# Agenda

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| **MEETING TITLE** | Market Advisory Committee |
| **MEETING NO** | 84 |
| **DATE** | Wednesday 9 September 2015 |
| **TIME** | 2:00 PM – 5:00 PM |
| **LOCATION** | IMO Board Room, Level 17, 197 St Georges Terrace, Perth |

| Item | Responsibility | Duration |
|---|---|---|
| 1. Welcome | Chair | 2 min |
| 2. Meeting apologies/attendance | Chair | 2 min |
| 3. Minutes of previous meeting | Chair | 5 min |
| 4. Actions arising | Chair | 5 min |
| 5. Progression of Rule Change Proposals | IMO | 5 min |
| 6. Discussion: Electricity Market Review update | PUO | 30 min |
| 7. Presentation: System Management transfer update | IMO | 15 min |
| 8. Presentation: Overview of constrained market models | IMO | 40 min |
| 9. Presentation: Update on Competing Applications Groups | Western Power | 20 min |
| 10. Presentation: 2015 Ancillary Services Plan and Report | System Management | 15 min |
| 11. Presentation: Data visualisations | IMO | 15 min |
| 12. Presentation: Enhancing forecasting capabilities in the IMO | IMO | 20 min |
| 13. Working Groups update | IMO | 2 min |
| 14. General business | IMO | 2 min |
| 15. Next meeting: 14 October 2015 | | |

Please note this meeting will be recorded to assist with the preparation of minutes.

INDEPENDENT MARKET OPERATOR

# Minutes

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|---|---|
| **MEETING TITLE** | Market Advisory Committee |
| **MEETING NO** | 83 |
| **DATE** | Wednesday 12 August 2015 |
| **TIME** | 2:00 PM – 2:55 PM |
| **LOCATION** | IMO Board Room, Level 17 St Georges Terrace, Perth |

| Attendees | Class | Comment |
|---|---|---|
| Allan Dawson | Chair | |
| Erin Stone | Compulsory – IMO | |
| Clayton James | Compulsory – System Management | Proxy |
| Will Bargmann | Compulsory – Synergy | |
| Fiona Bishop | Compulsory – Western Power | Proxy |
| Andrew Stevens | Compulsory – Generator | |
| Wendy Ng | Compulsory – Generator | |
| Shane Cremin | Compulsory – Generator | |
| Richard Wilson | Compulsory – Customer | Proxy |
| Tony Leahy | Compulsory – Customer | Proxy |
| Geoff Gaston | Compulsory – Customer | |
| Peter Huxtable | Discretionary – Contestable Customer | (2:15 PM – 2:55 PM) |
| Simon Middleton | Minister's Appointee – Observer | |
| Ray Challen | Minister's Appointee – Small Use Consumer Representative | |
| Elizabeth Walters | Economic Regulation Authority (ERA) – Observer | |

| Apologies | Class | Comment |
|---|---|---|
| Dean Sharafi | Compulsory – System Management | Proxy attended |
| Matthew Cronin | Compulsory – Western Power | Proxy attended |
| Michael Zammit | Compulsory – Customer | Proxy attended |
| Steve Gould | Compulsory – Customer | Proxy attended |

| Also in attendance | From | Comment |
|---|---|---|
| Fiona Wiseman | Alinta Energy | Presenter |
| John Rhodes | Alinta Energy | Observer |
| Ignatius Chin | Bluewaters Power | Observer |
| Mike Davidson | Western Power | Observer |
| Mia Threnoworth | Synergy | Observer |
| Natalia Kostecki | Public Utilities Office (PUO) | Observer |
| Ben Connor | IMO | Observer |
| Neetika Kapani | IMO | Observer |
| Caroline Cherry | IMO | Observer and Minutes |

| Item | Subject | Action |
|---|---|---|
| 1. | **Welcome**<br>The Chair opened the meeting at 2:00 PM and welcomed all members to the 83rd meeting of the Market Advisory Committee (MAC). | |
| 2. | **Meeting apologies/attendance**<br>The following apologies were received.<br>• Dean Sharafi<br>• Matthew Cronin<br>• Michael Zammit<br>• Steve Gould<br>The following **proxies** were noted:<br>• Clayton James (for Dean Sharafi)<br>• Fiona Bishop (for Matthew Cronin)<br>• Richard Wilson (for Michael Zammit)<br>• Tony Leahy (for Steve Gould)<br>The following **presenters and observers** were noted<br>• Fiona Wiseman (Presenter – Alinta Energy)<br>• John Rhodes (Observer – Alinta Energy)<br>• Ignatius Chin (Observer – Bluewaters Power)<br>• Mike Davidson (Observer – Western Power)<br>• Mia Threnoworth (Observer – Synergy)<br>• Natalia Kostecki (Observer – PUO)<br>• Ben Connor (Observer – IMO)<br>• Neetika Kapani (Observer – IMO)<br>• Caroline Cherry (Observer and Minutes – IMO) | |

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| **3.** | **Minutes of previous meeting**<br>The minutes of MAC meeting No. 82 held on 22 July 2015 were circulated to members prior to the meeting. The following comments were made:<br>• Ms Erin Stone noted that Mr Michael Zammit had clarified his comment regarding the decision making framework on rule changes in eastern Australia on page eight of the minutes. MAC members agreed to this proposed change.<br>• Dr Natalia Kostecki noted there were a number of references in the minutes to the PUO, which needed to be amended to refer either to the Electricity Market Review (EMR) Steering Committee or to the EMR Program Management Office (PMO). Dr Kostecki agreed to provide a list of these changes to the IMO for incorporation in the minutes.<br>• Mr Andrew Stevens also noted the last sentence on page 10 required an amendment to reflect his point which was that if the industry was to consider narrowing the frequency range from the current requirement, there would need to be some level of justification and expected that there would be cost savings in other areas that should be identified.<br>*Action Point: Dr Kostecki to provide the IMO with the clarifications in the minutes to those references that require amendment from the PUO to the PMO or EMR Steering Committee.*<br>*Action Point: The IMO to update the minutes to reflect Dr Kostecki and Mr Stevens's changes to finalise the minutes and publish the minutes as final on the Market Web Site.* | **Dr Kostecki**<br><br>**IMO** |
| **4.** | **Actions arising**<br>The Chair invited Ms Stone to update the MAC on the actions:<br>• **Actions 47 and 55** remained open. Ms Fiona Bishop noted that Western Power would provide an update on action item 55 to MAC at its September meeting.<br>• **Actions 9 and 15** related to progressing rule change proposals and have therefore been deferred.<br>• **Action 27:** related to the costings and plan for the integration of System Management into the IMO. It was noted that the IMO would provide an update to the MAC when it could.<br>Mr Stevens queried the timeline for the due diligence exercise. The Chair noted that the first phase of Due Diligence had been completed and the second phase was ongoing. The Chair further noted that some high level planning had occurred and a 1 July 2016 date for the transfer of System Management into the IMO had been nominated. The Chair further noted that a window from 1 July 2016 to 1 October 2016 was available for the transfer due to the preference for this to occur prior to the summer period. Mr Stevens queried who was funding the transfer. The Chair responded that the IMO would be responsible for the costs, which meant that ultimately it was Market Participants who would be funding the transfer. The Chair further noted however that the transfer costs appeared to be less than what was originally anticipated.<br>Mr Will Bargmann queried whether Mr Simon Middleton would be speaking on the consultation process for the transfer of | |

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| | System Management to the IMO in the next Agenda Item. The Chair responded that MAC would be provided with information on the costs, process and timelines for the transfer once these has been determined and consultation had occurred with the EMR Steering Committee.<br><br>Mr Bargmann asked what consultation would be undertaken for the transfer. The Chair noted that this action item would provide further details on the project after these had been considered by the EMR Steering Committee. Dr Ray Challen noted that the enabling Regulations, which would establish the powers and functions for the transfer, would have public consultation through a Regulation Impact Statement process. Dr Challen further noted that additional matters covered under rule changes would also have a consultation process, and any operational matters would more than likely be brought to the MAC for discussion. The Chair reiterated that the IMO would provide updates on the progress of the transfer as they became available.<br><br>• **Action 28:** related to the deferral of the five-yearly reviews. It was noted that this remained open and the IMO was preparing a paper for the EMR Steering Committee. | |
| **5.** | **Progression of Rule Change Proposals**<br><br>Ms Stone provided an update on the progression of the current Rule Change Proposals and noted the following:<br><br>• The Final Rule Change Report for the Rule Change Proposal: Specific Transition Provisions for the 2015 Reserve Capacity Cycle (RC_2015_05) was published on 7 August 2015 and the Amending Rules would commence on 1 September 2015.<br><br>• The IMO was preparing a Draft Rule Change Report on Rule Change Proposal: Formalisation of the Process for Maintenance Applications (RC_2015_03) for the IMO Board's consideration at the August Board meeting.<br><br>• There are three remaining Draft Rule Change Reports which require the IMO Board's consideration for deferral.<br><br>The Chair noted that when the Rule Change Assessment Panel (RCAP) is established all the Draft and Final Rule Change Reports in their current state, would be provided to the RCAP for consideration. | |
| **6.** | **Discussion: Electricity Market Review update**<br><br>The Chair invited Mr Middleton to provide an update on the EMR. The following points were discussed:<br><br>• Mr Middleton noted that a lot of focus was being directed at the adoption of the national framework for network regulation, its potential impact on other reform areas, and whether the national framework should be applied to those other reform areas. It was further noted that if the national framework was not to be adopted in other areas, there would need to be State specific instruments to manage those particular matters. For instance, Western Australia would not be adopting the national framework for its wholesale electricity market, however a State specific framework is already in place, to manage those matters.<br><br>• Mr Middleton noted in regards to the Wholesale Electricity Market (WEM) Improvements projects, the Reserve Capacity Mechanism | |

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| | (RCM) work stream was looking at how the price and quantity of capacity was established and that a position paper was likely to be released in October 2016. Mr Middleton further noted that specialist consultants had been engaged by the PMO to assist in the development of that position paper and that meetings had been scheduled between the consultants and the relevant parties.<br>• Mr Middleton noted that in regards to System Management transfer the PMO would soon be meeting with Parliamentary Counsel~~cil~~ to discuss the legislative framework to give effect to the transfer.<br>• Mr Middleton noted that submissions for the RCAP position paper were due on Friday 14 August 2015.<br><br>Mr Middleton took questions from MAC members. The following points were discussed:<br><br>• Ms Stone queried the extent to which the RCM position paper would capture the outcomes of the RCM 'Discussion Forum'. Mr Middleton responded that the position paper would go beyond those discussions and propose a number of design options in order to seek feedback from Market Participants.<br>• Mr Richard Wilson queried what the consultation process would be for the RCM work stream, asking whether there would only be one chance for stakeholder consultation before the Rule Change Proposal was developed. Mr Middleton responded that the EMR Steering Committee would need to provide direction to the PMO regarding the outcomes of consultation. Mr Wilson further queried whether the timelines would be extended at all. Mr Middleton responded that there would be no impact on the timelines. Ms Stone noted that there would not be sufficient time to undertake a Standard Rule Change Process if there was any further consultation to be undertaken. Mr Geoff Gaston queried if the rule changes were implemented prior to July 2016, what capacity cycle it would impact. The Chair responded that the Reserve Capacity Cycles affected would be for 2017/18 (as deferred) and 2018/19 onwards. Ms Stone noted that the Amending Rules would need to commence by 1 May 2016.<br>• Ms Wendy Ng queried whether the rule changes would be provided for public consultation. The Chair responded that for a Standard Rule Change Process to be followed, the Rule Change Proposal would need to be submitted by 16 November 2015. The Chair noted that the IMO was looking at ways to potentially shorten the IMO and Ministerial approval processes in order to maintain the public consultation period and meet the necessary timeframes. The Chair further noted that if the RCAP was not in place to consider the rule changes, the IMO Board has made an offer to the EMR Steering Committee and Minister to commence an EMR initiated rule change, with the RCAP to ultimately approve the proposed amendments. Mr Middleton noted that the EMR Steering Committee would need to consider the most appropriate option for the rule change process. Mr Middleton further noted that if the option was taken to repeal and replace the rules, that option was not being utilised in order to avoid public consultation.<br>• Mr Shane Cremin queried whether there was any inclination to delay the Reserve Capacity Cycle for another year. Mr Middleton responded that it would be a decision for the EMR Steering Committee and the Minister. Mr Cremin queried whether, if the consultation process | |

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| | became compromised, it would be worth considering progressing the changes under the Fast Track Rule Change Process. The Chair noted that the proposed RCM changes would not meet the Fast Track criteria and that the IMO was not in a position to make any amendments to the Market Rules related to the Fast Track provisions at this time in order to accommodate revised rule change processes.<br>• The Chair queried whether the MAC would be the working group for the RCM work stream. Mr Middleton responded that there was merit in that approach but the EMR Steering Committee would need to determine that matter. | |
| **7.** | **Discussion: Outcomes from the industry led forum on operational aspects of the proposed revised rule change process**<br>The Chair invited Ms Fiona Wiseman and Ms Ng to present. The following points were discussed:<br>• Mr Stevens queried the minutes from the industry forum that had been circulated with the papers and whether decisions that said "attendees agreed" included the PMO. Ms Ng responded that for the most part it was the majority of participants agreed. Mr Bargmann noted that the industry forum minutes should not be used as representative of the views of MAC and noted that the minutes also did not reflect the views of Synergy.<br>• Mr Bargmann queried whether the proposed decisions on the approval of Market Procedures by the IMO would be made in its capacity as the market operator or as the RCAP Secretariat. The Chair responded that the current arrangement for decisions on Procedure Change Proposals was that the IMO Board had developed a framework to delegate Market Procedures approval to the IMO Chief Executive Officer (CEO). Where a procedure is non-controversial the IMO CEO could make the decision. If any criteria under that decision framework was met the decision would revert back to the IMO Board for approval. The Chair further noted that a similar arrangement could be put in place under the RCAP model. Ms Wiseman noted that was similar to the framework on the east coast and that in Alinta Energy's view, this type of decision delegation framework could work well.<br>• Ms Wiseman noted that if a decision on a Procedure Change Proposal was reformist in nature it would be useful for Market Participants to be able to see both the Rule Change Proposal and the Procedure Change Proposal at the same time.<br>• Ms Ng noted that the current rule change process worked well and that some improvements could be made, however in order to establish the RCAP, the current rule change process was sufficient. Ms Wiseman noted that further refinements to the rule change process could be placed on the Market Rules Evolution Plan for consideration. Dr Challen noted that to establish the RCAP, it was preferable to keep rule changes to a minimum and any further refinements to the rule change process would warrant separate consideration.<br>*Action Item: The IMO to publish the presentation and industry forum minutes on the Market Web Site*. | **IMO** |
| **8.** | **Working Groups**<br>Ms Stone noted there were no changes to the Working Groups. | |

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| **9.** | **General Business**<br>Mr Cremin queried whether the EMR Market Operations work stream was considering the issue of unit commitment. Mr Cremin noted that previous discussions had come to a general consensus to move towards portfolio self-commitment and queried whether this had been reviewed, or if previous discussions had been taken into consideration. The Chair noted that previous work undertaken by the IMO on this matter had been passed on, to feed into the work stream. The Chair further noted that if the matter had not been raised in the proposal that, it would more than likely be raised by Market Participants in submissions as an area for concern. | |
| **CLOSED:** The Chair declared the meeting closed at 2:55 PM. | | |

INDEPENDENT MARKET OPERATOR

# Agenda Item 4: 2015 MAC Action Items

MAC Meeting 9 September 2015

**Table 1: Legend**

| | |
|---|---|
| Shaded | Shaded action points are actions that have been completed since the last MAC meeting. |
| Unshaded | Unshaded action points are still being progressed. |
| Missing | Action items missing in sequence have been completed from previous meetings and subsequently removed from log. |

| # | Year | Action | Responsibility | Meeting arising | Status/progress |
|---|---|---|---|---|---|
| 47 | 2014 | The IMO to canvass MAC members' feedback on the proposal to expedite Ancillary Services procurement processes at a later date to assess if it should be progressed further. | IMO | September | |
| 55 | 2014 | Western Power to provide an update of its progress with respect to the CAG process at the February 2015 MAC meeting. | Western Power | December | Ongoing |
| 9 | 2015 | The IMO to resubmit the Rule Change Proposal: Incentives to Improve Availability of Scheduled Generators (RC_2013_09) as a priority following the outcomes of the EMR if appropriate. | IMO | February | Deferred |
| 15 | 2015 | The IMO to submit the Rule Change Proposal: Expediting the Publication of Balancing Prices (RC_2015_06) into the formal process and progress it under the Standard Rule Change Process. | IMO | March | Deferred |

| # | Year | Action | Responsibility | Meeting arising | Status/progress |
|---|---|---|---|---|---|
| 27 | 2015 | The IMO to present costing and plan for the transfer of System Management to the IMO once the due diligence is complete. | IMO | June | |
| 28 | 2015 | The IMO to update MAC members on the outcome of the discussion with the EMR Steering Committee on the proposed deferral of the two upcoming five yearly reviews. | IMO | June | |
| 33 | 2015 | Dr Kostecki to provide the IMO with the clarifications in the minutes of MAC meeting No. 82 to those references that require amendment from the PUO to the PMO or EMR Steering Committee. | Dr Kostecki | August | Complete |
| 34 | 2015 | The IMO to update the minutes to reflect Dr Kostecki and Mr Stevens's changes to finalise the minutes and publish the minutes as final on the Market Web Site. | IMO | August | Complete |
| 35 | 2015 | The IMO to publish the presentation and minutes from the industry led forum on operational aspects of the proposed revised rule change process on the Market Web Site. | IMO | August | Complete |

IMO INDEPENDENT MARKET OPERATOR

# Agenda Item 5: Progression of Rule Change Proposals

MAC Meeting 9 September 2015

## 1. Background

At the Market Advisory Committee (MAC) meeting held on 17 June 2015, it was noted that:

- the IMO Board had received a request from the Minister, that the IMO use its discretion under clause 2.5.10 of the Wholesale Electricity Market Rules (Market Rules), to defer the timeframes for current or new Rule Change Proposals until the new decision making entity has been established; and
- the IMO Board had decided to:
  - not submit the Rule Change Proposal: Expediting the Publication of Balancing Prices (RC_2015_06) into the formal rule change process at this stage;
  - complete the draft reports for the seven Rule Change Proposals with the first submission period closed, but defer the consideration of these reports until 31 December 2015 (or earlier if the new decision making entity becomes operational);
  - complete the final reports for the three Rule Change Proposals with the second submission period closed, but defer the consideration of these reports until 31 December 2015 (or earlier if the new decision making entity becomes operational); and
  - proceed with the Rule Change Proposal: Specific Transition Provisions for the 2015 Reserve Capacity Cycle (RC_2015_ 05) to give effect to the recent Ministerial Direction to defer most aspects of the 2015 Reserve Capacity Cycle.

## 2. Progress of Rule Change Proposals underway

Currently there are 10 standard Rule Change Proposals underway.

Seven Rule Change Proposals have progressed to the first submission period closure. Of these, the IMO Board has formally decided to defer the consideration of four, with a further three reports still to be prepared.

Three Rule Change Proposals have progressed to the second submission period closure. The IMO Board has formally decided to defer the consideration of all three.

The Final Rule Change Report for RC_2015_05 was approved by the Board in line with the request from the Minister and commenced on 1 September 2015.

The following tables show the progress of each of the Rule Change Proposals currently in the formal rule change process.

**Draft Rule Change Reports being prepared**

| ID | Title | Next Step | Currently scheduled for |
|---|---|---|---|
| RC_2014_06 | Removal of Resource Plans and Dispatchable Loads | Draft Rule Change Report Published | 30/09/2015 |
| RC_2013_15 | Outage Planning Phase 2 - Outage Process Refinements | Draft Rule Change Report Published | 30/09/2015 |
| RC_2014_09 | Managing Market Information | Draft Rule Change Report Published | 30/10/2015 |

**Draft Rule Change Reports awaiting consideration by the RCAP**

| ID | Title | Next Step | Currently scheduled for |
|---|---|---|---|
| RC_2014_03 | Administrative Improvements to the Outage Process | Draft Rule Change Report Published | 31/12/2015 |
| RC_2014_05 | Reduced Frequency of the Review of the Energy Price Limits and the Maximum Reserve Capacity Price | Draft Rule Change Report Published | 31/12/2015 |
| RC_2015_01 | Removal of Market Operation Market Procedures | Draft Rule Change Report Published | 31/12/2015 |
| RC_2015_03 | Formalisation of the Process for Maintenance Applications | Draft Rule Change Report Published | 31/12/2015 |

**Final Rule Change Reports awaiting consideration by the RCAP**

| ID | Title | Next Step | Currently scheduled for |
|---|---|---|---|
| RC_2014_07 | Omnibus Rule Change | Final Rule Change Report Published | 31/12/2015 |
| RC_2014_10 | Provision of Network Information to System Management | Final Rule Change Report Published | 31/12/2015 |
| RC_2013_21 | Limit to Early Entry Capacity Payments | Final Rule Change Report Published | 31/12/2015 |

**Commenced**

| ID | Title | Commenced |
|---|---|---|
| RC_2015_05 | Specific Transition Provisions for the 2015 Reserve Capacity Cycle | 01/09/2015 |

INDEPENDENT
MARKET
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Dean Sharafi
Head of System Management
Western Power
GPO Box L921
Perth WA 6842

Dear Dean

**2015 Ancillary Services Report**

Thank you for submitting the amended version of the 2015 Ancillary Service Report on 12 August 2015.

The IMO has conducted an audit of the report in accordance with clause 3.11.12 of the Wholesale Electricity Market Rules. The IMO acknowledges the significant improvement in this report compared to previous years, and wishes to extend its thanks to your team for their effort.

This letter is to advise that the IMO has approved the amended report. The approved report, along with this letter, will be published on the IMO website.

Please contact me on (08) 9254 4333 if you have any queries.

Yours sincerely

ALLAN DAWSON
**CHIEF EXECUTIVE OFFICER**

28 August 2015

# Ancillary Services Report 2015

System Management

12 August 2015

Table of Contents

# 1 Introduction

## 1.1 System Management

Western Power is established under section 4(1)(b) of the *Electricity Corporations Act 2005* and has the functions conferred under section 41 of that Act.

Part 9 of the *Electricity Industry Act 2004* makes provision for a wholesale electricity market and provides for the establishment of Market Rules.

Regulation 13 of the *Electricity Industry (Wholesale Electricity Market) Regulations 2004* provides that the Market Rules may confer on an entity the function of operating the South West Interconnected System (SWIS) in a secure and reliable manner.

Clause 2.2.1 of the *Wholesale Electricity Market Rules* (**Market Rules**) confers this responsibility upon Western Power, acting through the segregated business unit known as System Management.

Clause 3.11.11 of the Market Rules requires System Management to prepare an annual Ancillary Services report as follows:

> *3.11.11. By 1 June each year, System Management must submit to the IMO a report containing information on:*
>
> *(a) the quantities of each of the Ancillary Services provided in the preceding year, including Ancillary Services provided under Ancillary Service Contracts, and the adequacy of these quantities (Chapter 2 of this report);*
>
> *(b) the total cost of each of the categories of Ancillary Services provided, including Ancillary Services provided under Ancillary Service Contracts, in the preceding year (Chapter 3 of this report); and*
>
> *(c) the Ancillary Service Requirements for the coming year and the Ancillary Services plan to meet those requirements (Chapter 4 of this report).*

System Management has prepared this report in accordance with the above obligations.

## 1.2 Independent Market Operator

Clause 2.1 of the Market Rules defines the obligations of the IMO. These include:

> *(o) to carry out any other functions conferred, and perform any obligations imposed, on it under these Market Rules*.

In particular the Market Rules provide for the following:

> *3.11.6. System Management must submit the Ancillary Service Requirements to the IMO for approval. The IMO must audit System Management's determination of the Ancillary Service Requirements and may require System Management to re-determine the Ancillary Service Requirements, in which case this clause 3.11.6 applies to any recalculated requirements.*
>
> *3.11.12. The IMO must audit System Management's determination of the Ancillary Services plan submitted to the IMO under clause 3.11.11. The IMO may require System Management to amend the Ancillary Services plan and resubmit it to the IMO, in which case this clause 3.11.12 applies to any amended plan.*

## 1.3 Terminology

A word or phrase defined in the *Electricity Industry Act 2004*, or in the Regulations or Market Rules made under that Act, has the same meaning when used in this report.

## 1.4 Reporting period

This report covers the quantity and cost for both the 2013/14[1] period and the 2014/15 period (sections 2 and 3 of this report), together with the requirements and plan for the 2015/16 period (section 4 of this report).

[1] The Ancillary Service report for 2014 was not published, hence there has been no prior reporting of the quantity and cost for 2013/14.

# 2 Quantities of Ancillary Services in the Preceding Year (2013/14 & 2014/15)

## 2.1 Load Following Service

### 2.1.1 Quantity

For the two periods the subject of this report, the typical LFAS Requirement was +/-72MW. The quantity actually used in real time may be greater or less than the LFAS Requirement.

The average LFAS raise enabled during the period 1 May 2013 to 30 April 2014 was 104 MW. The average LFAS lower enabled during the same period was 104 MW.

The average LFAS raise enabled during the period 1 May 2014 to 30 April 2015 was 107 MW. The average LFAS lower enabled during the same period was 107 MW.

These values are based on the historical dispatch of Synergy and NEWGEN_KWINANA_CCG1 generators over the periods referred to above.

The average LFAS quantities enabled were more than the typical LFAS Requirement of +/-72MW applicable to the above periods. This is because generators enabled for LFAS are typically brought on line in 'block' increments, normally in the order of 30-40MW per LFAS Facility (i.e. being the range of control between their minimum and maximum outputs), rather than the minimum amounts needed to meet the LFAS Requirement (which may require increments of less than 10MW).

The LFAS raise enabled during the years is shown in Figure 1 and Figure 2 below.

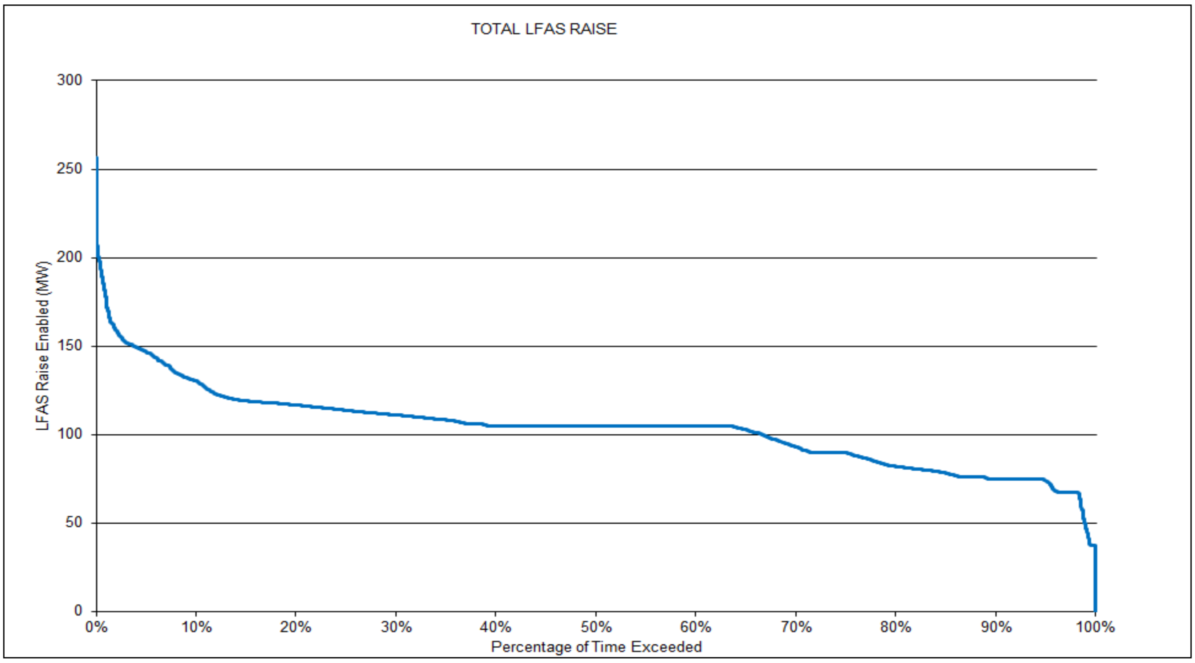


**Figure 1- Historic LFAS raise 2013/14 enablement**

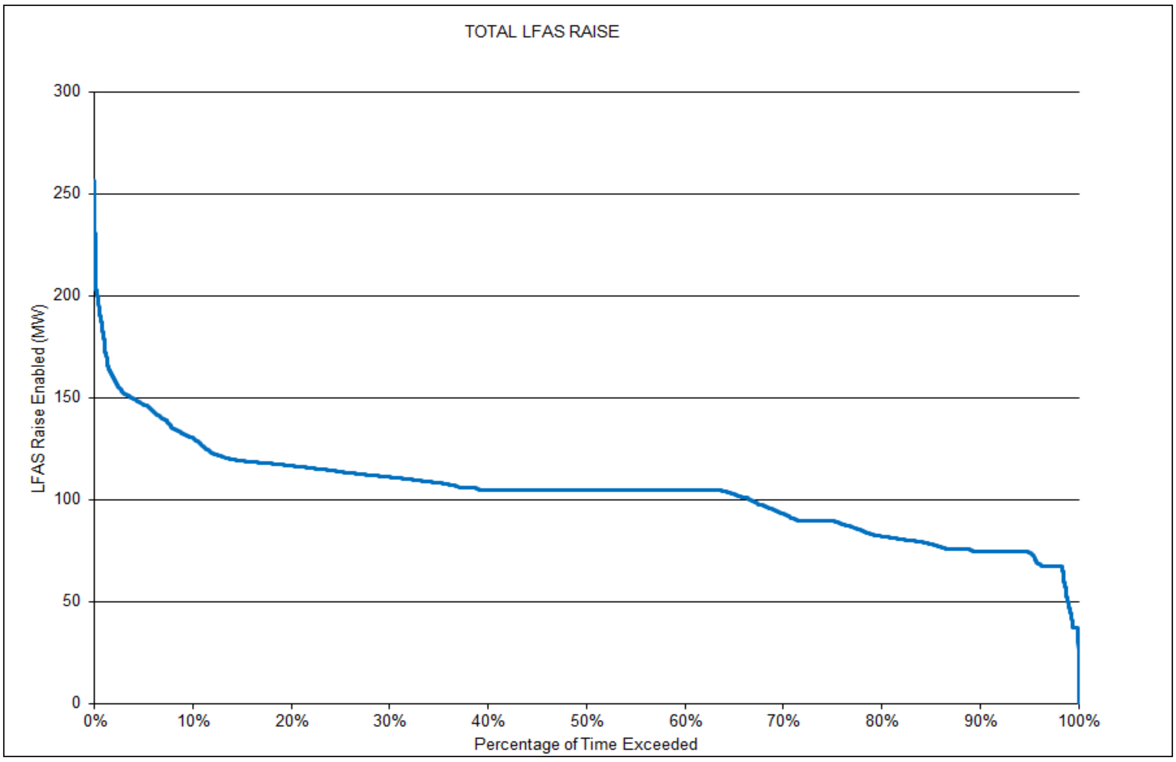


**Figure 2- Historic LFAS raise 2014/15 enablement**

The LFAS lower enabled during the years is shown in Figure 3 and Figure 4.

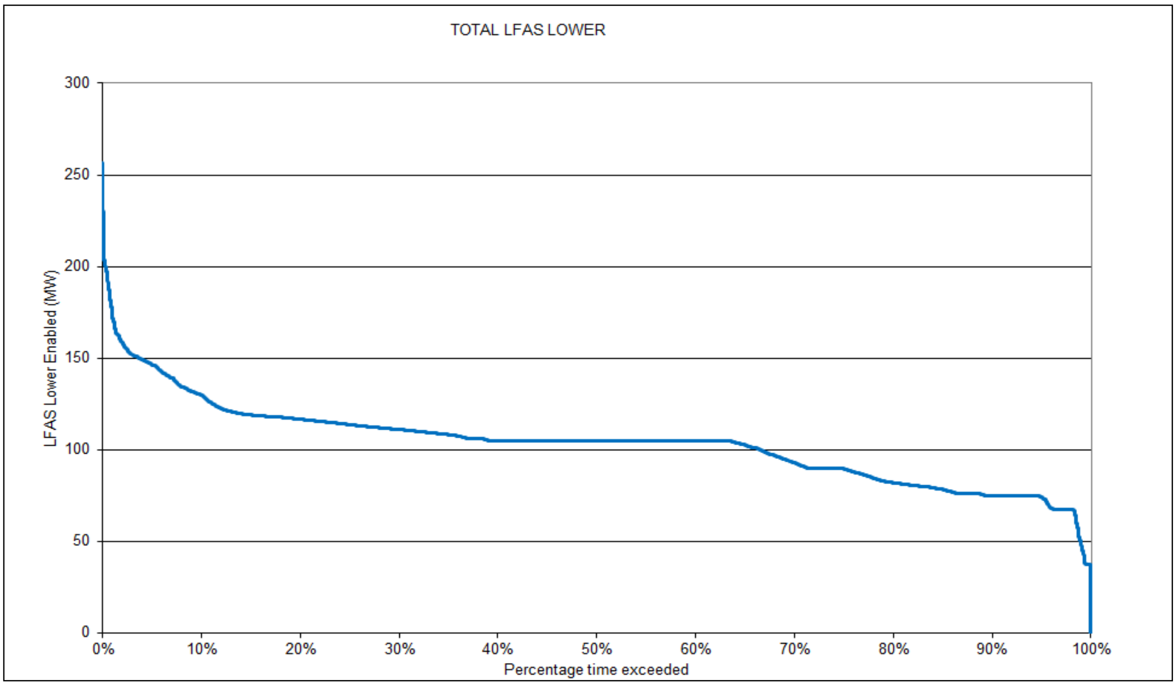


**Figure 3- Historic LFAS lower 2013/14 enablement**

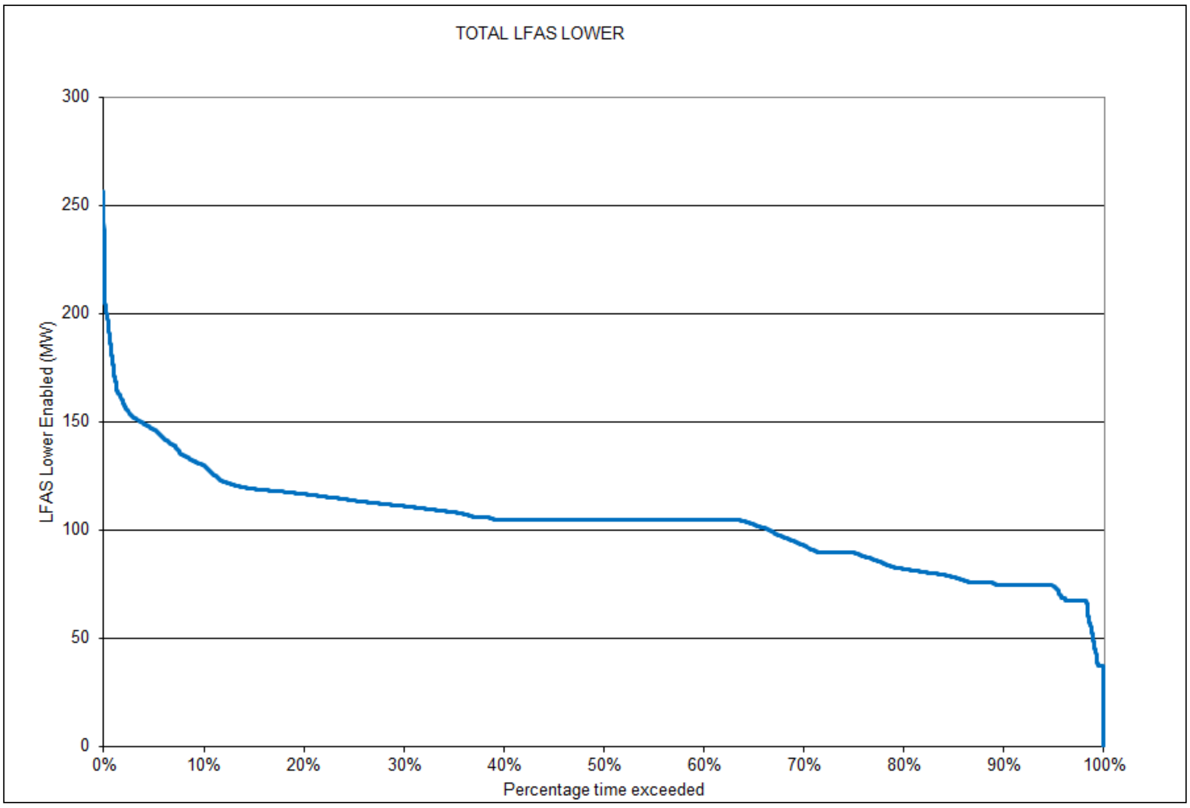


**Figure 4- Historic LFAS lower 2014/15 enablement**

The enablement quantities were in excess of the LFAS Requirement for more than 95% of the time. As mentioned earlier, this is primarily due to generators enabled for LFAS being brought on line in 'block' increments, rather than the minimum amounts needed to meet the LFAS Requirement. Enablement can fall below the LFAS Requirement for short periods due to Facility failures or communication failures between East Perth Control Centre and the Facility.

### 2.1.2 Adequacy of Quantities Enabled

Clause 3.11.11(a) of the Market Rules requires the Ancillary Services report to set out the adequacy of quantities provided in the preceding year. In the context of LFAS, adequacy is determined by assessing whether the approved Ancillary Service Requirement for LFAS was met.

In terms of a quantity, the 2013 Ancillary Service report approved by the IMO specified that the general LFAS Requirement for the 2013/14 year was +/- 72MW. In the absence of an approved report for 2014/15, System Management applied the same +/-72MW quantity during that year.

To assess the adequacy of LFAS, System Management examined the distribution of the system frequency over the preceding two year period to determine if the quantity applied (+/- 72MW) was sufficient. The historic performance is given in Table 1 below.

**Table 1 – Historic Frequency Performance**

| Month | Time within | | Average Hz | Standard Deviation Hz |
|---|---|---|---|---|
| | 49.8-50.2 Hz | 49.975-50.025 Hz | | |
| May-13 | 99.98% | 91.88% | 50.00 | 0.016 |
| Jun-13 | 99.99% | 89.80% | 50.00 | 0.017 |
| Jul-13 | 99.98% | 90.62% | 50.00 | 0.017 |
| Aug-13 | 99.98% | 87.37% | 50.00 | 0.019 |
| Sep-13 | 99.97% | 84.79% | 50.00 | 0.020 |
| Oct-13 | 99.98% | 89.09% | 50.00 | 0.021 |
| Nov-13 | 99.98% | 89.16% | 50.00 | 0.018 |
| Dec-13 | 99.98% | 90.71% | 50.00 | 0.015 |
| Jan-14 | 100.00% | 91.06% | 50.00 | 0.015 |
| Feb-14 | 100.00% | 91.12% | 50.00 | 0.015 |
| Mar-14 | 100.00% | 91.44% | 50.00 | 0.015 |
| Apr-14 | 100.00% | 90.01% | 50.00 | 0.015 |
| May-14 | 99.99% | 88.86% | 50.00 | 0.016 |
| Jun-14 | 99.99% | 88.08% | 50.00 | 0.017 |
| Jul-14 | 99.99% | 91.61% | 50.00 | 0.016 |
| Aug-14 | 100.00% | 92.53% | 50.00 | 0.014 |
| Sep-14 | 100.00% | 90.22% | 50.00 | 0.015 |
| Oct-14 | 99.99% | 86.74% | 50.00 | 0.018 |
| Nov-14 | 99.99% | 92.21% | 50.00 | 0.018 |
| Dec-14 | 100.00% | 92.26% | 50.00 | 0.015 |
| Jan-15 | 100.00% | 92.34% | 50.00 | 0.015 |
| Feb-15 | 100.00% | 93.12% | 50.00 | 0.015 |
| Mar-15 | 100.00% | 93.60% | 50.00 | 0.013 |
| Apr-15 | 100.00% | 93.34% | 50.00 | 0.014 |

Note the frequency data is based on one minute averages with periods outside the Normal Operating State frequency range (50+/-0.32Hz[2]) excluded.

Table 1 shows that for each month the frequency requirement was achieved with the frequency distribution being at least 99.9%.

This confirms that the enabled LFAS quantities referred to in section 2.1.1 were adequate to meet the last approved requirement. While the quantities enabled were greater than the

[2] Refer to clause 3.4.1(d) of the Market Rules referring to frequency deviations of greater than +/- 0.12Hz outside of those determined in accordance with clause 3.1.1 of the Market Rules

typical requirement of +/- 72MW, this is a direct result of the enablement in 'block' increments issue.

System Management acknowledges that the scope of this assessment does not consider whether there is opportunity to reduce the requirement (either as a whole or periodically). Further discussion of this is contained in section 4.2.3 of this report.

## 2.2 Spinning Reserve Service

### 2.2.1 Quantity of Spinning Reserve Service

The average Spinning Reserve Service (SRS) enabled for the period 1 May 2013 to 30 April 2014 inclusive was 299 MW (inclusive of LFAS raise) during Peak Trading Intervals (with the maximum quantity during Peak Trading Intervals being 540MW and the minimum quantity during Peak Trading Intervals being 97MW) and 273 MW (inclusive of LFAS raise) during Off-Peak Trading Intervals (with the maximum quantity during Off-Peak Trading Intervals being 690MW and the minimum quantity during Off-Peak Trading Intervals being 87MW).

The average SRS enabled for the period 1 May 2014 to 30 April 2015 inclusive was 304 MW (inclusive of LFAS raise) during Peak Trading Intervals (with the maximum quantity during Peak Trading Intervals being 694MW and the minimum quantity during Peak Trading Intervals being 119MW) and 276 MW (inclusive of LFAS raise) during Off-Peak Trading Intervals (with the maximum quantity during Off-Peak Trading Intervals being 682MW and the minimum quantity during Off-Peak Trading Intervals being 105MW).

SRS enabled during the years is shown in Figure 5 and Figure 6.

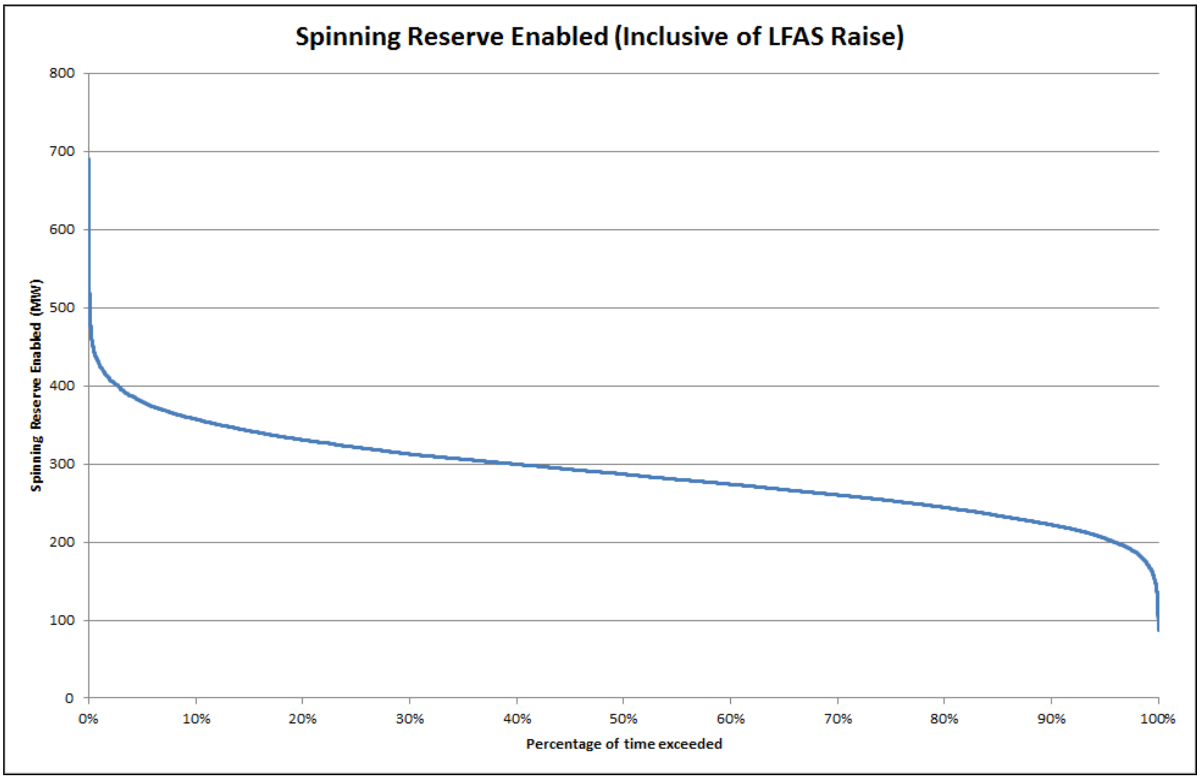


**Figure 5 - Historic Spinning Reserve 2013/14 enabled**

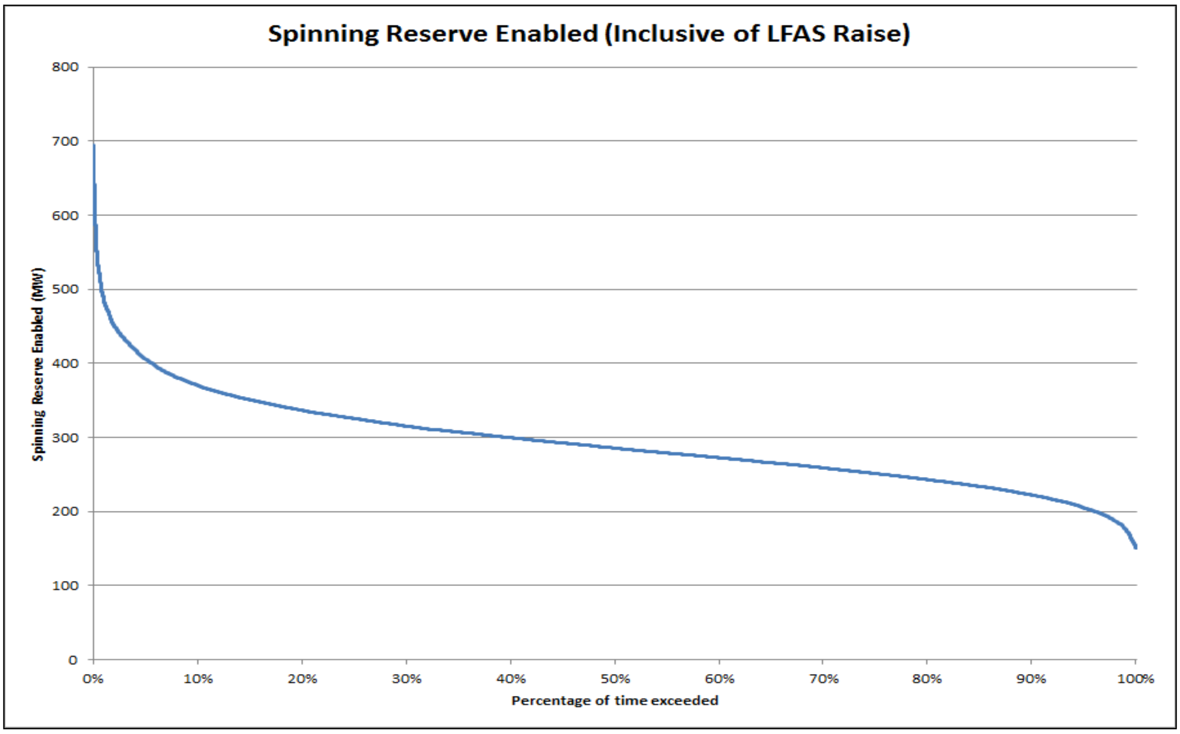


**Figure 6- Historic Spinning Reserve 2014/15 Enabled**

### 2.2.2 Adequacy of Quantities enabled

Clause 3.11.11(a) requires the Ancillary Services report to set out the adequacy of quantities provided in the preceding year. In the context of SRS, adequacy is determined by assessing whether the Ancillary Service Requirement for SRS was met. The 2013 Ancillary Service report approved by the IMO specified the Ancillary Services Requirement for SRS as:

The greater of:

- 240MW for a generator event, being 70% of Collie Power Station which has a maximum output of 340MW; or

- For the largest network event, when Bluewaters Terminal is supplied by either the MU-BLW 91 or BLW-SHO 91 line, 301MW. A forced outage of this line would result in the loss of about 430MW if both Bluewaters generators were dispatched at their full output whilst one of these transmission lines was undergoing a planned outage. This sets the SRS demand for such a network event to be 0.7 multiplied by 430MW which is approximately 301MW. Normally however, co-ordinated network and generator planned outages make this a rare event.

In the absence of an approved report for 2014/15, System Management applied the same quantities stated above for the 2014/15 period.

As seen in section 2.2.1, the average amount of SRS enabled was above the minimum SRS Ancillary Service Requirement of 240MW.

It should be noted that in the case of a generator event, more SRS than the minimum requirement will often be enabled because generators are committed/decommitted to the system that bring on line or remove large increments of spinning reserve, rather than in increments that meet the minimum requirement.

## 2.3 Load Rejection Reserve Service

### 2.3.1 Quantity of Load Rejection Reserve Service

The average Load Rejection Reserve Service (LRRS) during the period 1 May 2013 to 30 April 2014 inclusive was 370 MW during Peak Trading Intervals and 290 MW during Off-Peak Trading Intervals.

The average LRRS during the period 1 May 2014 to 30 April 2015 inclusive was 328 MW during Peak Trading Intervals and 214 MW during Off-Peak Trading Intervals.

The distribution of LRRS provided during these periods is shown in Figure 7 and Figure 8 below.

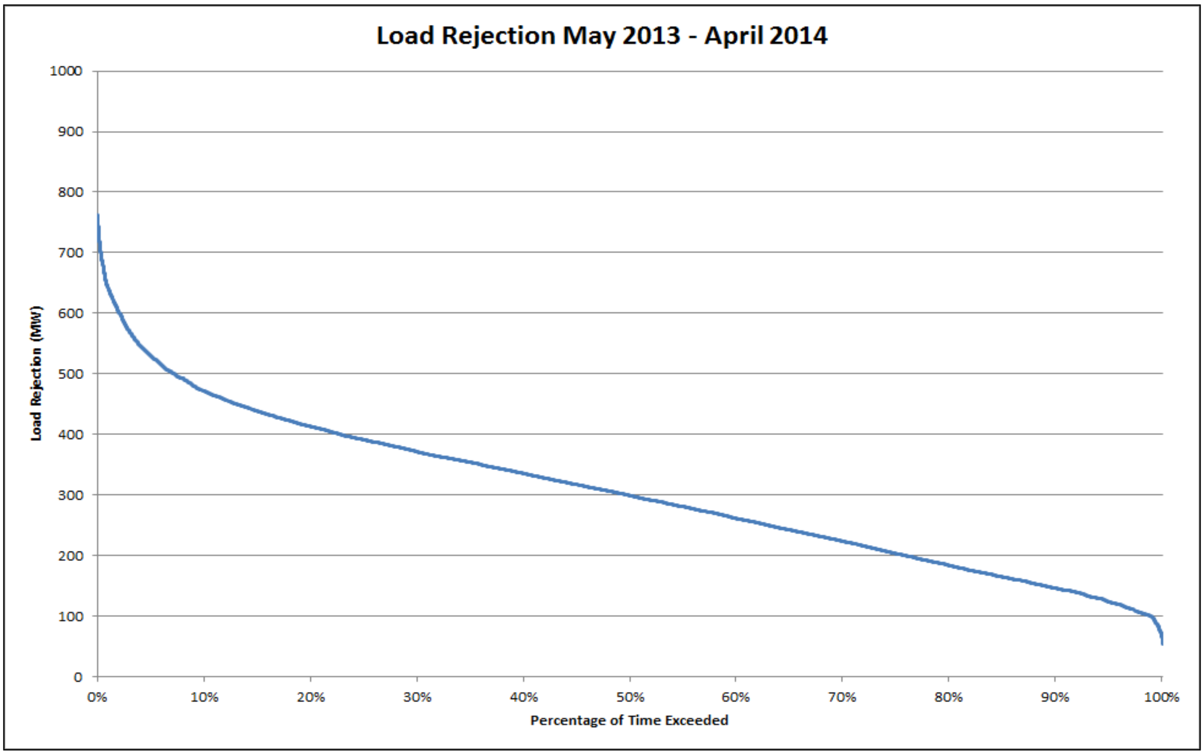


**Figure 7 - Historic 2013/14 Load Rejection Provision**

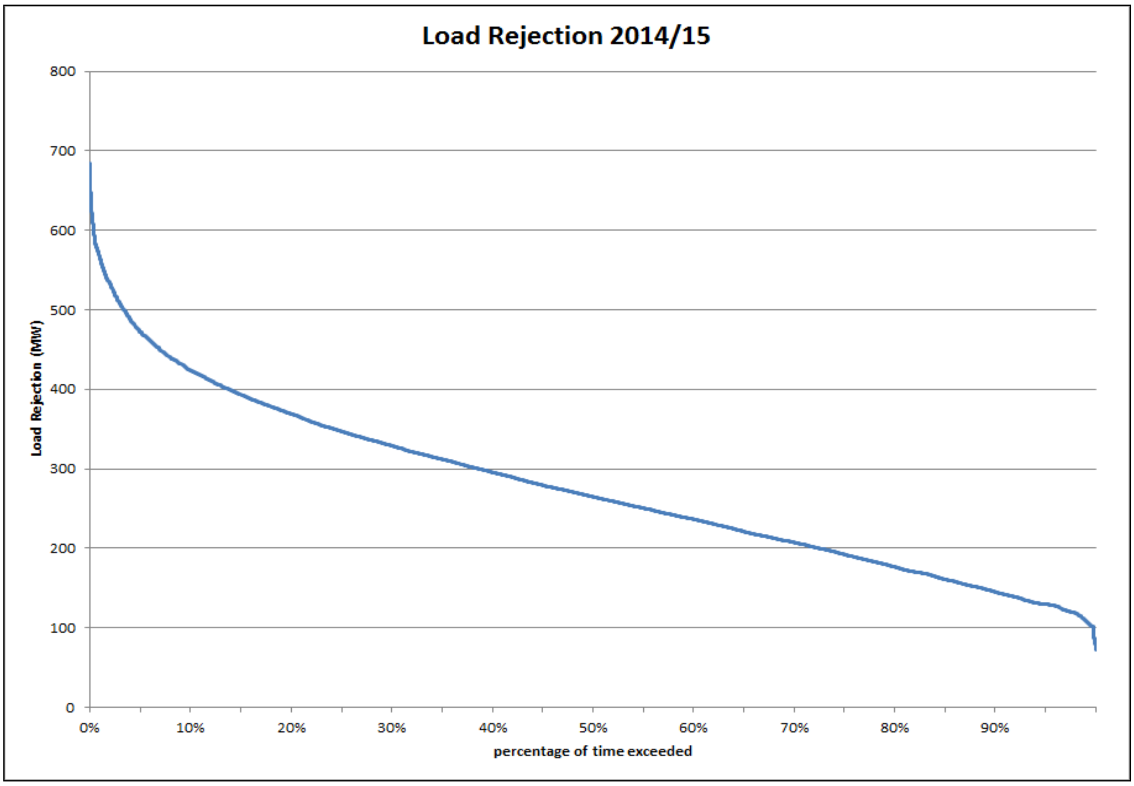


**Figure 8 - Historic 2014/15 Load Rejection Provision**

### 2.3.2 Adequacy of Quantities provided

Clause 3.11.11(a) requires the Ancillary Services report to set out the adequacy of quantities provided in the preceding year. In the context of LRRS, adequacy is determined by assessing whether the approved Ancillary Service Requirement for LRRS was met. The last IMO approved Ancillary Service Requirement for LRRS set in the 2013 Ancillary Service report was a quantity of 120MW to meet the standard that after a Single Contingency Event, frequency is to be maintained below 51 Hz. No over-frequency events above 51 Hz were recorded during 2013/14 or 2014/15.

## 2.4 Dispatch Support Service

Synergy is contracted to provide Dispatch Support Services (DSS) under an existing Ancillary Service Contract. The quantities of DSS provided under the Ancillary Service Contract for the periods 1 May 2013 to 30 April 2014, 1 May 2014 to 30 April 2015 as well as comparative information for the period 1 May 2012 to 30 April 2013, is given in Table 2 below.

**Table 2 – Historic DSS Provision**

| Dispatch Support Facility | 1/5/2014-30/4/2015 | 1/5/2013-30/4/2014 | 1/5/2012-30/4/2013 |
|---|---|---|---|
| Mungarra Gas Turbines | 61,351 MWh | 62,657 MWh | 51,834 MWh |
| Kalgoorlie Gas Turbines | 1404 MWh | 1231 MWh | 3,106 MWh |
| Geraldton Gas Turbine | 0 MWh | 0 MWh | 0 MWh |

## 2.5 System Restart Service

System Management has existing Ancillary Service Contracts for System Restart Services as set out in Table 3 below.

**Table 3 – Contracts for System Restart Services**

| Market Participant | Facility/ies | Contract Expiry | Sub-Network Area |
|---|---|---|---|
| Synergy | KWINANA_GT1 | 30 June 2016 | South Metro |
| Synergy | PINJAR_GT3 & PINJAR_GT5 | 30 June 2016 | North Metro |
| Perth Energy | PERTHENERGY_KWINANA_GT1 | 30 June 2016 | South Metro |

No System Restart Services were used in 2013/14 or 2014/15.

# 3 Cost of Ancillary Services in the Preceding Year (2013/14 & 2014/15)

The cost of each Ancillary Service for each of the following periods is set out in Table 4:

- 1 April 2012 to 31 March 2013
- 1 April 2013 to 31 March 2014
- 1 April 2014 to 31 March 2015

The costs itemized in Table 4 are defined in Market Rule 3.13.1 and are calculated and collected by the IMO on behalf of System Management.

**Table 4 – Cost of Ancillary Services**

| ANCILLARY SERVICE | Total Payment (Excluding GST) | | |
|---|---|---|---|
| | **1/4/2014 – 31/3/2015** | **1/4/2013 – 31/3/2014** | **1/4/2012 – 31/3/2013** |
| **LOAD FOLLOWING** | | | |
| **Capacity Total** | $10,807,114.82 | $13,001,881.69 | $12,352,161.14 |
| **Availability** | | | |
| Availability raise | $13,055,049.98 | $23,679,099.50 | - |
| Availability lower | $21,169,117.79 | $16,718,720.02 | - |
| **Availability Total** | $34,224,167.78 | $40,397,819.52 | $44,764,743.06 |
| **Load Following Total** | **$45,031,282.59** | **$53,399,701.21** | **$57,116,904.20** |
| **SPINNING RESERVE** | $12,300,700.58 | $18,055,126.19 | $ 21,468,550.36 |
| **LOAD REJECTION** | $0.00 | $ 0.00 | $ 0.00 |
| **SYSTEM RESTART** | $516,659.25 | $505,584.00 | $497,046.68 |
| **DISPATCH SUPPORT** | $5,428,607.41 | $4,745,982.05 | $6,011,828.22 |
| **TOTAL** | **$63,277,249.83** | **$76,706.393.45** | **$85,094,329.46**[3] |

The quantities of Ancillary Services in 2014/15 have remained at around the same levels compared to the previous year. The costs however have decreased by about 20%. System Management notes that the reduction in Spinning Reserve costs correlates to a reduction in the ERA approved ancillary service parameters used in the settlement calculations for Spinning Reserve[4]. The other notable decrease relates to LFAS costs which would appear to be a direct result of the prices determined by the LFAS Market.

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[3] This value was incorrectly reported as $90,494,045.14 in the 2013 Ancillary Services report.

[4] Refer to ERA 2014/15 determination of Spinning Reserve parameters: https://www.erawa.com.au/electricity/wholesale-electricity-market/determinations/ancillary-services-parameters/spinning-reserve-margin_peak-and-margin_off-peak

# 4 Ancillary Service Requirements and Ancillary Services Plan for Coming Year (2015/16)

## 4.1 Ancillary Service Requirements and Ancillary Services Plan for Coming Year 2015/16 Overview

Clause 3.11.11 of the Market Rules requires this report to include:

> *(c) the Ancillary Service Requirements for the coming year and the Ancillary Services plan to meet those requirements.*

The remainder of this chapter sets out for each type of Ancillary Service:

- The relevant standard/s applicable to that type of Ancillary Service and how System Management applies the standard/s
- The Ancillary Service Requirements for the 2015/16 year for that type of Ancillary Service, noting that the IMO interprets the term 'requirement' to mean the quantity/ies needed to achieve the standard/s
- The Ancillary Services plan for the Ancillary Service, being the method of procurement of the Ancillary Service type (whether by way of an Ancillary Service Contract, through an established market or other mechanisms provided for in the Market Rules) and any related future plans concerning the service.

## 4.2 Load Following Service

### 4.2.1 LFAS Standards

Market Rule 3.10.1(a) sets the LFAS Ancillary Service Standard as:

> "*a level which is sufficient to:*
>
> *provide Minimum Frequency Keeping Capacity, where the Minimum Frequency Keeping Capacity is the greater of:*
>
> *i. 30 MW; and*
>
> *ii. the capacity sufficient to cover 99.9% of the short term fluctuations in load and output of Non-Scheduled Generators and uninstructed output fluctuations from Scheduled Generators, measured as the variance of 1 minute average readings around a thirty minute rolling average."*

Market Rule 3.1.1 defines the applicable SWIS Operating Standard as:

> *"The frequency and time error standards for a Network in the SWIS are as defined in the Technical Rules that apply to that Network."*

The Technical Rules frequency standards are given in "Table 2.1 Frequency Operating Standards for the South West Interconnected Network" of those rules. This is given in Appendix 1 for reference.

For LFAS the applicable component is the "Normal Range" requirement being that system frequency shall be maintained at above 49.80 Hz and below 50.20 Hz for 99% of the time.

### 4.2.2 Application of the Standards

In an effort to comply with both standards set out in section 4.2.1, System Management targets a combined standard such that:

> System frequency is to be maintained between 49.80Hz and 50.20Hz for at least 99.9% of the time for each month.

The above combined standard remains unchanged from prior approved reports.

### 4.2.3 LFAS Requirement

The last approved Ancillary Services report set a general LFAS Ancillary Services Requirement equivalent to the operating range of two High Efficiency Gas Turbines (HEGT) at Kwinana (i.e. the range of control between their minimum and maximum outputs). In quantity terms this is +/-72MW. This level was set based on observations that this was sufficient to maintain the combined frequency standard of 99.9%.

Since the last approved Ancillary Services report in 2013, System Management has continued to observe that running two large HEGT Facilities is sufficient to ensure the necessary frequency standard of 99.9% is maintained (see Table 1 for Historic Frequency Performance).

The achievement of the historical frequency performance is primarily related to the responsiveness of the LFAS enabled units. The LFAS enabled HEGT Facilities are characteristically very fast in their response to correct the frequency and keep it within the required range. However for deeper frequency deviations and more significant load and generation fluctuations, System Management's experience is that the enablement of +/-72MW (i.e. two large HEGT Facilities) is necessary to deal with these latter more significant scenarios. In past discussions with the IMO it was indicated that an LFAS Ancillary Services Requirement of +/-66MW (i.e. one large and one smaller Facility) may be considered. However further and more recent consideration of this by System Management has resolved that this would be insufficient given the following factors.

A key input to determining any reduction in the requirement should be accurate measurements of historical LFAS usage. As noted in other reports and forums[5] these measurements are not currently available. As a result, the LFAS requirements are based on System Management's system operations experience and observations rather than actual measurements. Since the last approved Ancillary Services report, this has equated to a quantity of +/-72MW (i.e. two large HEGT Facilities) and has not changed.

While not necessarily conclusive, System Management also notes that analysis undertaken by EY during the 2014 Ancillary Services Standards and Requirements study in relation to the causes of LFAS indicated that a requirement greater than +/-72MW is necessary at times to maintain the frequency within the combined standard of

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[5] Refer to page 5 of LFAS Investigation report presentation to MAC in December 2014 (http://www.imowa.com.au/docs/default-source/Governance/Market-Advisory-Committee/4-lfas-update-for-december-2014-mac-v2-kr.pdf?sfvrsn=0) and pages 42 and 61 of the 2014 Ancillary Services Study Final Report by consultant EY (http://www.imowa.com.au/docs/default-source/rules/other-wem-consultation-docs/2014/2014-ancillary-services-study-ey-final-report.pdf?sfvrsn=0)

99.9%. System Management notes that EY qualified their work to the effect that the result of their analysis '*is not the same as the overall LFAS needed'* [6] but System Management still considers the results relevant as an indicator (rather than a conclusive measurement) when considering any potential reduction in the current level.

System Management has also investigated opportunities for sculpting the LFAS requirement in consultation with the IMO and with assistance from EY. The results of this preliminary work were presented at MAC Meeting 79 on 18 March 2015[7]. Importantly, in this process System Management recognised that to realise sculpting opportunities, given current resources and market systems, there would be a requirement to make significant enhancements to both. Progression of this work was discussed at MAC Meeting 80 on 6 May 2015 and the minutes for this meeting report the following:

> *'……due to resources being engaged on the System Management transfer to the IMO constraints and overlaps with issues being considered as part of the Electricity Market Review (EMR), the proposed work on sculpting the LFAS Requirement were not proposed to be progressed as a priority.*
>
> *MAC members discussed the complexities of accurately forecasting the required amount of LFAS and agreed on the need for fundamental issues, including the definitional boundaries between Ancillary Services and the measurement of LFAS, to be resolved.*
>
> *The Chair proposed to park the MAC discussion on LFAS and consider the issues as part of the EMR, noting that it overlapped with the Wholesale Electricity Market (WEM) improvements workstream and the project to integrate the System Management function into the IMO. MAC members agreed'.*

In the circumstances, System Management considers that it is prudent to be technically conservative and maintain the +/-72MW until such time as there is opportunity through the EMR to rationalise the provision of Ancillary Services and also opportunity to consider resourcing and systems requirements through the transfer of System Management to the IMO. Therefore the general LFAS Ancillary Services Requirement for the 2015/16 period is proposed to remain at +/-72MW.

Outside of the general requirement for +/-72MW, the maximum demand for LFAS services occurs when commissioning generators need to perform ramp up/down tests.

This is not envisaged to be more than 250MW up or down (depending on the test). For example during the ramp of a gas turbine from minimum load to maximum load of 160MW, with a normal LFAS Level of up to 90MW would equate to a total LFAS demand of 250MW.

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[6] Refer to section 9.1 of the EY Final Report on the 2014 Ancillary Service Standards and Requirements Study: http://www.imowa.com.au/docs/default-source/rules/other-wem-consultation-docs/2014/2014-ancillary-services-study-ey-final-report.pdf?sfvrsn=0

[7] Refer to EY Presentation delivered at MAC Meeting No. 79 on 18 March 2015: http://www.imowa.com.au/docs/default-source/Governance/Market-Advisory-Committee/ey-lfas-mac-presentation-2015-03-18a-final.pdf?sfvrsn=0

Note further information on the temporary increases in LFAS Levels may be found in the Commissioning and Testing Power System Operation Procedure[8].

In addition the general level can be relaxed in accordance with Market Rule 3.10.5

*"3.10.5. The level of Load Following Service, Spinning Reserve Service and Load Rejection Reserve Service may be reduced:*

*(a) following relevant contingencies; or*

*(b) where System Management cannot meet the standard without shedding load, providing that System Management considers that reducing the level is not inconsistent with maintaining Power System Security."*

### 4.2.4 LFAS Plan

#### 4.2.4.1 LFAS Market

The Market Rules have established an LFAS Market which currently consists of two competing providers. System Management sources LFAS through the LFAS Market in accordance with the Market Rules, noting that the provision of these services through the market to date has been adequate to meet the requirements.

Market Participants interested in participating in the LFAS Market should refer to the Ancillary Services Power System Operation Procedure for the Facility requirements[9].

#### 4.2.4.2 LFAS Initiatives

Over the past few years there has been an underlying concern that the cost of LFAS is high. As a result System Management and the IMO have jointly worked on initiatives to better understand the underlying causes of LFAS and sought to implement actions to reduce these causes. This work has included:

- Survey of Market Advisory Committee Members and industry carried out by System Management in 2013 seeking feedback and views in relation to relaxing the frequency control standard. Feedback to the survey was not unanimous and therefore no change was made to the application of the standards (refer to the papers for MAC meeting 59 – http://www.imowa.com.au/home/electricity/market-advisory-committee/2013/mac-59)

- The 5 year Ancillary Services Review commissioned by the IMO which made LFAS related recommendations including simplifying the LFAS standards, reducing dispatch intervals and varying BMO ramp rates together with a range of recommendations pertaining to other Ancillary Services (refer to 2014 Ancillary Services Study Final Report by consultant EY - http://www.imowa.com.au/docs/default-source/rules/other-wem-consultation-docs/2014/2014-ancillary-services-study-ey-final-report.pdf?sfvrsn=0)

[8] http://www.imowa.com.au/docs/default-source/rules/system-management---power-system-operation-procedures/ppcl0025-commissioning-and-testing-psop---clean.pdf?sfvrsn=0

[9] Refer to http://www.imowa.com.au/docs/default-source/rules/system-management---power-system-operation-procedures/ancillary_services_psop_july_2012.pdf?sfvrsn=2

- Joint IMO/System Management LFAS Investigation which identified a range of sources underlying the use of LFAS (refer to the papers for MAC meeting 77 in December 2014 for the last LFAS Investigation report - http://www.imowa.com.au/docs/default-source/Governance/Market-Advisory-Committee/4-lfas-update-for-december-2014-mac-v2-kr.pdf?sfvrsn=0

- Completed project by System Management to improve auxiliary load forecasting error related to the sources of LFAS identified by the LFAS Investigation (refer to item 4.1 in the minutes for MAC meeting 80 in May 2015 - http://www.imowa.com.au/docs/default-source/Governance/Market-Advisory-Committee/final-mac-minutes-meeting-80.pdf?sfvrsn=0)

- An investigation undertaken by EY on behalf of System Management in relation to opportunities for sculpting the LFAS requirement (refer to item 4.2 in the minutes for MAC meeting 80 in May 2015 where it was agreed that this work would not be progressed as a priority given the potential overlap with the EMR proposals - http://www.imowa.com.au/docs/default-source/Governance/Market-Advisory-Committee/final-mac-minutes-meeting-80.pdf?sfvrsn=0)

In addition to the above, the EMR currently underway contains proposals that will impact on LFAS quantity requirements, such as the Energy Market Operations and Processes workstream which proposes to examine the co-optimisation of energy and ancillary services, shorter dispatch cycles, reduced gate closure times and other relevant market operation and design matters (see Public Utilities Office Fact Sheet: Energy Market Operations and Processes for further information: https://www.finance.wa.gov.au/cms/uploadedFiles/Public_Utilities_Office/Electricity_Market_Review/Energy-Operations-and-Processes-fact-sheet.pdf).

System Management considers that these changes to market design and operation will have the most significant impact on the LFAS quantity requirements and, together with the transfer of System Management to the IMO, provides the best opportunity to address the issues surrounding LFAS.

## 4.3 Spinning Reserve Service

### 4.3.1 SRS Relevant Standards

Market Rule 3.10.2 sets the SRS Ancillary Service Standard as:

> *"is a level which satisfies the following principles:*
>
> *(a) the level must be sufficient to cover the greater of:*
>
> *i. 70% of the total output, including parasitic load, of the generation unit synchronised to the SWIS with the highest total output at that time; and*
>
> *ii. the maximum load ramp expected over a period of 15 minutes;*
>
> *(b) the level must include capacity utilised to meet the Load Following Service standard under clause 3.10.1, so that the capacity provided to meet the Load Following requirement is counted as providing part of the Spinning Reserve requirement;"*

Market Rule 3.1.1 defines the applicable SWIS Operating Standard as:

> *"The frequency and time error standards for a Network in the SWIS are as defined in the Technical Rules that apply to that Network."*

The Technical Rules frequency standards are given in “Table 2.1 Frequency Operating Standards for the South West Interconnected Network” of those rules. This is given in Appendix 1 for reference.

For SRS the relevant condition in Table 2.1 of the Technical Rules is the “Single Contingency Event” requirement being that, in the event system frequency does fall below the lower boundary of the Normal Range (49.8Hz), that it shall be maintained not to fall below 48.75 Hz, and that it must return to 49.8 - 50.2 Hz within 15 minutes.

#### 4.3.2 Application of the Standards

The SWIS Operating Standard implies that 100% of the quantity of the Single Contingency Event is to be enabled. That is to ensure that the frequency does not fall below 48.75 Hz after the loss of a 340MW generator, 340MW of spinning reserve is generally required to be dispatched.

To use the requirement set by the SWIS Operating Standard would impose a much greater cost to the market to reduce the risk of loss of supply compared to applying the Ancillary Service Standard which requires only 70% of the output of a generator related contingency to be enabled. As the occurrence of a “Single Contingency Event” in the context of the SWIS Operating Standard is very rare, the application of this standard for SRS appears to not be economically justified.

Applying the Ancillary Service Standard limits the “Single Contingency Event” to only the largest generator. This however would increase the risk to Power System Security when the largest network event has a larger impact than the largest generator event.

System Management therefore applies a combination of the standards as follows:

> The SRS requirement for 2015/16 is a level equal to at least 70% of the quantity of the largest contingency.

The above combined standard remains unchanged from previous years approved requirements.

#### 4.3.3 SRS Requirement

System Management understands that no new large generation or network configurations are proposed that would change the “Single Contingency Event” from the approved 2013 Ancillary Services report. In the circumstances applying the combined standard referred to in section 4.3.2 sets the following SRS Ancillary Services Requirement for 2015/16:

The greater of:

- The largest generation event is the loss of Collie Power Station as the largest unit on the SWIS with a maximum generated output of 340MW. This normally sets the spinning reserve demand and so, the maximum spinning reserve level that is normally required is anticipated to be 0.7 multiplied by 340MW which is approximately 240MW; or

- The largest network event is the loss of a transmission line when a power station is only being supplied by a single line. The largest instance of this is when Bluewaters Terminal is supplied by either the MU-BLW 91 or BLW-SHO 91 line. A forced outage of this line would result in the loss of about 430MW if both Bluewaters generators were dispatched at their full output whilst one of these transmission lines was undergoing a planned outage. This would set the spinning reserve demand for such a network event to be 0.7 multiplied by 430MW which is approximately 301MW.

Normally however co-ordinated network and generator planned outages make this a rare event.

The above will vary with the dispatch and commissioning plans of the various Market Participants and network outages.

Note further information on the temporary increases in SRS dispatch levels may be found in the Commissioning and Testing Power System Operating Procedure at:

http://www.imowa.com.au/docs/default-source/rules/system-management---power-system-operation-procedures/ppcl0025-commissioning-and-testing-psop---clean.pdf?sfvrsn=0

In addition, the general level can be relaxed in accordance with Market Rule 3.10.2:

*"(c) the level may be relaxed by up to 12% by System Management where it expects that the shortfall will be for a period of less than 30 minutes; and*

*(d) the level may be relaxed following activation of Spinning Reserve and may be relaxed by up to 100% if all reserves are exhausted and to maintain reserves would require involuntary load shedding. In such situations the levels must be fully restored as soon as practicable."*

### 4.3.4 SRS Plan

The Market Rules provide that the Synergy Portfolio is the default provider of SRS and Synergy's Portfolio of approximately 3,000MW of Scheduled Generators is adequate in itself to provide the SRS Ancillary Services Requirement.

The Market Rules provide that System Management may contract with alternate providers where this provides a less expensive alternative than Synergy. In this regard Simcoa has an existing contract for the provision of 42MW of SRS that has been in place since market commencement.

In the 2014/15 year, a competitive process was undertaken to procure SRS services at a discount to the administered price. This process resulted in the awarding of two short term contracts, each for 13MW, to Simcoa and Bluewaters. Both of these contracts have been renewed for a further term expiring 30 June 2016.

In the coming year, prior to the expiry of the two short term contracts, System Management will need to consider whether it will pursue another competitive process. The major factor in determining whether such a process will go ahead is the progression of EMR and any impact that this may have on Ancillary Services procurement.

## 4.4 Load Rejection Reserve Service

### 4.4.1 LRRS Relevant Standards

The LRRS Ancillary Service Standard is specified in Market Rule 3.10.4 as:

*"(a) the level sufficient to keep over-frequency below 51 Hz for all credible load rejection events;"*

Market Rule 3.1.1 defines the applicable SWIS Operating Standard:

*"The frequency and time error standards for a Network in the SWIS are as defined in the Technical Rules that apply to that Network."*

The Technical Rules frequency standards are given in “Table 2.1 Frequency Operating Standards for the South West Interconnected Network” of those rules. This is given in Appendix 1 for reference.

For LRRS the applicable component is the “Single Contingency Event” requirement being that the system frequency shall be maintained not to rise above 51.0 Hz and to return to 50.5 Hz within 2 minutes and return to 49.8 - 50.2 Hz within 15 minutes.

System Management understands that no new network configurations are proposed which would change the “Single Contingency Event” from previous years.

### 4.4.2 Applications of the Standards

The SWIS Operating Standard, as defined in the Technical Rules, encompasses the Ancillary Service Standard so System Management applies the combination of these standards as follows:

> The LRRS requirement for 2015/16 is, after a Single Contingency Event, a level sufficient to maintain the system frequency below 51.0 Hz, returned to less than 50.5 Hz within two minutes and returned to 49.8 - 50.2 Hz within 15 minutes.

This is the same standard as applied in previous years.

### 4.4.3 LRRS Requirement

The requirement is determined by the amount of load that is lost during a network fault. The network faults are generally from a short circuit on a transmission line, generally due to environmental impact. These cause severe voltage dips which in turn cause customer loads to automatically disconnect and so increasing the System Frequency.

The requirement is set by examining the load reductions that have historically occurred during a network fault event. Note previously the internal failure of a large load was also considered, however since to date this contingency has not eventuated this event is no longer a contingency to be considered.

This gives a level of LRRS of 120MW derived from:

- Actual observations of load reductions that have historically occurred during a network fault event; and

- A forecast of the largest network contingency.

In addition the general level can be relaxed in accordance with Market Rule 3.10.4:

*“(b) may be relaxed by up to 25% by System Management where it considers that the probability of transmission faults is low.”*

### 4.4.4 LRRS Plan

4.4.4.1 LRRS Providers

The Synergy Portfolio is the default provider of LRRS, which is adequate in itself to meet the LRRS Ancillary Services Requirement. In the circumstances System Management is not proposing to procure any additional LRRS.

4.4.4.2 LRRS Future Developments

At this point in time, there are no confirmed requirements for increased LRRS during the 2015/16 period.

## 4.5 Dispatch Support Service

### 4.5.1 DSS Relevant Standards

There are no applicable standards expressly for DSS.

### 4.5.2 DSS Requirement

Requirements for DSS are generally developed on a case by case basis.

There is an existing DSS contract with Synergy recognising that the Portfolio is dispatched outside of its preferred order in the Geraldton and Kalgoorlie areas for transmission outage requirements. As there is no out-of-merit compensation payable for this dispatch the Synergy DSS contract provides compensation for the dispatch, in lieu of any alternative mechanism.

Additionally, in 2014 System Management undertook an Expression of Interest (EOI) process for DSS in relation to an approved requirement as a result of the failure of Muja Bus Tie Transformers 1 and 2. However, remediation works associated with these transmission asset failures were completed and there was no further need to pursue this requirement.

No other requirement for DSS has been identified at this time.

### 4.5.3 DSS Plan

The need for the existing Synergy DSS contract is not easily predictable as it depends on the long term transmission outage requirements. System Management does not expect a significant increase in the use of this service from the current levels.

A new 330kV transmission line from Perth to Three Springs was commissioned at the end of the 2014/15 financial year. This should reduce the need for support from Mungarra under the existing Synergy DSS contract.

Potential load increases in the Kalgoorlie area may require the need to have more support from Kalgoorlie under the existing DSS contract from its historic levels of 200MWh/year. Further Muja-Kalgoorlie transmission line planned outages would result in additional needs in this area under the existing contract.

## 4.6 System Restart

### 4.6.1 System Restart Relevant Standards

Market Rule 3.10.6 sets the Ancillary Service Standard for System Restart Services:

*"The standard for System Restart Service is a level which is sufficient to meet System Management's operational plans as developed in accordance with clause 3.7.1."*

There is no applicable SWIS Operating Standard for this service.

### 4.6.2 System Restart Requirement

System Management requires that there should be at least three generating stations that can start upon black system conditions and can energise the rest of the system. Three services are required to ensure that a service is available to cover one planned and one forced outage amongst the service providers to meet the desired reliability target.

In addition System Management has determined that the black start generators should not be at the same location to mitigate the risk of common failure in the same geographic or electrical area (sub-networks).

Without this diversity the risk of having a generator being unable to start for extended periods is increased due to it being dependant on supply from a remote black start location where the restart path is not subject to network failures. This is particularly the case for generators with long start up times in the South Country should they need to be started from metropolitan black start providers.

That is, if supply to these generators is not restored quickly then they enter a warm or cold state and due to technical limitations this means the Facilities are unable to be restarted for several hours. This scenario will potentially result in a considerable delay to the restoration of supply to customers.

This scenario has arisen previously when adverse weather conditions caused a failure of the 330kV network between Perth and Collie in the morning and was not able to be restored until the weather lifted around midday. System Management consider this scenario credible.

The requirement for System Restart is based on having restart capability in each of the three electrical sub-networks being North Metropolitan, South Metropolitan and South Country.

It should be noted that certain generators with self-start facilities, such as those at Kalgoorlie, cannot restart the rest of the system due to network constraints.

Of further note is that there is no black start capability in the south country currently as previous attempts to procure a service in that area have been unsuccessful. A current tender process is underway with potential prospects for this area.

Further details regarding System Restart requirements are given on the System Management webpage at: http://www.westernpower.com.au/documents/system-management-standard-system_restart_services.pdf

The geographic delineation can be found on the System Management webpage at: http://www.westernpower.com.au/documents/system_restart_electrical_boundaries.pdf

### 4.6.3 System Restart Plan

As set out in section 2.5 Table 3, the existing three contracts for System Restart Services expire on 30 June 2016.

As a result, earlier this year System Management commenced a procurement process to ensure continuation of System Restart Services beyond expiry of the existing contracts for the North Metropolitan and South Metropolitan sub-network areas and to obtain a service in the South Country. It should be noted that any prospective provider in the South Country is likely to require a level of works that would not see the service available until sometime after 30 June 2016.

The procurement process is being carried out pursuant to the process set out in the Ancillary Service Power System Operation Procedure (PSOP). As per the PSOP the process commenced with Expressions of Interest (EOI), which closed in March 2015. There was sufficient subscription to the EOI for System Management to move to a Request for Proposal tender process. The tender was issued to potential providers shortlisted from the EOI on 3 June 2015 and is currently in progress. The outcome of the tender process is anticipated to be finalised prior to the end of 2015. In addition to this process System Management will also consider other alternatives available under the Market Rules to secure or extend existing services such that the requirements are fully met

# 5 Appendix 1

Technical Rules Table 2.1 Frequency Operating Standards for the South West Interconnected Network

TECHNICAL RULES FOR THE SOUTH WEST INTERCONNECTED NETWORK

SECTION 2 – TRANSMISSION AND DISTRIBUTION SYSTEM PERFORMANCE AND PLANNING CRITERIA

**Table 2.1** ***Frequency operating standards*** **for the** ***South West Interconnected Network.***

| **Condition** | ***Frequency*** **Band** | **Target Recovery Time** |
|---|---|---|
| Normal Range: | | |
| South West | 49.8 to 50.2 Hz for 99% of the time | |
| Island[1] | 49.5 to 50.5 Hz | |
| *Single contingency event* | 48.75 to 51 Hz | Normal Range: within 15 minutes.<br><br>For over-*frequency* events: below 50.5 Hz within 2 minutes |
| Multiple *contingency event* | 47.0 to 52.0 Hz | Normal Range within 15 minutes<br><br>For under-*frequency* events:<br><br>(a) above 47.5 Hz within 10 seconds<br><br>(b) above 48.0 Hz within 5 minutes<br><br>(c) above 48.5 Hz within 15 minutes.<br><br>(d) For over-*frequency* events:<br><br>(e) below 51.5 Hz within 1 minute<br><br>(f) below 51.0 Hz within 2 minutes<br><br>(g) below 50.5 Hz within 5 minutes |

**Note:**

An island is formed when the *interconnection* between parts of the *interconnected transmission system* is broken, for example if the *interconnection* between the Goldfields region and remainder of the power system is broken.