

PROCEDURE FOR THE EXERCISE OF THE RELIABILITY AND EMERGENCY RESERVE TRADER

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VERSION RELEASE HISTORY

Version	Effective Date	Summary of Changes
5.0	26 March 2020	Combined with the 'Procedure for the Exercise of Reliability and Emergency Reserve Trader' and renamed. Revised template. Updated to reflect rule change 'Enhancement to the Reliability and Emergency Reserve Trader' dated 02 May 2019. Redundant provisions from both Procedures removed.
4.0	09 June 2011	Revised template. Added disclaimer. Added <i>Affected Participants</i> and intervention pricing. Modified Management of Reserve Conditions.
3.0	30 November 2009	Interim Amendments
2.0	22 May 2009	Version consistent with the final determination of <i>RERT</i> consultation
1.0	17 February 2009	First Draft for Rule Consultation

CONTENTS

1.	INTRODUCTION	4
1.1.	Purpose and scope	4
1.2.	Definitions and interpretation	4
1.3.	Related documents	<u>5</u> 4
2.	RERT PANEL RECRUITMENT	5
3.	PUBLICATION OF NOTICES	<u>6</u> 5
3.1.	Notice of intention to enter into reserve contracts	<u>6</u> 5
3.2.	Publishing of reserve contract details	<u>6</u> 5
4.	ENSURING UNSCHEDULED RESERVES ARE NOT OTHERWISE OFFERED TO THE MARKET OR ENGAGED	<u>6</u> 5
5.	DETERMINING THE TERM AND QUANTITY OF RESERVES TO BE PROCURED	6
6.	BASIS FOR DETERMINING THE ESTIMATED AVERAGE VCRS	<u>7</u> 6
7.	METHODOLOGY TO DISPATCH AND ACTIVATE RESERVE CONTRACTS	<u>9</u> 6
7.1.	Communication	<u>10</u> 6
7.2.	Selecting Reserve Blocks	<u>10</u> 6
8.	DISPATCH OF SCHEDULED RESERVE	<u>10</u> 7
8.1.	Key Terminology	<u>10</u> 7
9.	ACTIVATION OF UNSCHEDULED RESERVE	<u>11</u> 8
9.1.	Key Terminology	<u>12</u> 8

FIGURES

Figure 1	Timeline for fast response reserve (Forecast LOR2 from T2 to T5)	<u>10</u> 7
Figure 2	Timeline for slow response reserve (Forecast LOR2 from T3 to T6)	<u>11</u> 7
Figure 3	Timeline for fast response unscheduled reserve (Forecast LOR2 from T2 to T5)	<u>12</u> 8
Figure 4	Timeline for slow response unscheduled reserve (Forecast LOR2 from T3 to T4)	<u>12</u> 9

1. INTRODUCTION

~~AEMO has published the final Procedure for the Exercise of Reliability and Emergency Reserve Trader (RERT)¹ that details the process AEMO will follow when exercising the RERT.~~

~~The operation of the RERT is divided into the following two stages:~~

- ~~1) Stage 1: when AEMO is determining whether to enter into contracts for the provision of additional reserves under clause 3.20.3; and~~
- ~~2) Stage 2: when AEMO is considering whether to dispatch scheduled reserves under scheduled reserve contracts or activation of unscheduled reserves under unscheduled reserve contracts under clause 3.20.7.~~

1.1. Purpose and scope

~~These are the Procedures for the Exercise of the Reliability and Emergency Reserve Trader (RERT)² made under Clause 3.20.7(e) (Procedures).~~

~~These Procedures have effect only for the purposes set out in the National Electricity Rules (NER). The NER and the National Electricity Law prevail over these Procedures to the extent of any inconsistency.~~

~~The purpose of this Procedure is to detail how AEMO will exercise Stage 2 of the RERT – Dispatch and Activation.~~

1.1. Application

~~This Procedure applies to everyone in AEMO charged with the responsibility for the dispatch and activation of reserves under reserve contracts.~~

1.2. Legal and Regulatory Framework

~~Clause 3.20.7(e) of the NER requires the publication of procedures by which the RERT will be exercised under clause 3.20. AEMO takes this to mean that it must detail all the processes AEMO will undertake from the moment a reserve shortfall has been forecast in one or more regions, through to the procurement and entry into reserve contracts and the dispatch of scheduled reserve, or activation of unscheduled reserve.~~

1.3.1.2. Definitions and interpretation

~~In this Procedure, a word or phrase *in this style* has the same meaning as given to that term in the NER.~~

~~Unless the context otherwise requires, this Procedure will be interpreted in accordance with Schedule 2 of the National Electricity Law.~~

1.1.1 Glossary

~~Terms defined in the National Electricity Law, the NER, and the RERT Guidelines- have the same meanings in these Procedures unless otherwise specified in this clause.~~

~~Terms defined in the NER are intended to be identified in these Procedures by italicising them, but failure to italicise a defined term does not affect its meaning.~~

¹Version 3 dated 23/11/10, refer <http://www.aemo.com.au/electricityops/rert.html>

²Version 3 dated 23/11/10, refer <http://www.aemo.com.au/electricityops/rert.html>

The words, phrases and abbreviations in the table below have the meanings set out opposite them when used in these Procedures.

<u>Term</u>	<u>Definition</u>
<u>AEMO Communication</u>	<u>An email communication that is forwarded by AEMO to a specified list of addressees who are representatives of <i>Registered Participants</i>.</u>
<u>EAAP</u>	<u>Energy Adequacy Assessment Projection</u>
<u>ESOO</u>	<u>Electricity Statement of Opportunities</u>
<u>Long Notice Reserve</u>	<u>Reserve procured in Long Notice Situations.</u>
<u>Long Notice Situations</u>	<u>Situations where AEMO has between 12 months and 10 weeks' notice of a projected shortfall in reserves.</u>
<u>Medium Notice Reserve</u>	<u>Reserve procured from RERT Panel Members in Medium Notice Situations.</u>
<u>Medium Notice Situations</u>	<u>Situations where AEMO has between 7 days' and 10 weeks' notice of a projected shortfall in reserves.</u>
<u>NEL</u>	<u>National Electricity Law</u>
<u>NER</u>	<u>National Electricity Rules</u>
<u>RERT Panel</u>	<u>A panel of entities recruited by AEMO in accordance with the RERT guidelines that might be called upon to tender for and enter into a reserve contract in Medium Notice Situations and Short Notice Situations.</u>
<u>PASA</u>	<u>Projected Assessment of System Adequacy</u>
<u>Short Notice Reserve</u>	<u>Reserve procured from RERT Panel Members in Short Notice Situations.</u>
<u>Short Notice Situations</u>	<u>Situations where AEMO has less than 7 days' notice of a projected shortfall in reserves.</u>

1.1.2 Interpretation

~~The following principles of interpretation apply to these Procedures unless otherwise expressly indicated:~~

These Procedures are subject to the principles of interpretation set out in Schedule 2 of the National Electricity Law.

~~1.4.1.3. Related policies and procedures documents~~

~~Procedure for the Exercise of Reliability and Emergency Reserve Trader – Final (AEMO Website dated 24 Nov 2010)~~

~~Reliability and Emergency Reserve Trader (RERT) Guidelines.~~

<u>Reference</u>	<u>Title</u>	<u>Location</u>
<u>N/A</u>	Reliability and Emergency Reserve Trader (RERT) Guidelines	<u>AEMC website</u>
<u>SO_OP_3707</u>	<u>Intervention, Direction and Clause 4.8.9 Instructions</u>	<u>AEMO website</u>
<u>N/A</u>	<u>Intervention Pricing Methodology</u>	<u>AEMO website</u>

2. RERT PANEL RECRUITMENT

Recruitment for the RERT Panel will, subject to the RERT Guidelines, be at AEMO's discretion. The AEMO website will contain the necessary details for participants seeking to become members of the RERT Panel.

3. PUBLICATION OF NOTICES

3.1. Notice of intention to enter into reserve contracts

Notices published in accordance with clause 3.20.3(c) of the NER will be published in an AEMO Communication.

3.2. Publishing of reserve contract details

Notices published in accordance with section 8 of the RERT Guidelines, including:

- the name of each reserve contract counterparty; and
- the volume and timing of the reserve procured under each reserve contract.

will be published on AEMO's website.

4. ENSURING UNSCHEDULED RESERVES ARE NOT OTHERWISE OFFERED TO THE MARKET OR ENGAGED

AEMO's request for expressions of interest and invitations to tender will require information to be provided, or undertakings given, by respondents to AEMO to satisfy itself that a person complies with clause 3.20.3(i) of the NER, including:

- providing written confirmation that any offered unscheduled reserve is not subject to another contract or arrangement under which it is required to be offered in the market for the trading intervals to which the contract with AEMO relates; and
- provide the consent of the customer or generator (as applicable) at the applicable connection point to allow AEMO, where practicable, to contact the retailer (if applicable) and the Network Service Provider for that point to confirm the unscheduled reserve is not subject to another contract or arrangement.

All unscheduled reserve contracts will require the provider of the unscheduled reserves to ensure that the unscheduled reserves the subject of the unscheduled reserve contract are not otherwise engaged for any of the trading intervals to which the contract with AEMO relates.

5. DETERMINING THE TERM AND QUANTITY OF RESERVES TO BE PROCURED

AEMO must use its reasonable endeavours to ensure that the term and quantity of reserve is no more than AEMO considers is reasonably necessary to address the declaration. In doing so, AEMO may:

- where practicable, procure reserves in a way that allows the quantities procured to be adjusted to reflect changing conditions without committing to paying additional availability costs;
- consider the forecast duration and profile of reserve and supply shortfalls;
- consider the likely availability and reliability of reserves contracted;
- consider information from AEMO's systems, modelling and analysis, including Medium Term PASA, Short Term PASA, ESOO, and EAAP;

- consider the characteristics of reserve contracted, including time of the day the reserve is available, the minimum and maximum period available and pre-activation lead times;
- consider where reserves can be shared between regions;
- consider other system or operating conditions that may reasonably alter the quantities required to address the declaration; and
- consider any other information that AEMO reasonably considers to be relevant.

6. BASIS FOR DETERMINING THE ESTIMATED AVERAGE VCRS

For the purposes of clause 3.20.7(e)(3) and 3.20.2(b)(3) of the NER, AEMO will use the energy-weighted average aggregate VCR values (or equivalent) published for each region.

2. MANAGEMENT OF RESERVE CONDITIONS

~~In order to assess whether reserve will be required to be dispatched or activated AEMO will monitor:~~

- ~~The outcome of the short term PASA; and~~
- ~~The pre-dispatch schedule outcomes in terms of the anticipated available reserve; and~~

~~Any other information AEMO reasonably identifies to be necessary.~~

~~AEMO may declare the following conditions in relation to a period of time, either present or future:~~

- ~~Low reserve condition (LRC)~~
- ~~Lack of reserve 1 (LOR1)~~
- ~~Lack of reserve 2 (LOR2)~~
- ~~Lack of reserve 3 (LOR3)~~

~~AEMO must publish any declaration of any of the above conditions and include the nature and extent of the reserve condition and the time period over which the condition applies.~~

~~When a declaration of a condition is published then AEMO must:~~

- ~~Publish a notice of any forecast circumstances that may require AEMO to implement a AEMO intervention event~~
- ~~Estimate and publish the latest time at which AEMO would need to intervene through a AEMO intervention event should there be an inadequate response from the market to avoid the need for the AEMO intervention event~~

~~In order to estimate the latest time to intervene AEMO may request information from a Scheduled Network Service Provider, Scheduled Generator, Semi-Scheduled Generator or Market Customer.~~

~~Such information may include but not be limited to:~~

- ~~Plant status~~
- ~~Details of plant outages which may affect MW capacity and an indication of the possible deferral of such outages~~
- ~~Estimates of relevant costs incurred if it is considered by AEMO reasonably likely that the Scheduled Network Service Provider, Scheduled Generator or Market Customer will be subject to a direction~~

~~AEMO must regularly review the estimate of the latest time at which it would need to intervene and publish any such revisions.~~

If the latest time for an *AEMO intervention event* is reached and the condition still exists then *AEMO* must *publish* a notice advising that the time for negotiation of further *reserve contracts* in accordance with clause 3.20 of the *NER* has elapsed and that it intends to implement a *AEMO intervention event*.

Any *reserve* available under *reserve contracts* should be *dispatched* or *activated* prior to the issuing of *directions*.

~~3. POWER SYSTEM SECURITY EVENTS~~

Section 9 of the *RERT* guidelines state that *AEMO* may *dispatch* or *activate reserves* under *reserve contracts* to address a *power system security event* in a *transmission network* that it has oversight for if:

- there are suitable *reserves* that *AEMO* has contracted under the *RERT* for long or medium-notice situations at an appropriate location, and there is sufficient notice of the *power system security event* to allow *AEMO* to *dispatch* or *activate* these *reserves*; or
- there are suitable *reserves* that *AEMO* can contract under the *RERT* for short-notice situations at an appropriate location, and there is sufficient notice of the *power system security event* to allow *AEMO* to *dispatch* or *activate* these *reserves*.

~~4. DETERMINING THE LATEST TIME FOR DISPATCHING OR ACTIVATING RESERVE~~

The latest time to *dispatch* or *activate reserve contracts* will be determined from the specified lead times of the contracted *reserve services* in order to maintain *power system security* and to ensure reliability of supply by first minimising *LOR3* conditions and then *LOR2* conditions.

Example:

A case may exist where there is inadequate *reserve* in a single *region* or set of *regions* where the loss of the largest *generating unit* in the *region* or set of *regions* would violate the secure operating limit of the *interconnector*. Manual *load shedding* would then be required to remove the *violation* within 30 minutes. In this case, forecast *LOR2* would be the trigger to *dispatch* or *activate* these *reserves* where the response time of the *reserve service* exceeds 30 minutes.

In cases where the response time for the *reserve service* is less than 30 minutes, the *dispatch* or *activation* may potentially generally not be required until after the contingency occurs. Hence the timing of the *dispatch* or *activation* depends on the characteristics of the contracted *reserve*.

~~5. DECLARATION OF INTERVENTION PRICE DISPATCH INTERVAL~~

Where an *AEMO intervention event* occurs *AEMO* must declare that *dispatch interval* to be an *intervention price dispatch interval*.

This declaration is independent of whether or not *intervention pricing* has been initiated.

~~6. DECLARATION OF INTERVENTION PRICING~~

The test for if the *intervention price run* should be initiated for a *AEMO intervention event* is:

- Could the issue that required the *intervention* be resolved by the *dispatch* or *activation* of the *reserve contracts* at the *regional reference node*? If YES, then initiate *intervention pricing*.

~~7. INTERVENTION CONSTRAINTS~~

~~If intervention constraints are invoked then the *dispatch algorithm* performs an intervention price run. Intervention constraints are ignored in the intervention price run, and this sets the *dispatch price* and *ancillary service prices* to that which would have occurred had AEMO not intervened in the market.~~

~~8. AFFECTED PARTICIPANTS~~

~~To minimise the number of *Affected Participants*, AEMO may select *Market Participants* to become *Affected Participants*.~~

~~This is referred to as a counter action.~~

~~AEMO will only select *Market Participants* to become *Affected Participants* if intervention pricing is initiated.~~

~~The NER definition of *Affected Participant* does not allow a *semi-scheduled generating unit* to be an *Affected Participant*.~~

~~9. EFFECT ON INTERCONNECTOR FLOWS~~

~~AEMO will attempt to minimise the effect on interconnector flows.~~

~~Selecting *Market Participants* to become *Affected Participants* in the region where the *reserve contract* is *dispatched* or *activated* will minimise the effect on interconnector flows.~~

~~10.7. METHODOLOGY TO DISPATCH AND ACTIVATE RESERVE CONTRACTS~~

~~10.1. RERT Principles~~

~~Rule 3.20.2 contains AEMO's obligations with respect to the management of *reserve*:~~

- ~~• AEMO must take all reasonable actions to ensure reliability of *supply* and, where practicable, take all reasonable actions to maintain *power system security* by negotiating and entering into contracts to secure the availability of *reserves* under *reserve contracts* (reliability and emergency reserve trader or RERT)~~
- ~~• actions taken should be those which AEMO reasonably expects, acting reasonably, to have the least distortionary effect on the operation of the *market*; and~~
- ~~• actions taken should aim to maximise the effectiveness of *reserve contracts* at the least cost to end use consumers of electricity~~

~~AEMO will minimise the distortionary effect on the operation of the market by, in so far as is reasonably practical, minimising the number of *Affected Participants* and the effect on interconnector flows using counter action.~~

~~AEMO will evaluate all short notice RERT tenders as between themselves and as against all existing *reserve contracts* in order to ensure that *reserve* is procured at the least possible cost to the market.~~

10.2.7.1. Communication

AEMO will issue instructions to *reserve* providers in accordance with each applicable *reserve contract*.

10.3.7.2. Selecting Reserve Blocks

There may be some *reserve* that cannot be used in a particular instance, for example, because binding network constraints prevent access to the *reserve* or there may be insufficient time to use the *reserve* because the reserve condition was forecast at sufficiently short notice compared to the reserve’s lead time for *dispatch* or *activation* that there would be no benefit in using it. Such *reserve* will not be considered for *dispatch* or *activation*.

Selection of the particular *reserve* to be *dispatched* or *activated* will be based on a number of factors including, but not limited to the following:

- ability to meet the requirement
- cost
- size of *reserve* blocks
- length of *dispatch* or *activation* times
- *dispatch* or *activation* constraints (for example, maximum number of days or consecutive days per week of *dispatch* or *activation*, maximum and/or minimum periods of *dispatch* or *activation*)
- shutdown periods when the *reserve* blocks are not available.

11.8. DISPATCH OF SCHEDULED RESERVE

Scheduled plant is registered in the AEMO Market Management System (MMS) with a unique Dispatch Unit Identification (DUID). Dispatch of *scheduled reserve* is through normal market processes using constraint equations which include the relevant DUIDs.

11.1.8.1. Key Terminology

Figure 1 Timeline for fast response reserve (Forecast LOR2 from T2 to T5)

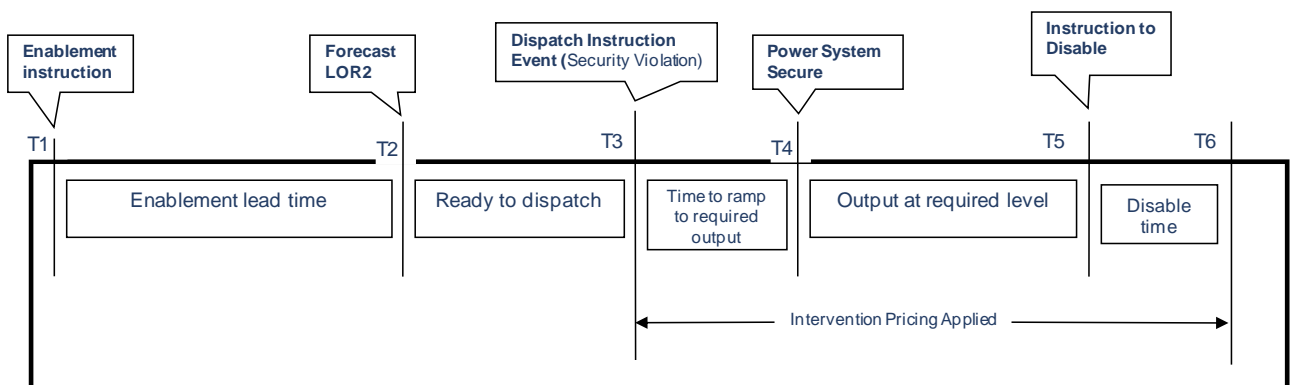
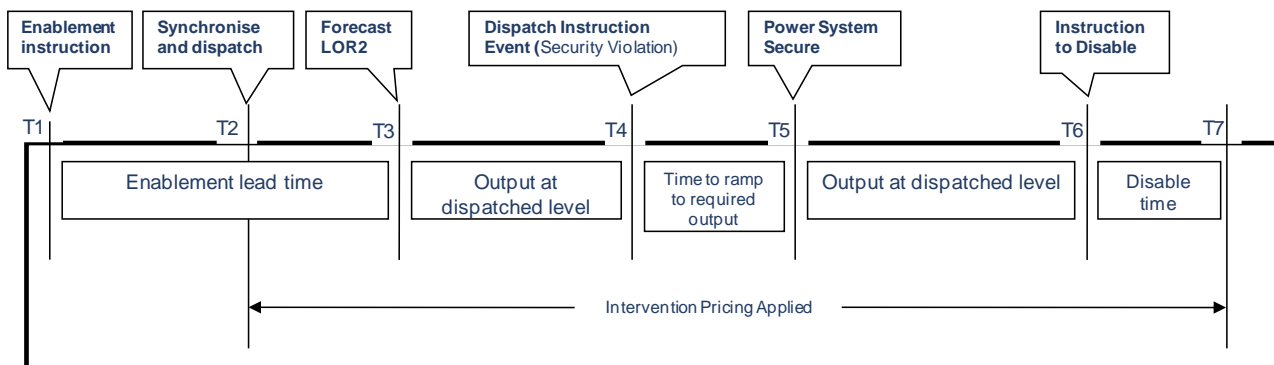


Figure 2 Timeline for slow response reserve (Forecast LOR2 from T3 to T6)



Enablement means preparing the *reserve equipment* to be *dispatched*. For example, Figure 1 demonstrates a fast response generator that does not need to be synchronised at the forecast LOR2 time (T2) to provide the reserve capacity. Note: a slow response generator may require *synchronising* and *loading* to its *minimum operating level* or some nominated level at the start of the LOR2 period (as shown in Figure 2), so that it can provide the reserve capacity within the timeframe required.

Enablement Lead Time means the maximum period required from the time the *Reserve Provider* receives an *enablement instruction* until the *reserve equipment* is:

- a) synchronised and its loading level becomes equal to the minimum operating level for slow start plant;
- b) ready for synchronisation for fast start plant; or
- c) ready to be dispatched above its market capacity,

Dispatch Instruction means an *instruction* from AEMO to the *Reserve Provider* to *dispatch reserve* or to *disable* the *reserve equipment* (as the case may be).

Disablement means the cessation of the provision of *reserve* required by a *dispatch instruction* and resuming the taking of electricity supply.

Disablement Lead Time means the period required to *disable* the *reserve equipment*

12.9. ACTIVATION OF UNSCHEDULED RESERVE

Unscheduled plant is not registered in the AEMO MMS with a unique DUID. Activation of *unscheduled reserve* appears in the *market* as a decrease in scheduled demand. In the MMS, AEMO has implemented generic RERT DUIDs for the purpose of activating unscheduled reserve.

Activation in the MMS is a two-part process involving:

- 1) Constraint equations which act on the generic RERT DUIDs
- 2) Submitting a reserve schedule using the Load Forecasting package

The reserve schedule ensures the PASA reserve calculation is accurate by modifying the load forecast to take into account the reduction in scheduled demand due to the activation of *unscheduled reserve*.

12.1.9.1. Key Terminology

Figure 3 Timeline for fast response unscheduled reserve (Forecast LOR2 from T2 to T5)

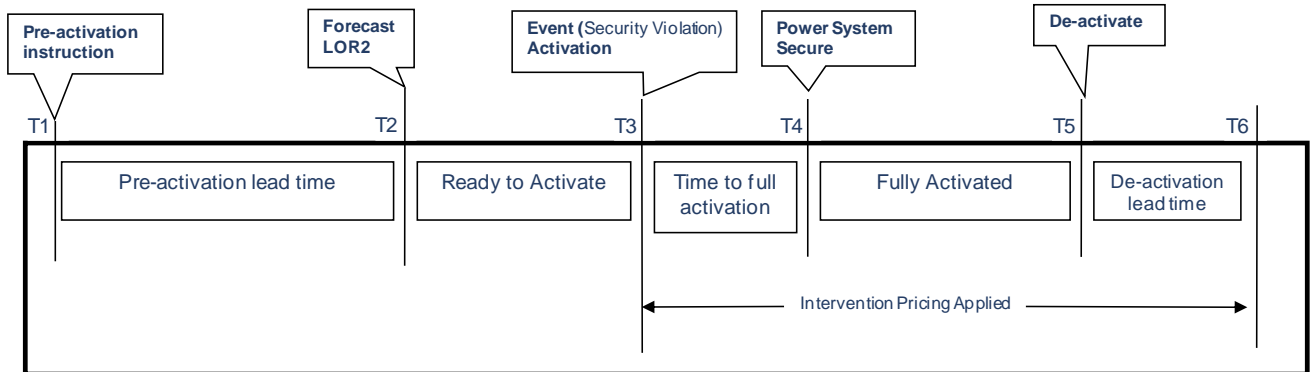
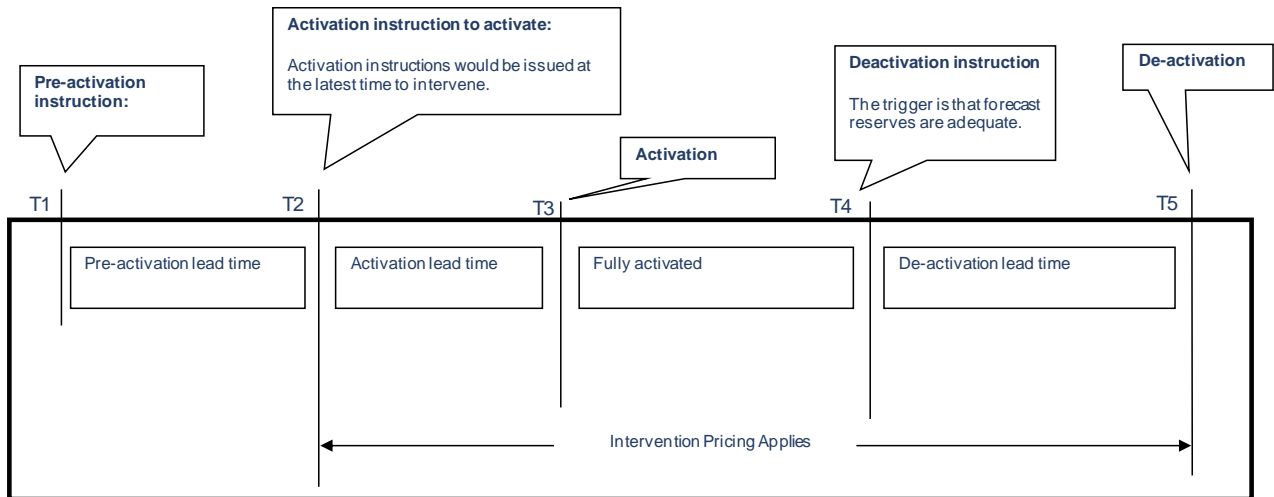


Figure 4 Timeline for slow response unscheduled reserve (Forecast LOR2 from T3 to T4)



Pre-activation means preparing the *reserve equipment* for activation.

Pre-activation lead time means the maximum period required to prepare the *reserve equipment* for activation

Activation means *synchronising* the *reserve equipment* where required and increasing its output to the *firm capacity*.

Activation Lead Time means the maximum period required by the *Reserve Provider* to activate reserve in response to an *activation instruction*.

De-activation means reducing the output of the *reserve equipment* to the *network* as quickly as practicable until it is below its *market capacity* or is *de-synchronised*.

De-activation Lead Time means the maximum period required to *disable* the *reserve equipment*