4 March 2014

Submissions
Electricity Authority
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by email: submissions@ea.govt.nz

SUBMISSION ON EFFICIENT PROCUREMENT OF EXTENDED RESERVES

1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to comment on the "Efficient procurement of extended reserves" second consultation paper (the **paper**) released by the Authority in December 2013.

Summary

2 Transpower has made significant progress in identifying the future technical requirements of AUFLS and we understand that further technical work is being undertaken to better address reserve design in a wider sense

3 These technical improvements will deliver benefits to consumers through improved reliability and reduced VOLL costs

4 We agree that there is potential to further improve the provision of AUFLS but suggest that care is required when making regulatory changes that have the potential to impact on other wider reaching issues such as demand side management.

5 We acknowledge that the paper:

- Identifies some of the barriers to reducing the VOLL costs associated AUFLS events
- Identifies the tensions between AUFLS, IL, DSM and rolling outages

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6 In Orion's view the paper **does not**:

- address the conflict between low VOLL AUFLS feeders and low VOLL rolling outage feeders
- address the coordination of loads for demand side management and AUFLS and in particular IL that is offered by local network connected load
- provide an efficient mechanism or incentive for reducing AUFLS related VOLL
- adequately address the regulatory implications of the proposal, specifically with respect to:
    1. whether the compensatory payments/costs will be regulated revenue/costs
    2. whether AUFLS relays (where owned by the distributor) will continue to be included in a distributor's Regulatory Asset Base (RAB)
- put the AUFLS VOLL **equitability** issues into context with other VOLL events that occur on a distribution network on a daily basis
- provide enough detail about what information is to be provided by distributors to the system operator to optimise AUFLS feeder selection in a central mechanism
- provide enough information for distributors to assess whether the central optimisation process will be more effective than the current distributor AUFLS feeder selection process

Recommendations

7 Orion recommends that the Authority:

- Delays any material AUFLS regulatory changes until it has undertaken a higher level review of how DSM, IL and AUFLS can be better managed through greater transparency of information and coordinated systems
- In the meantime, requires Transpower to analyse the current arming of AUFLS on a national, island and suitable regional basis to develop daily and seasonal profile information

- Uses the above information to ascertain the need for daily or seasonal changes to the level of arming

- Enable Transpower to specifically request some distributors to arm at different levels (varying around the 10%, 10%, 6% and 6% applying to other distributors) to achieve optimal arming. This is expected to be achieved by some basic seasonal arming and perhaps daily time clocks on some feeders

- Use the learning of the above approach (including the DSM, IL and AUFLS review) to ascertain the need for an 'automated real time' arming process by a small number of regionally significant distributors

- Raise the awareness of distributors (through sample calculations) of the VOLL benefits to customers of AUFLS relays being implemented over time on lower voltage and lower VOLL feeders (rather than GXP sub-transmission feeders)

- In the medium term and subject to the above learning:

    1. regulate the implementation of AUFLS relays on low VOLL feeders by including a customer type priority table (similar or the same as the Rolling Outage table)

    2. consider the implementation of standby AUFLS on other feeders to provide the ability to rotate AUFLS arming during rolling outage events

- Where it is economically appropriate through an exemption process, enable direct connect customers with suitable IL load to be exempt from AUFLS.

8 The remainder of our submission is in three parts:

- Comments on key aspects of the paper, and

- Responses to the paper's specific questions as Appendix A.

- A copy of our earlier submission as Appendix B

Comments on key aspects of the paper

Problem Definition and proposal discussion

9 We conclude that the proposed Transpower technical changes will largely deal with the risk of collapse due to over or under arming. Any remaining risk of over or under arming can be managed more simply than the proposal.

10 In our view there are two remaining high level problems to solve:

1. Cost effective minimisation of AUFLS VOLL costs
2. AUFLS obligations as a barrier to cost effective IL

11 The first problem has two parts.

12 The first part is determining the appropriate contributions from distributors and direct connects. We consider that the proposal is too complex to be an effective approach for dealing with a handful of unique (as defined by high VOLL or chunky load) direct connects

13 The second part is determining the appropriate contributions between distributors. We consider that almost all distributors have at least 32% of their customer base falling into a what could be considered a common low VOLL category and therefore the need to inter-network optimise is largely negated

14 We believe that the greatest potential to reduce AUFLS VOLL costs is continual improvement to feeder selection within the distribution networks and refinement of the arming at a regional level to ensure that we do not arm any more than is needed to curtail system collapse

15 We believe that an exemption process for a handful of unique (as defined by high VOLL or chunky load) direct connects is more efficient than the proposal which attempts a ‘one size fits all approach’ and as a result is overly complicated. This is particularly true in the short term when there is still uncertainty around how DSM, IL, AUFLS and rolling outages will be coordinated in the longer term.

16 In our view the proposal places too much emphasis on AUFLS arrangements that have equitable VOLL outcomes. There are some precedent issues to be considered when considering VOLL equitability.

17 We do not believe there is a need to identify beneficiaries and costs associated with AUFLS events. We estimate the annual VOLL on our network for normal day to day outages to be in the order of $10m per annum and quite rightly we do not seek to equitably distribute the VOLL costs associated with these events. There are many reasons on a distribution network why the price-quality equation for our customers is different all over the network and AUFLS is absolutely noise level

18 In our view the focus should be on a regime that minimises VOLL as efficiently as possible rather introducing extra complexity through compensation to achieve equitable VOLL outcomes.

19 We believe that distributors know their customers better than the system operator (and better than a system operator algorithm) and therefore distributors are the best party to decide which feeders are armed on AUFLS.

20 There is some doubt about whether the incentives of direct connects to supply the correct VOLL are aligned with the outcome the proposal seeks. Whether a customer is a direct connect or not should not determine whether their VOLL is determined by them or a central mechanism.

Regulatory and other considerations for distributors

21 Although Transpower is responsible for implementing AUFLS in the south island, the acquisition of spur assets has meant that Orion has become the more logical owner of AUFLS relays. This provides the opportunity (already undertaken at one site) to use multi-function relays to undertake the AUFLS requirements in a relay that is purchased for other purposes. Over time, this leads to a very cost effective outcome and enables AUFLS to be implemented at the 11kV level as opposed to large GXP feeders.

22 The cost of these relays is added to our Regulatory Asset Base and as a good distribution network asset manager our capex and opex forecast costs should reflect these costs going forward. The regulatory price reset process should reflect these costs and this is where the funding debate should occur – not somehow ring fenced in AUFLS regulation when the assets are integrated in the network.

23 In our view, it is not practical to ring fence the cost of AUFLS relays. AUFLS is a function in a modern relay and not a separate asset and therefore compensation for provision of AUFLS relays is problematic.

Concluding remarks

24 The AUFLS options jump from static arming to an optimisation and compensation solution for everyone. We think there is a middle ground that achieves the benefits at a lower cost and prevents the need for a solution that may conflict with other DSM initiatives later. We do not believe this is the right time for an optimisation and compensation solution.

25 Thank you for the opportunity to make this submission. Orion does not consider that any part of this submission is confidential. If you have any questions please contact Glenn Cates (Strategic Planning Manager), DDI 03 363 9819, email glenn.coates@oriongroup.co.nz.

Yours sincerely

Glenn Coates
Strategic Planning Manager

Appendix A: Responses to specific questions

	Question	Response
1	Please provide reasons if you agree that line companies' UoSAs do not grant them the rights to place their customers load under AUFLS as part of a voluntary commercial agreement. Please also provide reasons if you disagree.	We cannot speak for all UoSAs, but the MUoSA prevents this because such rights only accrue where rights to offer the customer load is "acquired" from the customer via a specific (by implication discounted) pricing option. We note that under the MUoSA, and most other agreements we are aware of, customers load can be interrupted for system security reasons and / or under instruction from the system operator.
2	Please provide reasons if you agree that it is not practical to change the UoSAs within the timeframe required to implement the new AUFLS arrangements. Please also provide reasons if you disagree.	Such agreements can only be changed by agreement, and because all customers on a network would be affected, all retailers would have to agree. Even assuming engagement, which is a big assumption as there is not obviously anything in this for retailers, this could take a significant amount of time.
3	Please provide reasons if you agree that lines companies will face weak commercial incentives to enter into bilateral commercial arrangements to vary their level of AUFLS provision. Please also provide reasons if you disagree.	Yes we agree that the commercial incentives are weak but this is true of many decisions that distributors make in the interests of customers.
4	Please provide reasons if you agree that excluding direct connects from the obligation to provide AUFLS would be inappropriate. Please also provide reasons if you disagree.	We agree that it would be inappropriate to exclude direct connects from the AUFLS obligation. There may be special reasons (similar to the choices distributors make about what feeders are exempt (not armed) from AUFLS but the initial obligation should remain.

	Question	Response
5	Please provide reasons if you agree that a beneficiary-pays approach to recovering cost of any compensation payments is likely to deliver more efficient outcomes than a causer-pays approach. Please also provide reasons if you disagree.	Yes, beneficiary-pays is more appropriate in this case but the concept of compensation is an unnecessary complication at this stage of reserves, AUFLS, DSM and IL development
6	Do you have any comments about the preferred approach to determining the VoLL of lines company feeders	Determining VoLL is a combination of science and art. We believe that distributors are best placed to assess which feeders are armed on AUFLS. We believe that there is significant risk that a central mechanism for determining VoLL will lead to poor outcomes. Distributors will almost certainly disagree and challenge any central mechanism results. We believe that the transition of AUFLS over time to the zone substation feeder level will enable distributors to grab the 'easy low VoLL fruit' and therefore negate the need for anything more complicated. We envisage that most networks will be able to achieve 32% low VoLL feeders relatively easily – particularly if the compliance regime is more flexible.
7	Please provide reasons if you agree that issues with lines companies' incentives and contractual ability are likely to severely reduce the potential effectiveness of a voluntary AUFLS tender. Please also provide reasons if you disagree.	Contractual ability is the key point, as noted above.
8	Do you have any comment on relative ranking of the options?	Any cost benefit analysis contains assumptions and detail (in this case) that is difficult to critique. One assumption leads to many others. Our main areas of concern are the 'central VoLL' process which introduces uncertainty of outcome (and hence uncertainty in actual VoLL as opposed to the theory of the model) and the 'compensation' aspects which in our

	Question	Response
		view adds unnecessary complexity and perhaps precedents. We think that a more staged approach excluding these aspects initially is appropriate. See our recommendations in this submission.
9	Do you have any comments on the proposed timetable?	NA to south island distributor but could be done
10	Do you need any more information to help you plan your resource availability to meet the requirements set out in paragraph 4.1.9?	NA to south island distributor
11	Do you have any issues with the potential use of timers for arming AUFLS load?	No issues with timers – we already have one 35MW feeder armed with an AUFLS timer
12	Do you have comments on the indicative implementation costs used in the CBA?	Overall the implementation costs for all options are small relative to the varying benefits that can be achieved. However, we note that the common AUFLS percentage options have a higher cost to replace and test the relays. Our view is that this is not the case in the longer term as these relays are integrated into the business with shared functionality. Note that in our recommendation in this paper we suggest that the system operator takes on a more active monitoring role which will incur costs but not to the extent of the optimisation role suggested in the proposal.
13	Do you have comments on the indicative on-going costs assumed in the CBA?	No comment
14	Do you have comments on the indicative base level and future benefits assumed in the CBA?	The accuracy is coarse.
15	Do you have any other comments on the CBA?	There appears to be an opportunity to improve on the current AUFLS

	Question	Response
		arrangements but we are not sure that the most simple and cost effective method has been determined.
16	Do you have comments on the proposed compensation payment mechanism?	We do not believe it is required to achieve good AUFLS outcomes. We believe that almost all distributors have at least 32% of their customer base falling into a what could be considered a common low VOLL category and therefore the need to inter-network optimise is largely negated. In this environment the compensation amount will be trivial and therefore its benefit is questioned.
17	Please provide reasons if you agree that, in an arrangement where different stakeholders are required to provide different proportions of their load as AUFLS based on their relative suitability, it is appropriate to compensate stakeholders for the costs they incur in providing AUFLS? Please also provide reasons if you disagree.	If the costs to stakeholders vary significantly then yes it is appropriate to compensate. In this case, we do not believe the costs vary significantly and moreover the idea that AUFLS implementation costs can be ring fenced in the future is optimistic. It will become a nominal component of the compensation rather than something that reflects actual cost.
18	Based on your experiences of the existing AUFLS and PROPs arrangements, do you have any views on the appropriate approach to ensure consistency of the two arrangements?	Consideration could be given to the implementation of standby AUFLS on other feeders to provide the ability to rotate AUFLS arming during rolling outage events. The incremental cost of this arrangement would be small because a zone substation relay can control many feeders and not all feeders will be low VoLL feeders so that the remainder of the feeders become the backup. Once again this would take time to cost effectively implement during protection system replacement projects. Alternatively, a more basic lumped load approach could be taken at the GXP level as a back up during rolling outages.

	Question	Response
19	Do you have any comments /suggestions about the historical load information requirements on stakeholders?	Changing load profiles or open points on a distributors network is a problem that is best addressed in real time through dynamic arming. We concur that it is not practical for distributors to resubmit or provide regular updates to feeder loading every time something changes. This issue reiterates the importance of having an AUFLS 'slack provider' that can fine tune in real time.
20	Are there any other technical reasons (other than load shape, or the VoLL of customers connected to it) why a feeder may not be suitable for AUFLS?	When choosing feeders for AUFLS, some consideration is given to (or should be given to) whether the feeder is on an automatic under voltage shedding scheme or is on the priority list of feeders to be disconnected for grid emergencies
21	Do you have any other comments?	No

Appendix B: Copy of our earlier submission

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by email

31 July 2013

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Dear Justin

AUFLS Framework update paper - Orion submission

Orion New Zealand Limited (Orion) welcomes the opportunity to provide feedback on your 'AUFLS Framework update' paper.

Introduction

Our submission is in two parts:

- General comments
- Specific answers to your questions – see appendix

General Comments

1 In principle Orion supports the investigation of technical outcomes to ensure grid stability during under frequency events and also the concept of using AUFLS relays to manage high impact low probability events that would otherwise be costly to include as an extension to reserves.

2 In the context of the Electricity Authority review of extended reserves procurement we understand the need to progress technical outcomes without being too prescriptive about how these technical objectives will be achieved.

3 As mentioned in previous AUFLS submissions we believe that over time the evolution of distributor Network Management System/s and the new technology being phased into zone substations during switchgear and protection replacement will result in an opportunity to enhance AUFLS functionality at minimal cost.

4 While we agree in principle to using new distributor technology to achieve smarter solutions, the regulatory obligations associated with this need to ensure that an unreasonable level of risk is not imposed on those without ultimate control of the outcome.

5 We endorse the proposed changes to compliance so that the risk of over arming AUFLS is reduced. Reducing the level of AUFLS has two benefits – reduced risk of over frequency leading to cascade collapse and reduced load exposure (reduced VOLL).

6 Although it is not part of your technical review we remain concerned about the potential for 'double counting' of IL and AUFLS response – this must be addressed by the EA as part of their rule development around extended reserves initiatives and also wider demand side response.

7 We look forward to the release of the Technical Summary Report so that we can better understand the design, compliance and testing criteria. For example, the 400mS trip time, is it a pick up time, a fixed trip time or a maximum?

8 Please note that our responses to your specific questions are in the context of a South Island distributor and any responses implying reference to the 4 block requirement is theoretical in nature.

Thank you again for the opportunity to provide feedback on your AUFLS update paper. If you have any questions regarding our feedback please contact Glenn Coates, DDI 03 363 9819, email glenn.coates@oriongroup.co.nz.

Yours faithfully

Glenn Coates
Strategic Planning Manager

Appendix: Responses to specific questions

	Question	Response
1	Do you agree that the proposed coordinated approach is likely to deliver better security and cost outcomes than the current "one-size-fits-all" obligation approach?	Yes, this approach will reduce costs through a reduction in the number of sites with standalone (as opposed to AUFLS integrated within a protection relay) AUFLS relays fitted and provides a better opportunity to manage regional block sizes leading to better security of supply outcomes and reduced VOLL.
2	Do you have any view on the types of criteria that could help achieve such outcomes?	The criteria should be relatively high level with the level of detail pitched to ensure that the right outcome is achieved. The detailed criteria or methodology should be left to the AUFLS participants to determine the most cost effective and equitable methodology. In the first instance the emphasis should be placed on distributors and direct connects to agree on an approach to achieve the high level criteria/outcome. As a fallback, the System Operator could specify minimum criteria that needs to be met if agreement between parties is not achieved. An equivalence/dispensation process could be available for customers – for example where they can show that their VOLL is materially higher than average. The proposed EA market approaches could prevent this being done simply. The EA approach over emphasises the allocative efficiency issues with AUFLS load being offered free of cost. There are far greater interruption/reliability related allocative efficiency issues on distribution networks than the allocation efficiency issues

		associated with low probability AUFLS events.
3	Do you have any view on how load could be prioritised into the four proposed blocks, noting the operational differences between networks(incl. size and flexibility) as well as the different operational requirements for non-conforming load?	It is unlikely to be economic to apply AUFLS relays on the distribution network at a level lower than the 22kV or 11kV feeder. Feeder level control can be achieved by one or two AUFLS relays (functionality is already in modern protection relays) with multiple feeder outputs at a zone sub. At the feeder level there is still a mix of customer types on many feeders and in many cases AUFLS relays at the GXP or zone substation level achieve a similar balance of customer types. Where possible, AUFLS relays could be applied giving consideration to the priority of loads as defined in the in distributors 'Participant Rolling Outage Plan - see below.

Priority	Priority Concern	Maintain Supply to:
1	Public health and safety	Major hospitals, air traffic control centres, and emergency operation centres.
2	Important public services	Energy control centres, communication networks, water and sewage pumping, fuel delivery systems, major ports, and public passenger transport.
3	Public health and safety	Minor hospitals, medical centres, schools, and street lighting.
4	Food production	Dairy farms and milk production facilities.
5	Domestic production	Commercial and industrial premises.
6	Disruption to consumers	Residential premises.

		This will mean that distributors will have AUFLS relays on the same low priority feeders as those used for rolling outages. This creates a problem during rolling outages where the SO requires AUFLS to be maintained. To avoid this problem, distributors will need to either interrupt higher priority loads during rolling outages or change the feeders armed on AUFLS during rolling outage events. This would suggest that distributors need to have the ability to arm more feeders on AUFLS than is normally required and have the ability to change the arming/disarming efficiently. Remote arming will be relatively simple to achieve with modern protection relays and network management systems.
4	The AUFLS requirement has been designed on the assumption that all parties directly connected to the transmission network will share the obligation to allocate load to AUFLS. If this were to change, do you have a view on how the system requirement could be shared, noting the system's need for geographical diversity per island?	We support the idea of smaller distributors and direct connect customers being able to simplify their AUFLS requirement to a single block with a % arming close to 26%(NI) and 32%(SI). We also support the idea of AUFLS arming for the largest distributor in each region filling the gaps for each block to meet the overall criteria. We consider that an alternative sharing arrangement involving a market approach is unnecessary as AUFLS events are low probability and the costs of administering a market approach and researching and consulting with customers in a meaningful way make this approach prohibitive. Large direct connects may see it differently but we fail to see how (in most cases) the VOLL on a percentage of business costs is any more important than a collection of smaller businesses that happen to be on an AUFLS feeder. We also reiterate that there are also much greater allocative efficiency issues in the industry than this.
5	In introducing the AUFLs framework, do you agree with the proposed introduction of an obligation on the System Operator to manage the AUFLS framework being specified in the Policy Statement?	We consider that a balanced approach is required between using the Code to specify outcomes and obligations and other mechanisms that can be more readily modified to provide the detailed methodology. The final drafting will determine the appropriateness or not of including the AUFLS framework in the Code or the Policy Statement.

6	Do you agree with the proposal that the details of the AUFLS framework (the % requirement and the AUFLS scheme) being included in an "AUFLS Policy"?	See answer to '5' above. The final drafting will determine the appropriateness or not of including the details of the AUFLS framework in the Code, Policy Statement or AUFLS Policy.
7	Noting that the System Operator sees this as an incremental step in improving the AUFLS framework, do you have any views on what the future development of AUFLS should include?	We support the proposal to move towards real time monitoring and this should be progressed (on a voluntary basis) as soon as possible in areas (e.g. USI) where the communications networks and connections are already in place. This will prove the viability of the approach and inform the decision making process for other regions. The proposed Transpower ICCP data links (for other purposes) provide a good platform for this real time information sharing. We also believe there is a case for real time arming by the larger distributors in each region to ensure that the AUFLS % arming remains in the band in real time. This functionality also provides the opportunity to have variable AUFLS requirements if the need arises in the future. As noted above there is also a need to share IL and DSM information to ensure that 'double dipping' on load response does not occur. As an industry we talk about moving to a SMART power system and in our view AUFLS present a real opportunity to utilise existing and proposed SMART infrastructure.