



INDEPENDENT  
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# Margin Values Review 2015/16 Presentation to MAC Meeting

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# Synopsis

Provide overview of the annual Margin Value review, including :

- Background
- How Margin Values compensate Synergy for providing Spinning Reserve services
- Process & Modelling
- Margin Values 2015/16 & Spinning Reserve cost outcomes
- Next Margin Value review 2016/17

# Background

- Historically Margin Values were used to determine an administered price for LFAS & Spinning Reserve for Synergy. Margin Values process has limitations and is affected by the accuracy of modelling and the input assumptions.
- Ideally a co-optimised energy and Ancillary Services market would better achieve cost reflectivity, promote competition and provide a more efficient dispatch outcome. This has been on the MEP priority list and we await Phase 2 of EMR work stream to progress development.
- IMO introduced the competitive LFAS markets from 1 July 2012. This has added complexities in the existing Margin Value process.

# Current Spinning Reserve Requirement

In the WEM **Spinning Reserve services** are used to retard the frequency decline associated with a loss of generation or transmission from the system.

The system requirement is to procure 70% of the generating unit producing the largest total output in that period, where the provision is to come from:

- from Simcoa interruptible loads <sup>[1]</sup> and Bluewaters units <sup>[2]</sup> contracted to provide 68MW;
- from Load Following Up Services (72MW LFAS enablement), and
- The remaining requirement is from Synergy as the default provider of Spinning Reserve services.

# Margin Values

The **Margin Values** review is an annual process and provides a mechanism for Synergy to recover their cost for being the default provider of **Spinning Reserve services**.

Two Margin Values are calculated, **Margin Peak** and **Margin-Off Peak**. These values are applied to the respective Balancing Price in the settlement calculations (clause 9.9.2), to determine an administered price to compensate Synergy during peak and off-peak periods for :

- The profit margin Synergy could reasonably have been expected to earn on **energy sales forgone** due to the supply of Spinning Reserve Service; and
- The **loss in efficiency** of Synergy's scheduled generators that System Management has scheduled to provide Spinning Reserve Service that could reasonably be expected due to the scheduling of those reserves.

# Margin Value Review

## Draft Assumptions

- **AUG 2014** - IMO reviewed prior year's model to determine draft assumptions for 2015/16. This includes consultation with System Management about system and network assumptions.

## Public Consultation for Assumptions & Methodology

- **3 OCT 2014** - Published **Draft Public Assumption Report** and invited public submissions on the methodology and inputs used for Margin Value modelling.
- **6 OCT 2014** - IMO directly emailed Market Generators seeking input for their private generator assumptions used for modelling. 13 of 25 Market Generators update their assumptions.

## Revise Assumptions Report

- **27 OCT 2014** – Finalised methodology and input assumptions after receiving public submissions and Market Participant feedback.

## Modelling

- **31 OCT to 18 NOV 2014** – Jacobs (consultant) performed PLEXOS market simulation models and submits draft Margin Peak and Margin Off-Peak parameters for 2015/16.

## Review results & Margin Values Report

- **18 NOV to 27 NOV 2014** – IMO reviewed Margin Values report and analysed outcomes.
- **28 NOV 2014** - Margin Values Review proposal was submitted to the ERA<sup>[3]</sup>

## ERA Determination of Margin Values

- **4 MAR 2015** - Published issues paper for 2015/16 determination of Margin Peak and Margin Off-Peak parameters and invited public submissions
- **31 MAR 2015** - Published 2015/16 determination of Margin Peak and Margin Off-Peak parameters paper.

# Availability Cost Modelling

An important input in determining the margin values is the **Availability Cost** for Synergy, which represents Synergy's modelled cost of providing Spinning Reserve service for the year.

To estimate the **Availability Cost for Synergy**, Jacobs input the final assumptions and modelled four scenarios (ten times) to isolate the costs of Spinning Reserve (SR) and Load Rejection Reserve (LRR).

- Scenario A: no SR, given no LRR (base line)
- Scenario B: SR, given no LRR
- Scenario C: LRR, given no SR
- Scenario D: LRR, given SR

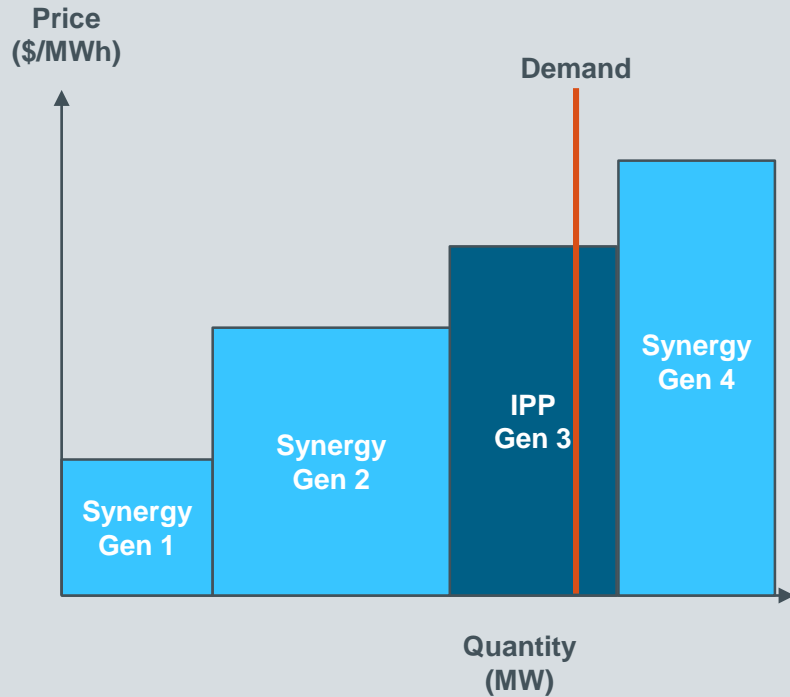
By modelling the above scenarios the cost of Spinning Reserve services can be inferred and the average Availability Cost is determined for Synergy by:

**Scenario B:SR, no LRR - Scenario A:no SR, no LRR + (LRR+SR Interaction Cost \* SR proportion)**

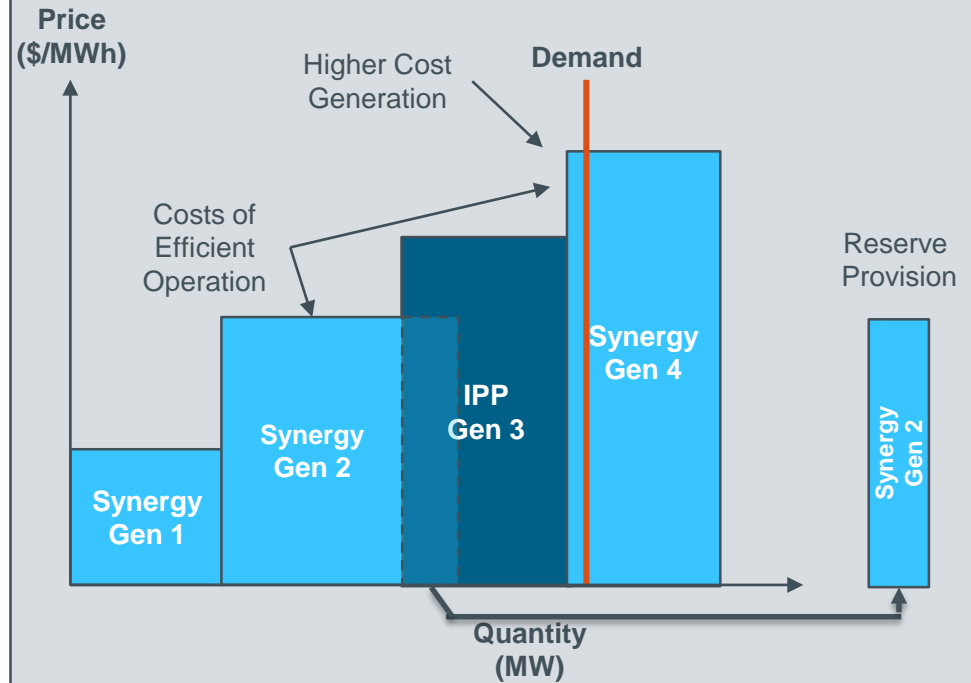
Load Rejection Reserve (LRR) of 120 MW was introduced and modelled this year due to a study prompted by System Management that suggested a cost was associated with providing LRR<sup>[4]</sup>.

# Example of Availability Cost for Synergy in an interval

## Model without Spinning Reserve

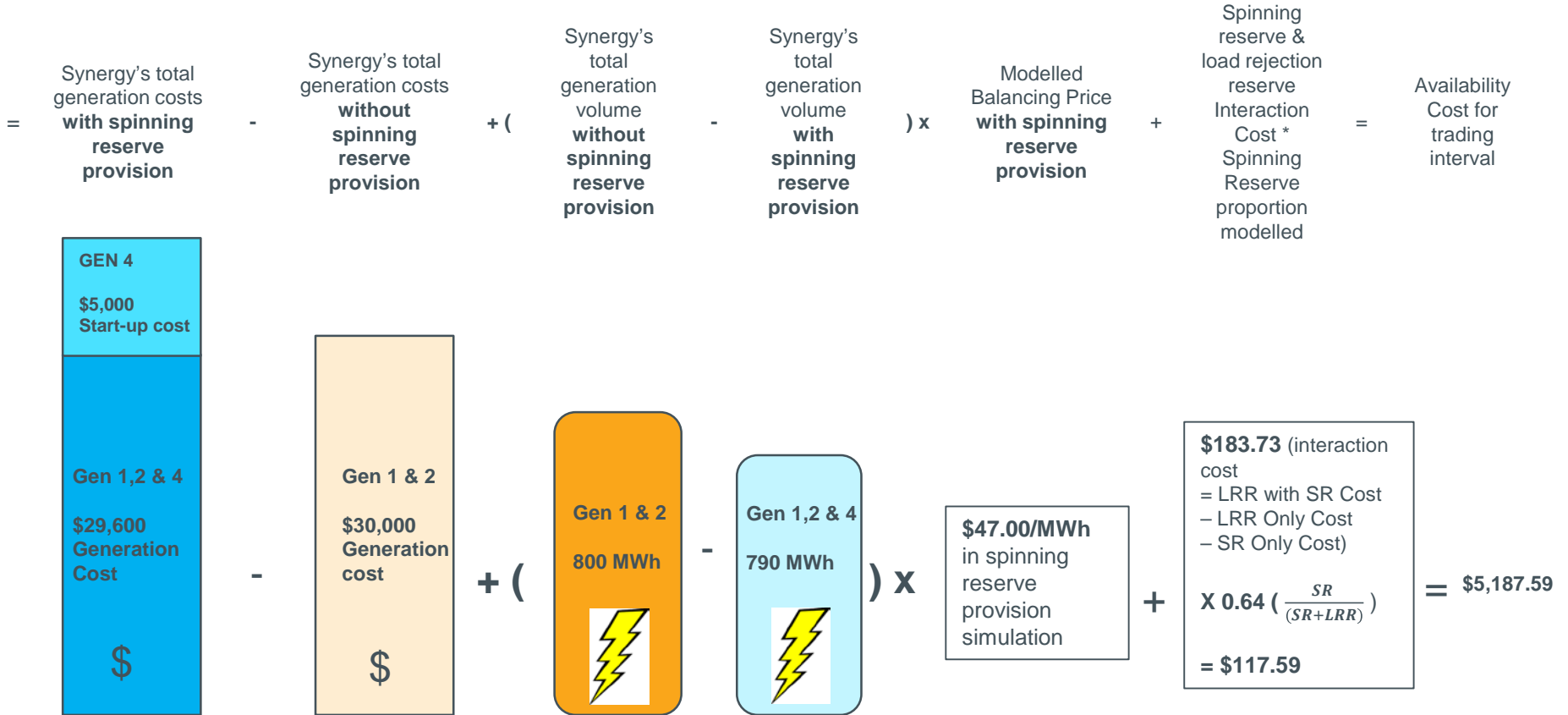


## Model with Spinning Reserve





# The Availability Cost for Synergy was modelled using the below formula on interval basis



# Margin Values Calculation

The Margin Values are then calculated using a re-arrangement of settlement formula in clause 9.9.2(f), given by:

$$\text{Margin Value} = \frac{2 \times \text{Modelled SR Availability Payment to Synergy } (t)}{\text{Modelled Balancing Price in } \$/\text{MWh } (t) \times \text{Modelled SR provision by Synergy in MW } (t)}$$

Where:

- *Modelled SR Availability Payment* (t) for a given trading interval
- *Modelled SR modelled provision by Synergy in MW* (t) for a given trading interval
- *Modelled Balancing Price modelled in \$/MWh*(t) for a given trading interval in Spinning Reserve scenario
- *t* is a Trading Interval in the year

Jacobs calculates the Margin Values by:

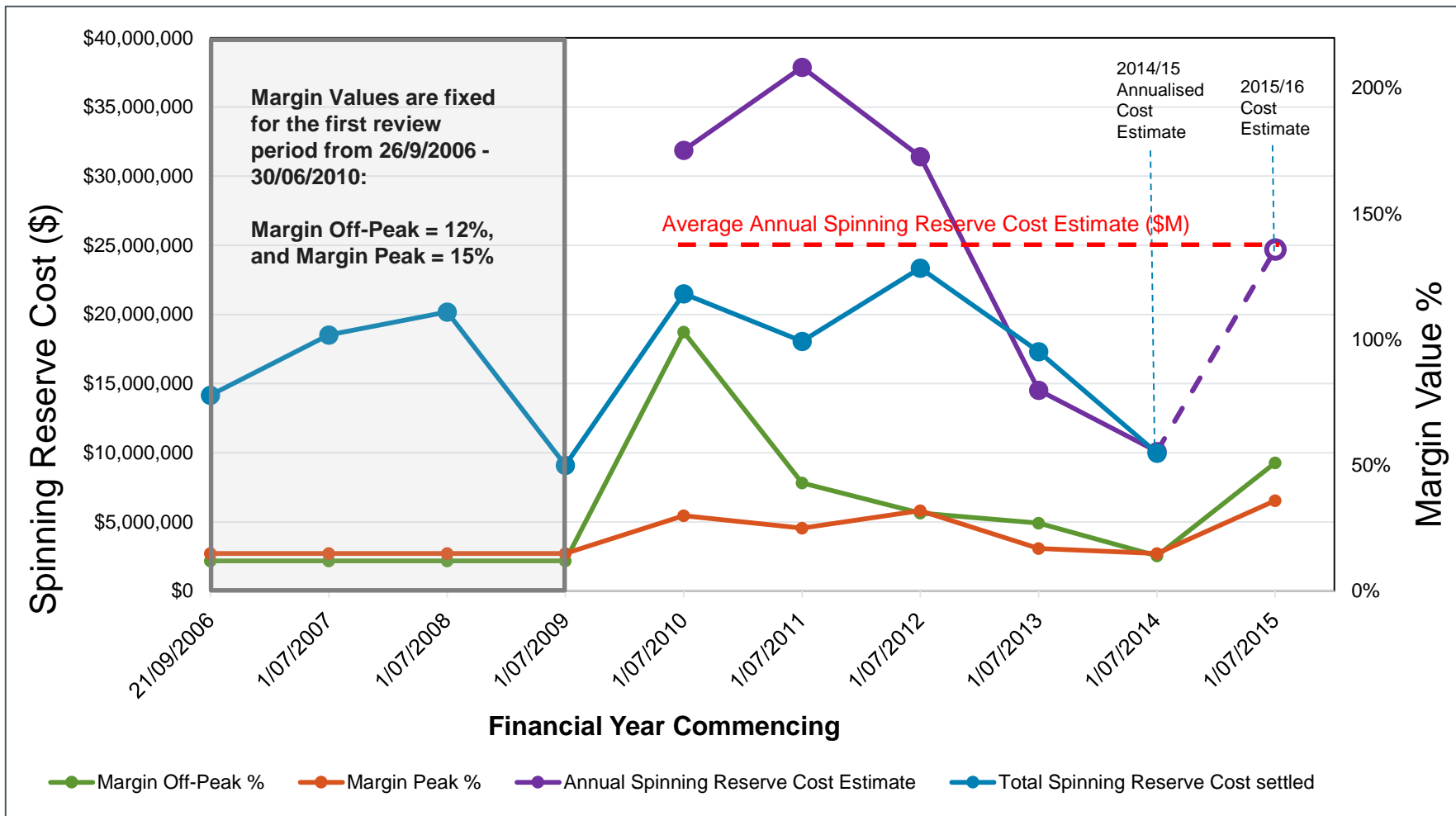
1. modelling the inputs on an interval basis for each of the Peak and Off- Peak periods;
2. summing the interval results for each of the respective Peak and Off-Peak periods; and
3. then applying the formula above to determine the **Margin Peak** and **Margin-Off Peak values** for the respective periods.

# Margin Values 2015/16 vs 2014/15

Margin Values	Modelled 2015/16	Modelled 2014/15
Margin Peak (%)	36%	15%
Margin Off-Peak (%)	51%	14%
Average Annual Spinning Reserve Capacity Peak (MW)	208.84	220.48
Average Annual Spinning Reserve Capacity Off-Peak (MW)	178.44	201.29
Average Balancing Price Peak (\$/MWh)	47.23	45.83
Average Balancing Price Off-Peak (\$/MWh)	32.98	31.10
Synergy Availability Cost (\$M)	8.32	5.11
Average Interaction Cost from LRR and SR (\$M)	0.95	NA
Annual Spinning Reserve Cost Estimate (\$M)	24.70	10.09
Average Annual Spinning Reserve Cost Estimate (\$M) since 2010	25.0	

- In 2014/15 the estimated annual actual Spinning Reserve cost was 9.98M

# Spinning Reserve Costs



# Cost drivers for higher Margin Values 2015/16

Primary reason for higher Margin Values in 2015/16 was Synergy's **higher Availability Cost** of 8.32M.

The contributing factors for a higher Availability Cost were :

- Synergy's Portfolio for the provision of Spinning Reserve has been restricted, requiring the use of higher cost Synergy facilities and more start-up costs, due to:
  - Retirement of base load generators Kwinana G5 (135 MW SR capacity) and Kwinana G6 (135 MW SR capacity);
  - Disqualification of Cockburn CCGT from providing Spinning Reserve including indirectly via LFAS UP;
  - Disqualification of NewGen Kwinana CCGT from providing Spinning Reserve indirectly through LFAS UP; and
  - Muja 5 - 8 units each have reduced their maximum Spinning Reserve provision from 20MW to 15MW.
- The inclusion of the 120MW Load Rejection Reserve constraint this year (Interaction cost apportionment).

Consequently, IPP Spinning Reserve contracts cost will rise as they are “pegged” to the Margin Values determined.

The Spinning Reserve Contracts are procured at a discounted rate to Synergy's Margin Value payment.

# Margin Values Review 2016/17

Actions for 2016/17:

- Review input assumptions for:
  - LFAS Up quantities which do not qualify for Spinning Reserve, and explore options mentioned in the MAC Meeting No.79 Papers [6].
  - Unit commitment costs (No. of start-ups and costs associated with warm to hot start-up); and
  - Load Rejection Requirements and the Interaction cost.
- Consider backcasting the modelled outcomes with actual results available. This is consistent with ERA's recommendation in their Determination Report [7].
- Discuss opportunities for increasing quantity of Spinning Reserve contracted with System Management, as the contracts are always provided at discount to the Margin Value payment per MW.