

TRANSPOWER NEW ZEALAND LIMITED

Submission to the Electricity Commission on  
**AUFLS Exemptions – Issues and Options**

*November 2009*



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## 1. Introduction

### 1.1 Purpose of this document

This is the System Operator's submission in response to the Electricity Commission's consultation on *AUFLS Exemptions – Issues and Options*.

## 2. Executive Summary

### 2.1 Key Issue

The System Operator is concerned the Commission is seeking to resolve legal issues relating to automatic under frequency load shedding systems (AUFLS) exemption provisions in a way which may have unintended consequences on the quantum of AUFLS available to manage rare undefined events that can cause cascade failure leading to system blackouts.

The System Operator relies on AUFLS to avoid cascade failure for extended contingent events and rarer undefined events which have the potential to cause a system blackout. AUFLS are relied on by the System Operator (and the industry) as the measure of "last resort" i.e., the last control available to avoid blackout.

The System Operator and the industry do not fully understand the extent to which the current 2 x 16% blocks will be sufficient to arrest cascade failure (and thus avoid a prolonged restoration) or whether additional AUFLS blocks are required to fully cover such events, the nature of which are almost by definition hard to predict. Therefore, a substantive review of AUFLS is a precondition to understanding the implications on system security if an exemption/waiver or indeed a dispensation from the 2 x 16% block obligation were to be granted.

The System Operator is strongly of the view that, prior to determining the test for granting an AUFLS exemption, the Commission, the System Operator and the industry need to clearly understand the extent to which AUFLS are expected to be available for the mitigation of cascade failure in New Zealand's electricity system.

Accordingly, the System Operator strongly opposes any changes to the AUFLS exemption provisions prior to a substantive review of AUFLS being undertaken.

### 2.2 Specific Issues

In addition to the general concern summarised in paragraph 2.1, the System Operator has a number of significant concerns with the present consultation paper. These are predominantly the same concerns raised with the Commission in 2005 and again raised during 2009. Recent correspondence

with the Electricity Commission on this issue (letters dated 29 June 2009 and 6 August 2009) is attached to this submission.

The System Operator's concerns can be summarised in five broad categories:

- **Role of AUFLS** – the paper makes incorrect assumptions regarding the role of AUFLS;
- **Effect on Security** – there is no analysis in the paper regarding the effect of the proposals on New Zealand's risk profile;
- **Urgency around Rule Change** – the reasons for requiring an urgent rule change do not justify the potential implications of effecting such a rule change;
- **Proposed Options** – the options proposed in the consultation paper do not in any event appear to address the legal issue. Dispensations are not the appropriate mechanism to grant exemptions from rule obligations on economic grounds;
- **Credible Event Review** - the System Operator's credible event review is not the appropriate mechanism for undertaking a substantive review of AUFLS.

Each of these concerns is discussed in turn below.

### 3. Discussion

#### 3.1 Incorrect Assumptions regarding the role of AUFLS

The consultation paper assumes that AUFLS are only required to manage an extended contingent event i.e., the loss of the bi-pole or an equivalent quantity of power generation. The conclusions and recommendations throughout the Commission's consultation paper rely upon the correctness of this assumption.

The System Operator *does not* solely rely upon AUFLS for extended contingent events. As set out in paragraph 3.1 of this submission, AUFLS blocks are relied upon by the System Operator to avoid cascade failure for events beyond the magnitude of an extended contingent event. The types of high impact, low probability events that the System Operator currently relies on AUFLS (that are not defined as an extended contingent event) include:

- the loss of a large power station (e.g., Aviemore or Huntly)
- circuit breaker mal-operation;
- two or more simultaneous or consecutive losses of significant transmission circuits, interconnecting transformers or generating units.

We believe the Commission's key assumption on which its paper is based is incorrect or inappropriate.

#### 3.2 Effect on Security

Section 3 of the consultation paper discusses the costs of load interruption and the relationship between the provision of instantaneous reserves and the provision of AUFLS blocks. The conclusion reached in the paper is that there is an ability to “trade off” AUFLS obligations against the cost of the procurement of additional instantaneous reserve. Again, this is based on an assumption that AUFLS and instantaneous reserves are available to mitigate against the occurrence of the same types of events. We believe this is incorrect.

Instantaneous reserves are used by the System Operator to mitigate against contingent events and extended contingent events whereas AUFLS are used to mitigate against higher impact, lower probability type events (in addition to extended contingent events).

Accordingly, any exemptions/dispensations or waivers granted to asset owners in respect of AUFLS obligations will impact on the amount of AUFLS available to arrest cascade failure in these rare, lower probability type events. Potentially, the proposed new arrangements could considerably erode New Zealand’s current AUFLS base<sup>1</sup>. The consultation paper does not consider the impact of exemptions/dispensations/waiver in this regard and therefore what the appropriate “risk profile” is for New Zealand consumers.

The System Operator recognises that the current rule 6.6, as drafted, does allow the Commission to grant an exemption where the financial impact of providing AUFLS would exceed the expected interruption costs. In addition, the regulations have general exemption provisions which allow the Commission to grant exemptions from AUFLS. The System Operator has a reasonable level of confidence that these current exemption provisions will not significantly erode the current AUFLS base within the period that the substantive review of AUFLS will be completed. The impact of any new exemptions provisions on the AUFLS base is, however, unknown as this has not been assessed.

We believe Rule 6.6 should be reviewed only following the substantive AUFLS policy review and when the Commission and the System Operator are clear on the test against which an AUFLS exemption should be assessed. Such a test cannot be developed in the absence of a policy review.

### 3.3 Urgency around Rule Change

The consultation paper states that the Commission’s immediate objective is to handle the imminent expiry of AUFLS exemptions.

One of the reasons expressed for the immediate need to make a change (see paragraph 4.3.4 of the consultation paper) is that the Commission believes that it is not appropriate for the Commission to use its power to grant exemptions to participants from compliance with the Rules in a way which would usurp or replace the role of the Minister to make rules.

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<sup>1</sup> Internationally AUFLS schemes of up to 60 percent of peak demand exist to manage events and reduce the need for restoration procedures. Comparatively New Zealand’s AUFLS scheme appears limited at 32 percent.

The System Operator does not agree with the paper's concern about the "constitutionality" of granting open-ended exemptions to the AUFLS requirements. The System Operator's legal advice is that the Commission clearly has the right under regulation 194 to grant exemptions, which is not limited as to type of exemption or duration. The Commission does not "usurp or replace the role of the Minister to make rules" when it grants exemptions, including open-ended ones, because the Minister has given the Commission the power to do exactly that.

Secondly, the consultation paper suggests that it is unfair to force a distributor to assign sensitive and high cost loads, which they have by virtue of the size of the distribution network to which they belong, to AUFLS blocks.

Whilst the System Operator does not disagree with this statement, it is important to understand what level of AUFLS blocks should be required across New Zealand prior to determining who should and should not be required to meet AUFLS obligations.

The System Operator remains concerned about the continued focus on exemption arrangements rather than a focus on the need to undertake the longer term development initiative for AUFLS.

### 3.4 Consultation Paper's Proposed Options

The consultation paper suggests a number of options to address the above Commission concerns. The System Operator's views on these options are set out below.

#### ***Option A1 – Continued use of exemptions***

The granting of exemptions by the Commission (either under rule 6.6. or the general exemption provisions within the regulations), being the status quo, is the System Operator's preferred option until the substantive review is complete.

#### ***Option A2 – Waiver***

This option proposes to replace rule 6.6 with power to grant an "AUFLS waiver". We cannot see how this would address the Commission's constitutionality concern because there is no difference in substance between an "exemption" and a "waiver". Both an exemption and a waiver excuse the applicant from complying with a rule it would otherwise be required to comply with, on such conditions as the Commission thinks fit. Furthermore, a waiver can be open-ended - although the consultation paper proposes a 2/3 year maximum duration requirement. However, nothing is proposed that would restrict the Commission continually renewing a waiver.

#### ***Option B1: Dispensations***

The consultation paper suggests, as an option, the use of the System Operator's dispensation regime as the appropriate mechanism for granting relief to asset owners from AUFLS obligations.

The System Operator strongly opposes any use of the dispensation regime for relief from technical obligations on economic grounds.

The dispensation regime requires the System Operator to grant a dispensation where an asset owner is unable to meet a technical rule obligations but the System Operator can continue to meet its principal performance obligations. The test of whether or not to grant a dispensation is therefore of a technical nature. The issue of costs associated with the dispensation only arises if the System Operator grants the dispensation and has identified costs as a result of the dispensation being granted.

On the other hand, as the Commission states in the consultation paper, the key reason for granting an AUFLS exemption is that *“it is unfair to force a distributor to assign sensitive and high cost loads, which they have by virtue of the size of the distribution network to which they belong, to AUFLS blocks”*. This is ultimately a decision which requires an economic trade-off, rather than an assessment on technical grounds. Accordingly, it is one that must be determined by the Commission, with advice from the System Operator on the effects of any potential relief on the principal performance obligations.

#### **Option B2 - Waiver**

As set out in response to Option A2, we cannot see how this would address the Commission’s constitutionality concern because there is no difference in substance between an "exemption" and a "waiver".

### **3.5 Credible Event Review and Impact on AUFLS arrangements**

The System Operator has recently undertaken a review of its policy in relation to the management of credible events. The findings of this review are now being consulted with the industry. However, the consultation paper (paragraph 3.4.2) suggests that this review will impact on the use of AUFLS.

The System Operator has previously advised the Commission that the credible event review will not impact on the use of AUFLS by the System Operator. AUFLS are an assumed management tool for extended contingent events and other rarer undefined events. In light of the apparent uncertainty expressed in the consultation paper regarding the System Operator’s current reliance on AUFLS for contingency planning, we are proposing a change in wording to the policy to clarify that the System Operator does rely upon AUFLS as a control to mitigate “other events” (those rarer events not categorised as either a contingent event or an extended contingent event.)

The credible event review can only use the "toolbox" available to it in the rules. The "toolbox" for AUFLS is the legislated 2 x 16% blocks to be provided by grid owners and distributors. The System Operator cannot change the obligations on third party participants via the policy statement. Accordingly, the credible event policy inevitably means reliance only on the controls available to the System Operator to mitigate events, not the mechanisms it would like to have available to it. The underlying rationale for AUFLS needs to be consider

as part of a separate rules review (the scope of which is set out at section 5 of this submission).

The Commission directly criticises the current security policy as paragraphs 4.2.7 and 5.4.15 on the basis that is currently not "as robust as it might be" and "this reduces participants' compliance incentives". This conclusion seems unsupported by the content of the consultation paper.

#### 4. Substantive Review of AUFLS

The consultation paper notes that the System Operator has "*suggested the Commission conduct an urgent review of the AUFLS requirements and their use*". This review has been discussed with the Commission over the last six months and a proposed scope for this review was provided to the Commission in our letter dated 29 June 2009 attached to this submission.

We are currently working with the Commission to reach agreement on this proposed scope and how this review will be funded. In the meantime, the System Operator considers that it is of sufficient importance to commence the review within its own resources and funding. We will be releasing a proposed scope and methodology for industry comment within the next 4 weeks.

In the System Operator's view the scope of the review must include the following:

- a survey of international AUFLS practice and developments. The SO has started a survey based contact with international peers;
- identify the optimal number and size of AUFLS blocks for ECE risk management and for insurance against rare but unidentified events while ensuring system stability;
- identify the respective roles, and their relationship, of AUFLS and special protection schemes (SPSs);
- identify the extent to which AUFLS contribute to the management of regional risks;
- identify value of lost load for all load. A likely starting point for this work is the Commission's current work on this issue;
- review the economics and consequence of AUFLS as a component of extended contingent event (ECE) management;
- review the economics of AUFLS as an insurance policy, to provide for the rare but unidentified events, and consequence of insufficient insurance. Internationally up to 60% of load is part of AUFLS schemes rather than risk a larger unmanaged cascade failure and the need to black start the power system;

- review the merits of who, distributor or grid owner, has the obligation to provide AUFLS in the South Island;
- consider, given the outcome of the above, if there a need for an exemption or dispensation regime for AUFLS obligations. If so what are the appropriate criteria, processes and conditions; and
- review model requirements.

While the review is being carried out the System Operator will continue to operate in accordance with the current rules, including:

- annual provision and assessment of AUFLS capability;
- the resolution of issues arising from annual assessments of AUFLS capabilities;
- requests for redistribution of AUFLS capability amongst grid exit points; and
- four yearly relay tests and resolution of issues arising.

The System Operator will also continue to ensure the reserve management tool (RMT) inputs remain current, including at least an annual review of modelled AUFLS capability taking into account granted exemptions and or dispensations.

## 5. Conclusion

Whilst the System Operator recognises the need to accept the current exemptions until the review has been carried out, it is strongly opposed to any new exemption/waiver or dispensation arrangements which have the potential to erode the current AUFLS base.

The System Operator is concerned about the continued focus on exemption arrangements rather than a focus on the need to undertake the longer term, substantive review of AUFLS arrangements in New Zealand.

Any changes to the current AUFLS exemption arrangements should not be considered until the review of the New Zealand requirements for AUFLS is complete.

The System Operator disagrees with the conclusions and the recommendations reached in the consultation paper.



Attachments:

Letter to Darryl Renner, Electricity Commission dated 29 June 2009

Letter to Darryl Renner, Electricity Commission dated 6 August 2009