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Efficient Procurement of Extended Reserves – draft Code amendment

Thank you for the opportunity to provide a submission on the Electricity Authority's (Authority) consultation paper: *Efficient procurement of extended reserves – draft Code amendment*, published 3 April 2014.

We commend the Authority for its continued work on the framework to facilitate the procurement of Extended Reserves (ER). We don't underestimate the work required to progress this development initiative.

Our interest in this matter lies primarily as the System Operator (SO) and previous submissions have focused on this interest. As we progress toward the implementation phase of this initiative issues that may affect us as the Grid are beginning to emerge. To assist readers understand the basis of our comments we have provided submissions from each perspective. This submission is written from our perspective as the SO service provider.

Optimisation of technical standard and procurement methodology

As acknowledged in the consultation paper¹ and at the subsequent workshop² the optimum quantity of Automatic Under-frequency load shedding (AUFLS) varies with system conditions (load and its inertia on the system³, HVDC transfer, and source of generation and its inertia). In the analysis underpinning the conclusions reached in the four-block AUFLS Scheme Design⁴ it was necessary to address this issue. To undertake the analysis we assumed that the nature and location of the load⁵ interrupted would remain the same as that interrupted in the current two block scheme. While the analysis contemplated changes to the quantity of load interrupted it did not test the consequence of allocating interruption obligations to a different composition of load types.

² Extended reserve workshop, Electricity Authority, 6 May 2014, Slide 2

¹ Page B, second bullet

³ Motive load (pumping, processing, and conveyance) assists in the arrest of under-frequency deviations. While the interruption of such load may be inevitable the interruption of motive load exacerbates the rate and extent of under-frequency deviations

⁴ http://www.systemoperator.co.nz/sites/default/files/bulkupload/documents/20130807%20AUFLS%20Scheme%20Design%20Report.pdf

⁵ Interruption of load alters power flows and consequentially voltages and losses.

The optimal mix of load shed, to manage frequency (and voltage), following an event that triggers AUFLS needs to trade-off technical requirements and cost. The regime proposed by the Authority seems to assume that either: the preparation of the technical requirements specification (TRS) can anticipate the type of load that will be identified by the selection process, and its location; or that the TRS is sufficiently prescriptive to restrict the outcome of the selection process to the load type assumed in the derivation of the TRS. At this stage the outcome of the selection process is unknown and it is not clear that an overly prescriptive TRS will deliver an efficient outcome.

To ensure an efficient outcome the development of the initial TRS and selection methodology should be iterative. To ensure the TRS and SM deliver an efficient outcome the steps should be:

- the SO reviews, and publishes, the TRS;
- o the Extended Reserves Manager (ERM) develops the selection methodology (SM);
- the ERM acquires asset owner information and runs the selection process;
- the SO ensures the selected load facilitates management of frequency and voltage; and
- if necessary:
 - the SO refine the TRS; and
 - the ERM re-runs the selection process.

Adopting this approach would require amendment to the proposed Code amendments which we would be happy assist with. In our view this approach would be a better use of resource than re-running the selection methodology with revised load information as proposed by the Authority at the recent workshop.

Alternatively, it may be possible to compensate for shortcomings in the initial TRS, if small, through the use of flexible AUFLS to achieve a reliable and efficient outcome, though this use of flexible AUFLS is not identified in the consultation paper.

We also need to be mindful that the characteristics of the load finally selected for AUFLS may influence the scheduling and dispatch of generation since load characteristics will be incorporated in the security analysis undertaken as part of the scheduling and dispatch processes to ensure the principal performance obligations (PPOs) may be attained.

Governance of ERM selection process

The extended reserves manager (ERM) role should be established as a market operations service provider role as soon as possible, ideally before the Code amendment takes effect. While the Authority is acting as the ERM it would preferably be as a market operation service provider. If the Authority is undertaking the role of the ERM, but not as a service provider, it will not have the benefit of the immunity in section 55(3) of the Electricity Industry Act and will therefore have an ongoing exposure to tortious claims arising from all decisions made and actions taken during this period.

Also, during the period that the Authority is acting as the ERM, and before this role is established as service provider, the Authority will not be a participant and not subject to complaints to the Rulings Panel for breach of the Code. A lot of detailed design, that could have significant impact on participants, is likely to be completed during this period. Given the potential impacts of proposed changes, challenges to unanticipated results cannot be ruled out. Without recourse to the established compliance regime the only option for participants,

for whatever reason, will be through the courts. Recourse to the courts is likely to be more complex and time consuming.

The Electricity Industry Act s109 allows the Governor General, on recommendation of the Minister, to add market operation service provider roles. This ought to be able to be completed within several months. The appointment of a third party, as ERM, would be a subsequent step. If the Authority is to be the initial ERM it should identify, sooner, rather than later, at which step in the timeline it will appoint a third party to undertake the role so participants can anticipate and plan for the change.

Proposed extended reserve arrangement

System security is our core business and the AUFLS scheme is critical to our ability to meet the PPOs. We support the principle of having:

- o a Technical Requirements Schedule, which sets out what the system needs;
- o a Selection Methodology, which states how the load is selected and secured; and
- o an implementation plan, which agrees how participants will transition to and meet new requirements.

Provided the selection methodology chosen doesn't impair our ability to meet the PPOs (and it can be practically implemented) and doesn't frustrate the implementation of rolling outage plans, if required, the choice of selection methodology, so long as it complements the TRS, is not an immediate concern.

We have responded to the questions raised in the consultation paper at Appendix A. Recommended Code changes are set out in Appendix B. Please contact Andrew Gard (System Operations Engineering Manager) directly on (04) 590 7183 to discuss in the first instance.

Yours sincerely

Kieran Devine

General Manager, System Operations Division

Appendix A – Responses to Consultation Questions

No.	Question	Response
1	Do you have any comment on the Authority's overall design of the proposed extended reserves arrangements?	The proposed framework certainly creates an opportunity to develop and specify the technical requirements schedule (TRS) and selection methodology (SM). The complexity of both should not be under estimated.
		While the process does contain checks and balances the process is essentially linear. Such an approach should be appropriate for subsequent reviews of the TRS and SM However, to ensure an efficient outcome from the development of the initial TRS and SM consideration should be given to an iterative process.
		As discussed in the covering letter the development of TRS has and will continue to be based on an assumption that the load selected will have the same characteristics as that accessed through the current two block scheme. The SM should be tested with information to be provided by EDBs and grid connected load to either confirm the validity of the load characteristic assumed in the derivation of the TRS or allow the TRS to be refined.
		It may be possible to compensate for shortcomings in the initial TRS, if small, through the use of flexible AUFLS to achieve a reliable and efficient outcome, though this use of flexible AUFLS is not identified in the consultation paper.
		Furthermore, noting the Authority's comment that it is a matter of timing to create the new Service Provider role under Regulations, it is recommended that the Authority clarify the expected timeframe for the transition, including how long they anticipate being required to undertake the functions of the role.
		The framework creates the opportunity for the Authority to set principles and "participate" in role of the ERM. For example The Authority may become involved in the ERM's consultation process, and direct the scope of the selection process. Both of which create regulatory uncertainty. At the very least the Authority should be required to consult with participants prior to exercising these options.
2	What comments do you have on the indicative timeline the Authority has developed for transitioning to the proposed arrangements for extended reserves?	Key steps should include the steps to specify the ERM role in the Electricity Industry (Enforcement) Regulations 2010 and the appointment of the service provider, supported by a timeline.

3	Do you agree with the Authority's proposed allocation of roles in relation to the technical requirements schedule, selection methodology, procurement schedule, extended reserves procurement notices, implementation plans, the extended reserves schedule and statements of extended reserves obligations? If not, what alternative would you propose, and why?	The extended reserves manager (ERM) role should be established as a market operations service provider role as soon as possible, ideally before the Code amendment takes effect. While the Authority is acting as the ERM it would preferably be as a market operation service provider. If the Authority is undertaking the role of the ERM, but not as a service provider, it will not have the benefit of the immunity in section 55(3) of the Electricity Industry Act and will therefore have an ongoing exposure to tortious claims arising from all decisions made and actions taken during this period.
		Also, during the period that the Authority is acting as the ERM, and before this role is market operation service provider, the Authority will not be a participant and not subject to complaints to the Rulings Panel for breach of the Code. A lot of detailed design, that could have significant impact on participants, is likely to be completed during this period. Given the potential impacts of proposed changes, challenges to unanticipated results cannot be ruled out. Without recourse to the established compliance regime the only option for participants, for whatever reason, will be through the courts. Recourse to the courts is likely to be more complex and time consuming.
4	Do you agree with the Authority's proposal that the Authority undertake the ERM role itself initially? If not, what alternative would you propose, and why?	It would be preferable for the Authority to establish the ERM and appoint a third party to fulfil the role thereby ensuring that the requirements and implementation of the role and the selection methodology are transparent.
		Also refer response to Q3.
		It is recommended that the Authority establish the ERM role as market operations service provider by October 2014.
		If the Authority is to be the initial ERM it should identify, sooner, rather than later, at which step in the timeline it will appoint a third party to undertake the role so participants can anticipate and plan for the change.
5	Do you agree with the Authority's proposed mix of Code provisions and documents that sit outside the Code? If not, what alternative would you propose, and why?	A good working assumption.
6	Do you agree with the Authority's proposal that publishing more details about extended reserves specification	Both regimes have or will be documented in the Code. Details reflect the complexity of the respective regimes.

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	and procurement will bring a greater degree of transparency to extended reserves arrangements? If not, what changes would you propose, and why?	
7	What comments do you have on the Authority's proposed approach to coordinating AUFLS With IL and other forms of demand response? What comments to you have on the Authority's initial view on how to achieve consistency of outcomes between AUFLS and rolling outages?	No comment
8	What comments [do] you have on the Authority's initial view on how to	Considerable work is still required on the integration of AUFLS and rolling outage obligations.
	achieve consistency of outcomes between AUFLS and rolling outages?	At this stage in our analysis we think there are two potentially fundamental issues that need to be resolved.
		Firstly, the flexibility afforded to Electricity Distribution Businesses (EDBs) through a common obligation to manage multiple obligations around system security. Under the current common obligation, provided EDBs ensure 32% of their load is armed for AUFLS, they can implement rolling outages how they wish to minimise the impact on load within their network. Under the proposed regime it would appear that the provision of AUFLS will need to be co-ordinated between EDBs — adding to the complexity of an already stressed power system. To illustrate assume there are only two EDBs, both with 50MW loads. 50% of EDB A load is selected to provide AUFLS. EDB B is selected to provide the balance of the AUFLS. If EDB A chose to interrupt 20% of its load for a period as part of its rolling cut obligation, and EDB B didn't cut load at the same time, and EDB A reduced its AUFLS obligation proportionately only 30% of the remaining load would be armed for AUFLS.
		Secondly, when rolling cuts are required, it is not clear how the proposed regime appears to deal with the need to balance the certainty of an interruption of load to achieve a rolling outage and the possible interruption of load due to an AUFLS event. The AUFLS selection regime is designed to identify that load which has the least cost of interruption. By definition the interruption of this load to achieve rolling cuts would achieve the least cost outcome, i.e. interrupt the load that imposes the least cost and move the possible interruption due to an AUFLS event to load with a higher cost of interruption. The selection and specification of feeders to provide AUFLS appears to remove the possibility of selection of other feeders to provide

		AUFLS when rolling cuts are required.
9	Do you have any comments in relation to the consistency of the proposed AUFLS regime and the Commerce Commission's price control regime?	No.
10	What comments do you have on the Authority's proposal to amend the Code to change the trigger setting for the second AUFLS block in the South Island from 45.5 Hz to 46.5 Hz?	We support the change in the trigger setting for the second AUFLS block in the South Island, refer to Section 9 of our Automatic Under-Frequency Load Shedding (AUFLS) RoCoF Testing Report ⁶ .
11	Are there any arrangements or agreements between parties pursuant to the AUFLS provisions currently in the Code that the Authority ought to be made aware of? If so, please give details.	We are aware that not all arrangements that give effect to the current AUFLS provisions are documented. In particular not all interruption capability provided to distribution businesses by Transpower, as Grid Owner, at grid exit points is documented. This lack of information exchange has the potential to protract the collection of information for the initial selection and implementation phases of these Code amendments
12	Do you agree with the Authority's proposal that the equivalence regime remain applicable to extended reserves, but that extended reserves be excluded from the dispensation regime? If not, what alternative do you propose and why?	Agree that the equivalence regime extends to extended reserves, and that extended reserves be excluded from the dispensation regime.
13	Do you have any comments relating to the proposed extended reserves Code amendments? Please provide comments and suggested drafting improvements with reference to specific parts, schedules and clauses of the draft Code amendments set out in Appendix B. (refer suggested format for drafting comments in the table below)	Please refer to Appendix B.
14	What comment do you have on the Authority's cost-benefit assessment summarised here and detailed in Appendix C?	Based on the available information the magnitude of System Operator costs included in the cost-benefit assessment seem to be a reasonable working assumption. An estimate of expected System Operator costs will only be possible when detailed design has been completed, in particular the design of the SM.
15	What comment do you have on the	No comment.

⁶ http://www.systemoperator.co.nz/sites/default/files/bulk-upload/documents/AUFLS-III-RoCoF-testing-summary.pdf

	Authority's assessment of the proposed amendment against the requirements of section 32(1) of the Act?	
16	What comment do you have on the Authority's assessment of the proposed amendment against the Code amendment principles?	No comment.
17	Do you have comments on the indicative implementation costs used in the CBA (Appendix C)?	No comment.
18	Do you have comments on the indicative base level and future benefits assumed in the CBA (Appendix C)?	No comment.
19	Do you have any other comments on the CBA (Appendix C)?	No comment.

Appendix B - Recommended Code Amendments

Part 1	
To be consistent with the singular definition of "instantaneous reserve". Changes would be required throughout the Code. While the Authority is doing the job of the extended reserves manager it should be	extended reserves means services provided to restore frequency to the normal band after disturbances of a magnitude that make it impracticable or uneconomic to restore frequency using ancillary services extended reserves manager means the market operation service provider that is for the time being
doing so as a service provider, and the regulations establishing the extended reserves manager as a service provider should be made before the Code amendment takes effect. If the Authority is doing the job of the extended reserves manager but not as a service provider it will not have the benefit of the immunity in section 55(3) of the Electricity Industry Act and will therefore be exposed to tortious claims by participants. Also, the Authority will not be a participant in its extended reserves manager role and will therefore not be subject to complaints to the Rulings Panel for breach of the Code (which it should be).	appointed as the extended reserves manager underfor the purposes of this Code, of if no regulations have been made establishing the extended reserves manager as a market operations service provider, the Authority
This proposed wording amendment is consistent with the way the "pricing manager", "reconciliation manager" and "market administrator" are defined in the Code.	
Part 8	8.54T Assignment of extended reserves
	obligations
	(1) An extended reserves provider that proposes to assign assets that it uses to provide extended reserves may apply to the Authority by notice in writing for approval to assign its obligations to provide extended reserves that relate to those assets .
	(2) The Authority may, on receiving an application under subclause (1)—
	(a) approve the assignment; or
	(b) approve the assignment with conditions; or
	(c) decline to approve the assignment.
Depending on what the assets are and who the assignee is, the assignment of the extended reserves obligations may have a security impact. The system operator should	(2A) The Authority must consult with the system operator before making its decision under subclause (2).
be given an opportunity to comment on that rather than told after the fact what the	(3) If the Authority gives an extended reserves provider approval to assign its obligations under

Authority's decision is.	subclause (2), the Authority must notify the system operator .
	(4) An assignment of an extended reserves provider's obligations is not effective except in accordance with an approval by the Authority under subclause (2).
Technical Code B	
	7B Obligations of extended reserves providers in relation to automatic under-frequency load shedding
Bolding error.	(4) As soon as practicable after communications are restored, each extended reserves provider must report to the system operator on the status of load restoration and the status of re-arming the automatic under-frequency load shedding system system.
A form of this important provision is currently in clause 7(7) of Technical Code B. It should be carried over to new clause 7B.	(5) An extended reserves provider must not include in a reserve offer for interruptible load any electrical load that may be required for automatic underfrequency load shedding during any of the trading periods to which the reserve offer relates.
Part 2, Schedule 8.5	
	6 Approval of extended reserves selection methodology
The system operator needs to know about the Authority's approval of the methodology.	(3) The Authority must, as soon as practicable after receiving the system operator's comments, or advice that the system operator does not wish to make any comments, by notice in writing to the extended reserves manager and the system operator ,—
	(a) approve the draft methodology; or
	(b) decline to approve the draft methodology.
	7 Consultation on proposed changes
	(8) As soon as practicable after receiving the system operator's comments, or advice that the system operator does not wish to make any comments, the Authority must, by notice in writing to the extended reserve manager and the system operator ,—
	(a) approve the revised draft methodology; or
	(b) amend the revised draft methodology to address any comments received from the system operator , and approve it; or
	(c) publicise a further revised draft methodology, and notify the extended reserve manager and interested parties of the date by which submissions on the changes must be received by the Authority

8 Technical and non-controversial changes

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(3) The **Authority** must, as soon as practicable after receiving a draft methodology and the information required by subclause (1), by notice in writing to the **extended reserves manager** and the **system operator**,—

- (a) approve the draft methodology; or
- (b) decline to approve the draft methodology, giving reasons.

9 Publication of extended reserves selection methodology

- (1) An extended reserves selection methodology will not be effective until it is approved by the Authority under clause 6(3)(a), 7(8)(a), 7(8)(b) or 8(3)(a) and published by the extended reserves manager.
- (2) If As soon as practicable after the Authority has approveds an the extended reserves selection methodology under clause 6(3)(a), 7(8)(a), 7(8)(b) or 8(3)(ab), the extended reserves manager must publish the methodology as soon as practicable but no earlier than 5 business days after the Authority's notice to the extended reserves manager and the system operator under clause 6(3)(a), 7(8)(a), 7(8)(b) or 8(3)(a).
- (3) The extended reserves manager must not publish the extended reserves selection methodology if the system operator notifies the extended reserves manager in writing that the system operator does not consider that:
- (a) the methodology gives effect to the **extended** reserves technical requirements schedule; or
- (b) if the methodology was approved by the **Authority** under clause 8(3)(a), the proposed change to the methodology is technical and non-controversial.

The system operator must provide reasons for its view in its notice to the extended reserves manager.

The changes to this clause are to allow the system operator an opportunity to view and discuss a methodology that does not achieve the technical requirements for extended reserves. The purpose of extended reserves is to protect the system from severe power quality variations and cascade failure. The system operator is responsible for and is the expert on that, not the extended reserves manager or the Authority. Furthermore, for the period of time the Authority is acting as the extended reserves manager there will be no effective check and balance in the methodology approval process.

All the avenues for approval proposed above need to be captured.

Even if the proposed changes to clause 9 are not accepted, it is important that the system operator is at least given an opportunity to comment on changes that are thought by the extended reserves manager and Authority to be technical and non-controversial.

In addition we recommend the Authority clarify what is intended by the term "technical and non-controversial" changes, and whether this is referencing an engineering, policy or administrative perspective.

Part 3, Schedule 8.5

12 Approval of extended reserves procurement schedule

The changes to this clause are to allow the system operator an opportunity toview and discuss a schedule that does not achieve the technical requirements for extended reserves. The purpose of extended reserves is to protect the system from severe power quality variations and cascade failure. The system operator is responsible for and is the expert on that, not the extended reserves manager or the Authority. Furthermore, for the duration the Authority is acting as the extended reserves manager there will be no effective check and balance in the schedule approval process.

There is a bolding error in this clause heading.

All the avenues for approval proposed above need to be captured. Bolding error.

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- (3) The **Authority** must, as soon as practicable after receiving the **system operator's** comments, or advice that the **system operator** does not wish to make any comments, by notice in writing to the **extended** reserves manager and the **system operator,**—
- (a) approve the draft procurement schedule; or
- (b) decline to approve the draft procurement schedule.

13 Consultation on proposed changes

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- (8) As soon as practicable after receiving the **system operator's** comments, or advice that the **system operator** does not wish to make any comments, the **Authority** must, by notice in writing to the **extended reserve manager** and the **system operator**,—
- (a) approve the revised draft procurement schedule; or
- (b) amend the revised draft procurement schedule to address any comments received from the **system operator**, and approve it; or
- (c) publish a further revised draft procurement schedule, and notify the **extended reserve manager** and interested parties of the date by which submissions on the changes must be received by the **Authority**.

...

- 14 Publication of extended reserves procurement schedule14 Publication of extended reserves procurement schedule
- (1) An extended reserves selection methodology will not be effective until it is approved by the Authority under clause 12(3)(a), 13(8)(a) or 13(8)(b) and published by the extended reserves manager.
- (2) IfAs soon as practicable after the Authority has approveds the extended reserves procurement schedule under clause 12(3)(a), 13(8)(a) or 13(8)(b), the extended reserves manager must publish publish the schedule as soon as practicable but no earlier than 5 business days after the Authority's notice to the extended reserves manager and the system operator under clause 12(3)(a), 13(8)(a) or 13(8)(b).
- (3) The extended reserves manager must not publish the extended reserves procurement schedule if the system operator notifies the extended reserves manager in writing that the system operator does not consider that the schedule gives effect to the extended reserves technical requirements schedule. The system operator must

	provide reasons for its view in its notice to the
	extended reserves manager.
Part 17	
The transition to the new proposed Extended Reserves framework will take time, and the duration of the transition is yet to be finalised. During this time it is essential that information currently provided to the System Operator with regards to AUFLS is retained, including the requirement on distributors to provides AUFLS load profile information on an annual basis. The proposed wording amendment for Part 17 is to retain this obligation until such time as the participant has received a new set of information provision obligations and has agreed an implementation plan with the System operator.	(1) Despite the deletion of Schedule 8.3, Technical Code A, Appendix B, clause 6 and replacement of Schedule 8.3, Technical Code B, clause 7(1) by [insert name of amendment], each North Island distributor that was required to comply with [thoseat clauses] before [insert date] must continue to comply with thoseat clauses as if [insert name of amendment] had not been made until the earlier of— (a) [insert date]; or (b) the date on which an implementation plan approved by the system operator under clause 8.54K comes into force in respect of the distributor. (2) Despite the deletion of Schedule 8.3, Technical Code A, Appendix B, clause 7 and replacement of Schedule 8.3, Technical Code B, clause 7(2) by [insert name of amendment], each South Island grid owner that was required to comply with [with thoseat clauses] before [insert date] must continue to comply with thoseat clauses as if [insert name of amendment] had not been made until the earlier of— (a) [insert date]; or (b) the date on which an implementation plan approved by the system operator under clause 8.54K comes into force in respect of the grid owner. (3) However, subclause (2) applies as if Schedule 8.3, Technical Code B, clause 7(6)(d)(ii) was amended from [insert date] by replacing "45.5 Hertz" with "46.5" Hertz.