.3	Prefers national threshold.	Mighty River Power	A national threshold would mean that scarcity pricing would not trigger even if load shedding is required throughout one island. The Authority considers this to be unduly restrictive.
6.4	The threshold should not be reviewed as it would increase uncertainty.	Mighty River Power	Changes to the threshold will not occur unless they meet the Authority's statutory objective and other requirements in the Electricity Industry Act for making Code amendments (for example, consultation on proposed amendments).
Q7	**Do you agree that an amendment should be made to final pricing processes when an infeasible solution arises following an IR shortfall?**		
7.1	The need for change at this time has not been 'demonstrated'. Behaviours have altered since mid 2010 (when pricing in IR shortfalls was changed). Using data from 2009 may not be relevant.	MEUG Transpower	The issue arises because of the inherent mathematical properties of the market clearing engine. The simulated example in the Consultation Paper using 2009 data merely illustrated the effect that can arise when an infeasibility occurs in final pricing. Subsequent analysis using more recent data to simulate infeasible solutions shows that the same issue can still arise.
7.2	If the EA considers there is still a residual problem then the appropriate next step is	MEUG	The current process involves incrementally relaxing the constraint until a feasible solution is found. This can lead to very high prices (for example seven to fourteen times the highest energy or reserve offer respectively) which are extremely sensitive to small variations in input parameters. These outcomes are unlikely to be viewed as economically

	to assess all options including incrementally relaxing the constraint until a feasible solution is found to derive IR prices.		robust and are therefore likely to come under challenge. The Authority considers it more consistent with its statutory objective to limit the prices that can occur in such situations.
7.3	The IR proposal would set a precedent for a price cap on energy offers.	MEUG	The proposal does not place any cap on energy or reserve *offer* prices. Rather, it would limit the final *price* outcomes to a maximum multiple of the highest *offer* price. In any case, this decision has no precedent value as any change to the Code must be assessed according to the statutory objective.
7.4	Metering errors are random and there is no bias either up or down – this means that IR prices are likely to be correct 'on average' once infeasibilities are resolved.	Norske Skog Tasman	While metering errors are expected to be random, the fact remains that 'just feasible' prices following an IR shortage can be extremely sensitive to any variation in inputs. Being correct 'on average' does not alter the fact that prices in a single event will have doubtful economic integrity, make them more open to challenge, and increase uncertainty for participants.
7.5	Prices can and should settle at many multiples of the highest energy or reserve offer price at times, e.g. when there are multiple risk setters.	Norske Skog Tasman	The Authority agrees that it is technically possible for a reserve price to be multiples of the energy price and has undertaken further analysis with data after the variable reserve implementation in July 2010 to assess its likelihood. In light of this analysis, the Authority has modified the Code amendment to limit final prices when an infeasibility arises following an instantaneous reserve shortfall to the higher of three times the highest energy offer price, or the highest instantaneous reserve offer price scheduled in final pricing.
7.6	The proposed amendment is arbitrary and it is preferable that the pricing algorithm be looked at if extreme prices around IR-induced infeasibilities	Rio Tinto Alcan	The Authority prefers to address the identified risks with current arrangements at this time, rather than waiting for an actual event to occur when parties will have clear commercial positions to protect. However, it intends to undertake further work to investigate more fundamental options, grounded by economics.

	have no economic foundation.		
7.7	The issue is not a section 42 matter, and could be deferred for later consideration.	Transpower	The Authority agrees that it is not a matter covered by section 42 of the Electricity Industry Act 2010, but considers it to be an important issue that should be addressed now. See ref 7.6.
7.8	A minimum threshold for IR could be of value, such that if available IR dropped below a certain level then the IR market would close and the energy price could be set by the floor for emergency load shedding.	Contact	Under the Authority's proposal, demand curtailment could well be invoked by the system operator before IR cover is completely exhausted. If so, scarcity pricing would be expected to apply in large 'IR shortfalls'.
7.9	Customer Advice Notice 284093670 appears to reduce the impact of the IR proposal in the Consultation Paper.	Contact	True, but the change outlined in the CAN would not solve the problem that final prices can end up as a significant multiple of energy or reserve offers, as these can occur under the variable reserve approach as specified in the CAN.
7.10	A shortage of IR should trigger scarcity prices.	Smart Power	For modest IR shortfalls it is not clear why prices should reflect scarcity values for demand curtailment. However, if the system operator decides to curtail demand to preserve minimum reserve cover then scarcity prices would apply (provided other conditions for scarcity pricing are met).
Q8	**Do you agree with the proposed implementation timetable?**		
8.1	Other initiatives (demand dispatch, reserves review) have higher priority than	Pan Pac	Scarcity pricing is not being pursued at the expense of these other initiatives. For this reason, it is hard to see how delay of scarcity pricing would produce net benefits.

	scarcity pricing/stress testing.		
8.2	Proposals should be refined by a group of industry technical experts and practitioners.	MEUG	The current proposals already reflect a lengthy period of development that has included input from the Scarcity Pricing Technical Group since early 2010.
8.3	Reassess if there is a residual problem post the mid 2010 IR shortfall rule changes.	MEUG Rio Tinto Alcan Pan Pac	See refs 1.5 and 7.6.
Q9	**What is your view of the proposed review provisions for key scarcity pricing parameters?**		
9.1	Any review should seek to establish whether the presence of the scarcity price had been (net) beneficial, and should start from the basic premise that the intervention is no longer necessary.	Meridian Norske Skog Tasman	The Authority will undertake a review in accordance with its statutory objective.
9.2	It will be important to retain at least 12 months warning of any change following a review.	Powershop	The Authority intends to provide at least 12 months notice before any change flowing from a programmed review would take effect. However, the Authority retains the ability to make Code amendments at any time (subject to acting within the statutory framework), but does not intend to do this unless a change is necessary to address the matter.
9.3	Provision should be made for shorter notice periods if a change is	Transpower	The Authority agrees – see ref 9.2.

	critical to maintaining security standards.		
9.4	An additional option is to consider a review after the first specific scarcity pricing events.	Pulse	The Authority prefers to operate on the basis of scheduled reviews for considering *specific scarcity pricing parameters* as this provides greater certainty for participants. However, if an event indicated a need to make an urgent change, the Authority would not wait for a scheduled review.
Q10	**What is your view of the trigger mechanism for declaring a national or island shortage?**		
10.1	There are numerous AC constraints that bind on any particular day, and hence the pre-condition that no AC constraints bind could set an unduly high threshold for scarcity pricing to actually flow-through to final prices.	Contact Genesis	The Authority considered a number of alternative tests for island-wide shortages (for example the status of the reserve in each island). All of the alternatives suffered from either false positives (i.e. imposing scarcity pricing when shortage was not island-wide) or would impose significant new computational requirements on the system operator. The proposed test based on AC constraints did not suffer false positives and can be implemented based on existing processes. On the issue of whether AC constraints are common at times of widespread system stress, the Authority has examined trading periods between 2008 and 2011 when spot prices at Haywards or Benmore were elevated (an indicator of widespread system stress). Of the 105 identified trading periods, over 85% did not have any binding AC transmission constraints within the relevant island.
10.2	The current proposal places extra duties on the SO when the primary focus will be on physical system management. This may delay the notification of scarcity pricing conditions to participants.	Transpower	The Authority acknowledges this concern and supports the approach suggested by the system operator in its submission. In essence, this provides for scarcity pricing processes to be invoked if the system operator notifies participants that demand curtailment has been instructed on an island-wide or national basis. It recognises that the system operator is already required to exercise a high standard of care before issuing curtailment instructions. This approach would avoid the need for the system operator to run an additional specified procedure close to real time (reducing resource pressure) and should speed up the issuing of notices which is desirable for signalling to participants. The test for transmission constraints would still be applied by the pricing manager when computing final pricing. This would provide a safeguard against any unexpected changes between the time the system operator issues curtailment notices and actual metered conditions.

10.3	Generators can easily manipulate transmission constraints. Thus transmission constraints should not be part of the criteria for declaring shortages.	Norske Skog Tasman	The decision to use the approach suggested by the system operator in its submission addresses this concern (see ref 10.2).
10.4	With respect to a system failure prior notice appears impossible. Ability to advise a trigger appears improbable.	Pan Pac	The Authority agrees that it is impossible to provide prior notice of system failure. However, because final pricing is based on system conditions (other than demand) at the start of a trading period, a CAN notifying participants of an island or nation-wide shortage requiring load shedding will only trigger scarcity pricing in the following trading period. This increases the potential for participants to receive prior warning when scarcity pricing is likely to apply.
Q11	**What is your view of the trigger mechanism for revoking shortage declarations?**		
11.1	A better option may be to revoke the declaration when the system operator revokes the first load shedding instruction.	Powershop	This would be inconsistent with the overall policy objective. For example, if a national shortage occurred and load was restored first in one island, then scarcity pricing should continue to apply in the other island.
Q12	**What is your view of the proposed pre-dispatch and real time indicators for scarcity pricing?**		
12.1	Pre- or real time dispatch schedules would indicate forecast prices based on constraint violation penalties ($100,000/MWh for SIR/FIR and $500,000/MWh for energy) rather than	Meridian	It is not practicable to signal scarcity prices for an island-wide shortage in forecast schedules without using a device like a shortage function (i.e. demand curve) for IR, an option that was not supported by the scarcity pricing technical group or scarcity pricing forum. In any case, the forecast prices based on constraint violation penalties should provide a strong price signal for participants in a directional sense, even if the values are only indicative. Additionally, the quantities of energy or IR shortage will be published so participants are aware of the extent of the problem.

	scarcity prices. This may lead to some confusion.		
12.2	The Authority should consider carefully how they could make pre-dispatch and real-time indicator information more user friendly to users who do not have 24/7 attention to these matters.	Carter Holt Harvey Norske Skog Tasman Pan Pac	The Authority notes that publishing island-wide or national load curtailment notices by the system operator will be an important indicator. The Authority has asked the WITS service provider to look at how it can provide swift dissemination of these notices to participants.
Q13	**Which approach do you believe will best meet the Authority's statutory objective (and why):** **- a common value for the GWAP floor and cap of $10,000/MWh; or** **- a GWAP floor of $10,000/MWh and a cap of $20,000/MWh?**		
13.1	Of the two options, a cap of $20,000 per MWh would best meet the Authority's statutory objective.	Genesis Pan Pac	The Authority agrees with this view.
13.2	If the proposal is really to provide incentives for investment in last resort resources then no cap should apply.	Rio Tinto Alcan	The proposed cap of $20,000/MWh is intended to provide greater revenue certainty for providers of last resort resources while also providing more assurance for purchasers that spot prices in emergency load shedding will not settle well above the level expected in a workably competitive market.
13.3	A floor of $10,000/MWh and a cap of $20,000/MWh fails to provide market participants with sufficient certainty	Mighty River Power Meridian Powershop	Given a floor price of $10,000/MWh, higher spot prices during scarcity events could only arise on a sustained basis if suppliers consistently offered at prices above this level. By doing so, they would reduce the likelihood of being dispatched in 'near miss' events and increase the likelihood of other competitive responses, such as increased price-based demand response or the entry of new generation. In short, based on the proposed scarcity price mechanism, it appears unlikely that material price overshooting would occur on a

	around possible pricing outcomes during a scarcity event.	Smart Power	sustained basis.
13.4	A cap at $20,000/MWh is a lesser intervention and more consistent with the uncapped market design.	Transpower Norske Skog Tasman	The Authority agrees with this view.
13.5	It appears possible the high price will reward lack of supply hence reducing incentives to provide new generation investment.	Pan Pac	See ref 1.2 and 13.3.
13.6	A $10,000 per MWh cap risks significantly undervaluing the cost of non-supply to affected consumers and, as such, is likely to contribute to sub-optimal reliability.	Genesis	Choosing a $20,000/MWh cap (in GWAP terms) during scarcity pricing should sufficiently limit the potential for any unintended dampening of demand response and supplier incentives.
Q14	**Which approach do you believe will best meet the Authority's statutory objective (and why):** **- scaled pricing approach; or** **- flat pricing approach?**		
14.1	The scaled pricing approach provides/maintains locational signals for demand response and generation and should	Contact Genesis Meridian Powershop	The Authority agrees with this view and prefers the scaled approach.

	better preserve the relativities between IR and energy prices.		
14.2	Customers generally try to be hedged at the location of their usage and wish to use hedging to remove as much risk as possible. For those users the flat pricing approach would undermine their certainty.	Smart Power	The Authority agrees with this view and prefers the scaled approach.
14.3	The scaled pricing approach imposes risk on market participants in the form of exaggerated locational price signals at a time when locational signals are unlikely to achieve any beneficial purpose.	Mighty River Power TrustPower	Even when an administrative intervention is being applied (i.e. load shedding), the value of additional voluntary demand response or generation resources will vary across the grid.
14.4	The scaling approach is inconsistent with the scarcity pricing approach adopted in similar overseas electricity markets.	Mighty River Power	In this context, international precedents are of little value as neither the Australian National Electricity Market nor the Singapore market have full nodal pricing.
14.5	If differentiated administered pricing were implemented, it would be logical to determine the VoLL at	TrustPower	The value of lost load (VOLL) will vary by location. However, other factors will also come into play such as the timing, duration and extent of curtailment required. Ideally, values of lost load would be determined at each location (preferably by customers), and the system operator would use this to inform its scheduling decisions. While such changes are not realisable at this time, they might be possible after voluntary dispatchable demand has

	each node and use those values.		been implemented.
Q15	**What is your view of the proposed approach to applying scarcity pricing across trading periods?**		
15.1	Intra-period triggering would provide a more accurate price signal.	Genesis	The Authority agrees in principle. However, any move towards more 'granular' pricing needs to be considered in its own right as it raises broader market issues.
15.2	This start of trading period thing should be abolished and replaced with a time weighted average price under all circumstances.	Norske Skog Tasman	See 15.1.
Q16	**What is your view of the proposed approach to treating differences between forecast and actual conditions?**		
16.1	There are numerous AC constraints that bind (or are close to binding) on any particular day, and hence the pre-condition that no AC constraints are binding could set an unduly high threshold for scarcity pricing to actually flow-through to final prices.	Contact	See ref 10.1.
16.2	Transmission constraints should have no bearing on scarcity pricing. A declaration made in real-time should not be	Norske Skog Tasman	The Authority is concerned to avoid situations where genuine differences between forecast and actual conditions could lead to the mis-application of scarcity pricing. The scope for bona fide differences is very real, especially during a load restoration process.

	revoked by some trickery ex-post.		
16.3	The problem of difference in actual and forecast conditions may be largely eliminated if the Authority subdivides each island into regions.	Rio Tinto Alcan Pan Pac	See ref 6.1.
Q17	**What is your view of the proposed approach to HVDC rentals, and what alternative (if any) would you support and why?**		
17.1	Applying a $20,000 or $35,000 per MWh cap would reduce the likelihood of negative HVDC rentals arising.	Genesis	A higher scarcity price cap (in GWAP terms) would reduce the scope for negative rentals but needs to be balanced against the effect on certainty about pricing outcomes (see ref 1.2) and possible overshooting.
17.2	A potential disconnect could arise from commencing the proposed FTR product ahead of finalising the Authority's preferred approach to transmission pricing.	Meridian	This is a distinct issue and is best resolved outside of the design of scarcity pricing arrangements.
17.3	The Authority's proposed approach re HVDC rentals will impact the revenue adequacy of the proposed Benmore-Otahuhu FTR.	Meridian Transpower Smart Power	The Consultation Paper noted the potential impact of scarcity pricing on rentals. However, the likelihood of material impact appears relatively remote given the number of preconditions that must be met.

17.4	Participants in the FTR market should bear this risk (re HVDC rentals).	Norske Skog Tasman	The Authority agrees with this view.
17.5	Would the HVDC rentals be an issue with a four-region approach?	Rio Tinto Alcan	See ref 6.1
Q18	**What is your view of the proposed approach to implementing a scarcity pricing stop-loss mechanism?**		
18.1	The Authority, by proposing a restriction on the application of scarcity pricing via the stop-loss mechanism, appears to have reservations about the policy.	Norske Skog Tasman	The stop loss mechanism was proposed in order to place a boundary on cumulative spot price risk arising directly from the application of scarcity pricing.
Q19	**What is your view of the proposed modification to final pricing when an IR shortfall occurs and an infeasible solution arises in final pricing?**		
19.1	As a shortage of IR could ultimately result in outages we consider that a scarcity price should be allocated to it.	Smart Power	IR scarcity prices should not reflect scarcity values for demand curtailment but, in principle, could be expected to have their own value. However, the system operator could invoke load shedding to maintain minimum IR cover to achieve their PPOs, so scarcity prices would apply in this situation (provided other conditions for scarcity pricing are met).
19.2	Same issue as ref 7.5.	Norske Skog Tasman	See response to ref 7.5.
19.3	A cap on reserve prices appears inconsistent with	Pan Pac	See response to ref 7.3.

	having no cap on energy prices.		
19.4	Appears an arbitrary approach. Prefer to amend pricing algorithm.	Rio Tinto Alcan	See response to ref 7.6.
Q27	**What is your view of the proposals when assessed against the Authority's statutory objective?**		
			Q27 and Q29 are closely related and are considered in consolidated form below.
Q28	**What is your view of the alternative means of achieving the objectives of the proposed scarcity pricing regime?**		
28.2	We consider that a more complete implementation of scarcity pricing would be the best approach.	Genesis	The Authority does not favour this approach for the reasons set out in ref 2.1.
28.3	Prefers capacity pricing and increased intervention and control of the generation side of the market.	Pulse	The Consultation Paper noted that a capacity mechanism would be expected to require more prescription than scarcity pricing. This may stifle innovation, and over time reduce the efficiency of operation of a capacity mechanism relative to the alternatives. For these reasons, it favoured the current proposals ahead of a capacity mechanism.
28.5	The status quo is a better alternative.	MEUG NZ Steel Norske Skog Tasman	Reliance on existing arrangements is not considered sufficient to address price suppression when demand is forcibly curtailed in a short term emergency, or the pressures around time consistency that are expected to arise during a period of tight supply. Nor would the concerns be adequately addressed by other proposals that are actively being pursued by the Authority at present (e.g. development of hedge market arrangements).
28.6	The single supplier model is a better	Pan Pac	The Consultation Paper noted that this option would require widespread changes to existing arrangements and create significant transition costs and risks. Nor is it clear that

	alternative.		centralised decision-making would yield economic benefits (recalling that supply shortages occurred under central decision making in the past).
28.7	A price cap could apply for PCCs and rolling outages to help identify the boundaries of risk that participants should seek to manage.	Contact	The Authority does not favour this approach for the reasons set out in ref 2.1.
28.8	Addressing immature market arrangements (including demand side response) is a better alternative.	Rio Tinto Alcan Smart Power	The Authority agrees that strengthening demand side response and risk management arrangements are important, and it has initiatives underway in these arenas (e.g. introducing a locational hedge product, improving the hedge market, introducing dispatchable demand product).
Q29	**What is your view of the costs and benefits of the proposed scarcity pricing changes?**		
29.1	Cost-benefit analysis should count the costs of health impacts.	DEUN	The Consultation Paper noted the issue could have merit to the extent there is a divergence between private costs (to consumers) and social costs (to New Zealand). However, the paper noted the extent of such effects is unclear because: • the effect of scarcity pricing on residential prices is expected to be modest (scenario-based modelling suggested an impact of zero to one percent on delivered prices in the medium term); • scarcity pricing should improve security of supply, which could have positive health impact costs The Consultation Paper also noted that addressing health or affordability issues in a more direct way is likely to be more effective than seeking to address them by altering the expected level of security of supply. The Authority is not aware of any new information which would alter this view.
29.2	The Consultation Paper did not consider the poor incentives and	MEUG	The Consultation Paper included a cost benefit analysis that considered a range of downside scenarios. This indicated that the net benefits were robust to sizeable

	disadvantages of the scarcity pricing proposal as a whole. To reduce the risk of unintended consequences a technical expert group should consider final design elements.		variations in key assumptions. As regards the risk of unintended consequences, the current proposals have been developed over more than 18 months with input from two earlier rounds of public submissions, two Scarcity Pricing Forum meetings and eleven Scarcity Pricing Technical Group meetings. The Authority is also planning to undertake periodic reviews of key scarcity pricing parameters in the future.
29.3	Our view is that the status quo (no intervention) must deliver more efficient prices than the interventionist scarcity pricing proposal.	Norske Skog Tasman	It is not clear why this would be the case as any load that is forcibly curtailed is effectively ignored for pricing purposes under current arrangements.
Q31	**Do you propose any changes to the Code amendments?**		
31.1	The Code should be amended to take account of policy revisions following submissions.	A range of submitters	The Authority has noted this point and revised the draft Code in light of policy decisions following the consultation process.

Glossary

AC	Alternating current
AUFLS	Automatic under frequency load shedding
BusNZ	Business New Zealand
CAN	Customer Advice Notice
DC	Direct current
DEUN	Domestic Energy Users Network
EMP	Emergency Management Policy
GWAP	Generation weighted average price
IR	Instantaneous reserve
MEUG	Major Electricity Users Group
NCFO	Net cash flow from operations
STFM	Short term forward market
VOLL	Value of lost load