System Management

Allowable Revenue Application

30 November 2006

Table of Contents

1 Purpose

System Management is a segregated business unit of Electricity Networks Corporation (**Western Power**) and has the function of operating the South West interconnected system (**SWIS**) in a secure and reliable manner.

The wholesale electricity market began on 21 September 2006, with the commencement of the majority of the *Wholesale Electricity Market Amending Rules (September 2006)* (**Market Rules**). Clause 2.23.3 of the Market Rules requires that, by 30 November prior to each Review Period, System Management is to submit a proposal of the costs of undertaking its functions in the wholesale electricity market to the Economic Regulation Authority (**Authority**) for approval.

These costs must be for the services provided by System Management and are:

- system operation services (all of System Management's functions and obligations except for the provision of ancillary services); and
- costs in relation to the provision of ancillary services.

The "Review Period" is defined as the three year period commencing 1 July in the year after Energy Market Commencement. The Review Period will therefore commence on 1 July 2007 and conclude on 30 June 2010.

By 31 March 2007 the Authority must determine the allowable revenue of System Management for the Review Period, taking into account the requirements of clause 2.23.12 of the Market Rules.

This document is submitted to satisfy System Management's obligations under clause 2.23.3 of the Market Rules.

This document:

- provides an overview of the role, functions and powers of System Management;
- describes the institutional and governance arrangements that exist for the Western Australian electricity market;
- describes the various components and drivers of the allowable revenue that System Management must recover under clause 2.23 of the Market Rules;
- provides a detailed substantiation of System Management's forecast costs for the Review Period;
- provides a detailed substantiation of System Management's Ancillary Services costs for the Review Period; and
- benchmarks the costs of providing similar services in other jurisdictions (Appendix B).

2 System Management

2.1 Role, Functions and Powers

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.

One of the core functions undertaken by Western Power is the management of the electricity transmission and distribution networks. 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 SWIS in a secure and reliable manner.

Clause 2.2 of the Market Rules confers this responsibility upon the segregated ("ringfenced") business unit of Western Power known as System Management. The functions of System Management are to:

- schedule and dispatch Verve Energy facilities and issue dispatch instructions to other market participants;
- procure adequate ancillary services where Verve Energy cannot meet the ancillary service requirements;
- assist the IMO in the processing of applications for participation and for the registration, de-registration and transfer of facilities;
- develop market procedures, and amendments and replacements for them, where required by the Market Rules;
- conduct tests of equipment;
- release information required by the Market Rules;
- monitor rule participants compliance with the Market Rules relating to dispatch and power system security and power system reliability; and
- provide regular reports to the IMO and other market participants.

In addition, System Management conducts short and medium term system planning (short term and medium term PASA, or projected assessment of system adequacy) and outage scheduling, as set out in chapter 3 of the Market Rules.

3 Institutional and Governance Arrangements

The new electricity market commenced on 21 September 2006 with the primary objective of establishing a market for the trading of electricity and to ensure that, in the longer term, sufficient generation capacity is available in the SWIS. The operation of the market is set out in detail in the Market Rules and is administered by a new statutory corporation, the Independent Market Operator (**IMO**).

The creation of the wholesale market was a Government initiative and has been brought about amongst a number of other electricity reform objectives. The market is intended to foster a competitive environment in relation to the generation and sale of electricity within the State.

The main instrument governing the operation of the Western Australian electricity market is the Market Rules. This legislative instrument governs the relationship of market participants, outlines the roles and responsibilities of various players and provides a framework for market operations, capacity arrangements and the "auction" which occurs each trading day.

As indicated above, System Management plays a critical role in the market in relation to maintaining system security and reliability, as well as providing support to the IMO regarding the latter's function in market settlement.

4 First Review period

It is important to explore the context surrounding this first review period.

This application for allowable revenue for a three year period is made just two months after the commencement of the wholesale market. Therefore, the forecast costs included within this submission represent System Management's best assessment of costs involved in

satisfying its market functions. There is little in the way of "precedent" to underpin cost estimates, or to serve as a guide for likely future expenditure.

Nevertheless, System Management's experience in the first few weeks of the wholesale electricity market is that it is very labour intensive, with a significant requirement for manual intervention by staff. System Management has therefore assessed the requirements imposed by the Market Rules and made cost allowances commensurate with these requirements. Indeed, part of System Management's expenditure program is to provide further IT facilities to streamline the provision of information to the IMO.

It is very important to note that the forecast costs included in this submission do not represent an immutable allocation. Should System Management's forecasts vary from actuals, a number of mechanisms exist within the Market Rules to ensure that System Management recovers only the amounts from market participants which reflect the cost of the system operation services.

Of particular note is the presence of clauses 2.23.7 and 2.23.8 of the Market Rules. The former provision creates a notional "unders and overs" account where discrepancies between a year's budget forecast and actual revenue are corrected in the following year, while the latter provides that where actual recovery is likely to be more than 15% greater than the allowable revenue, then System Management must apply to the Authority to reassess the allowable revenue.

In addition, System Management is required to provide the annual budget, which must be consistent with the approved allowable revenue, to the IMO.

Over the course of the review period historical data will become available that can be used to analyse trends in expenditure and provide a foundation from which to forecast future expenditure. System Management is confident that the first budget submission is a reasonable estimate of the costs a service provider would be likely to incur going into a market of significant uncertainty. The demonstration that costs forecast are well below those of comparable service providers should also provide the Authority with comfort that the participant fees recovered from the market will be at a reasonable and sustainable level.

5 System Operations Services

5.1 Introduction

As required under clause 2.23.1 of the Market Rules, System Management is to submit its forecast costs for the provision of system operation services, which include all of System Management's functions and obligations under the Market Rules except those concerning the provision of ancillary services.

Consistent with its functions being both "market" and "network" in character, System Management's network functions are funded through the normal Western Power budget process. The allowable cost of system operation services – relating only to System Management's market responsibilities – are to be recovered from market participants by way of the system operation fee (clause 9.13 of the Market Rules).

System Management has therefore sought to identify the costs which relate to its market functions.

It is emphasised that there is no over-recovery of costs; amounts allowed for the "network" funding of System Management are not included in the total costs sought under the Market Rules. Those "network" costs have been segregated from the Allowable Revenue claim and included in Western Power's proposed Access Arrangement for recovery through tariff revenue.

System Management's total costs for system operation services have been extracted in the table which follows.

Table 1 – System Operation Services

Expense category ($'000)	**2007/08**	**2008/09**	**2009/10**
Labour costs	2,890	3,063	3,247
Functional costs	350	300	320
Legal costs	300	330	363
Self-insurance costs	500	500	500
IT costs	1,252	1,518	682
Total costs	**5,292**	**5,711**	**5,112**

The proposed total costs for the budgetary period have been derived based on meeting the requirements under the Market Rules, in accordance with a standard consistent with good electricity industry practice.

System Management has endeavoured to achieve the lowest sustainable cost of providing services; thereby supporting the new electricity market and fostering a competitive environment.

5.2 Labour costs

5.2.1 General drivers

The biggest cost driver is human capital within System Management, because of the labour intensive nature of system operation services in the market.

System Management is a division of Western Power staffed by approximately 156 FTEs. System Management is structured into four branches (which are discussed in turn below), and illustrated graphically in Appendix A.

The budget for market purposes (for 2006/07) approved by the Minister for Energy includes a salary and on-costs component of $2.1m, reflecting 14 FTEs concerned with market functions. It is important to note that this staffing level reflected System Management's expectations prior to the commencement of the new wholesale market.

Since the formulation of the previous budget, the arrival of the market and a greater understanding of System Management's functions have necessitated revisions to expectations for staff numbers and the accompanying cost.

It is now considered that 19.1 FTEs are required to perform System Management's functions under the Market Rules. The increase in labour numbers is due to the identified need for an additional 5 resources across the Market Operations (2), Market Strategic Development (2) sections and the SCADA and Information Systems Branch (1).

The identification of the additional staff is the result of a better understanding of the workload in the market. Some of the additional functions System Management is required to undertake in accordance with the Market Rules include:

- ongoing manual intervention requirements for data transfer;

- additional reporting responsibilities;
- compilation of procedures and documents for rule participants;
- additional compliance activities;
- processing applications from market participants (including provision for out-of-hours coverage); and
- information management and disclosure requirements.

These additional responsibilities, as well as numerous other obligations, require additional resources to be included in an appropriately resourced division.

5.2.2 Labour on-costs

A provision has been made for employee entitlements accumulated as a result of employees rendering services up to the reporting date for accounting purposes. These entitlements include relevant on-costs for all staff. As such, System Management has included an amount for on-costs of those staff performing market related functions.

System Management has calculated the on-costs related to staff based on Australian standards, specifically AASB 1028: Employee Benefits and AASB 119: Employee Benefits. Provision may be made for on-costs where it is recognised that a future sacrifice of economic benefits will probably be required and the amount of the provision can be measured reliably.

The method adopted by Western Power for estimating this liability is to allow for approximately 30% on-costs in addition to salary. These on-costs include:

- superannuation based on the standard 9%, plus an additional amount to provide for those staff who are entitled to superannuation under other more generous arrangements (such as the Gold State scheme);
- compensated absences, such as long service leave, annual leave, public holidays, etc;
- payroll tax that Western Power is liable for; and
- workers compensation components based on actual historic expenditure.

The practice of Western Power has been to include an adjustment for retrospective payments to recover any overpayments to staff as a result of errors in payroll processes. This amount is included as an on-cost for staff as it is a cost incurred by the company for employing staff.

The Australian Standard as specified by the Department of Treasury recognises that on-costs are estimates based on the best available information at the time. As such, the method used by System Management for determining the allocation of costs is to estimate the liability based on the amount expected to be paid in a future reporting period. Given that Western Power has been in operation (in a number of guises) for a significant period it is reasonable to utilise historic information in order to establish future estimated costs related to staff.

System Management has calculated that the historic expenditure related to those on-costs listed above equates to 30% of labour costs.

5.2.3 Forecast labour costs

The table below provides greater detail as to the labour costs for specific branches in System Management. Relevantly:

- the amounts shown in the table include 30% on-costs; and

- the number in parentheses reflects the FTE staff numbers related to the allocated labour cost.

Table 2 - Labour

Labour category ($'000)	**2007/08**	**2008/09**	**2009/10**
Management	238 (1)	252 (1)	267 (1)
Planning & Market Operations	1,456 (10)	1,543 (10)	1,636 (10)
System Control	793 (5)	841 (5)	891 (5)
Network Operations	13 (0.1)	14 (0.1)	15 (0.1)
SCADA	390 (3)	413 (3)	438 (3)
Total Labour costs	**2,890**	**3,063**	**3,247**

This staffing level is expected to be maintained for the duration of the review period, barring further Market Rule changes altering the scope of System Management's functions. The salary component is therefore largely stable, with an annual escalation applied to reflect expected salary movements. This escalation amount has been set at 6% per annum.

5.2.4 Management

The cost allocated under this category reflects the "market" time allocated to the General Manager of the division, as well as the Manager, System Operation Control and the Manager, Planning and Market Operations.

It is considered that approximately 30% of each manager's time is spent on market activities. Labour costs have been allocated accordingly.

5.2.5 Planning and Market Operations

The Planning and Market Operations Branch has principal responsibility for most aspects of System Management's functions under the Market Rules. This branch handles:

- outage scheduling;
- medium and short term PASA;
- transmission constraint and system security planning;
- operational load forecasts;
- scheduling and trading day information for the IMO;
- ancillary service identification and procurement;
- development of IT interfaces;
- market operations and monitoring;
- market investigations;
- maintaining and developing power system operating procedures;
- governance arrangements; and

- dispute resolution and legal issues.

The functions of this branch are undertaken by 15 FTEs, which includes staff who carry out "network" related functions. Of these, 10 FTEs will be required to carry out the market related functions listed above.

An annual availability payment of $80,000 (escalated) has been included in this branch's labour cost allocation. This amount represents payments to the System Operations Programming Engineers for outage planning outside of normal business hours.

5.2.6 System Operation Control

This branch holds responsibility for controlling SWIS operations in accordance with the Market Rules, including recommending changes to facilitate the effective operation of the SWIS. The functions of the System Operation Control Branch include:

- generation dispatch including demand management;
- real time system security and contingency analysis;
- voltage and frequency control;
- data input for settlement process for IMO;
- switching operations;
- market participant compliance; and
- development of control room instructions.

The functions of this branch are undertaken by 31 FTEs, the majority of whom carry out "network" related activities. Of these, five FTEs will be necessary to carry out market related functions. This equates to two-thirds of the labour costs of the six senior (generation) controllers and one FTE with responsibility for engineering support for the control room.

5.2.7 SCADA and Information Systems

The SCADA and Information Systems Branch has responsibility for developing, maintaining and operating the supervisory control and data acquisition systems (SCADA) used by System Management for monitoring and controlling the real time operation of the SWIS power system.

The branch's functions include:

- master station responsibility;
- SCADA System administration and security;
- SCADA applications and replacement;
- Remote Terminal Unit maintenance;
- maintaining backup EBS's;
- DMS – ENMAC;
- EMS-XA/21; and
- benefits realization.

Given that accurate measurement and monitoring of energy dispatch and consumption data is crucial to the operation of the wholesale electricity market, particularly for financial settlements, and the maintenance of network security analysis modelling tools, the support activities carried out by this branch are fundamental to successful market operations.

The SCADA branch is staffed by 28 FTEs, the majority of whom are considered to carry out "network" related activities. Of these, it is considered that three FTEs are necessary to provide specialised SCADA and information support to underpin the wholesale market functions.

5.2.8 Network Operations

This branch has responsibility for managing distribution operations, including:

- distribution network control;
- crisis management (real time);
- crisis planning/readiness;
- call centre after hours; and
- switching program management.

This branch is staffed by 58 FTEs. While network operations is almost entirely "network" related, a small component of the branch's workload has market functions. This in relation to load shedding (chapter 3 of the Market Rules) and management of linkages with distribution connected generators (eg. Land fill gas sites).

As the market involvement of this branch is largely ad hoc, it is considered appropriate to allocate 0.1 FTE.

5.3 Functional costs

System Management has forecast the recurring expenditure related to performing specific functions under the Market Rules.

As allowed under clause 2.23.12(a)(i) of the Market Rules, System Management has allocated these costs and payments for the year of the forecast expenditure.

All costs have been forecast consistent with the requirements of clause 2.23.12(b) of the Market Rules.

Functional costs are not included in the recurrent salary expenditure as they relate to consultant expenditure for advice, contractor engagement for specific activities and other specific activities. Consultancy assistance is necessary where an organisation chooses to "trade-off" the acquisition of internal staff numbers in specialist areas sufficient to fulfil its responsibilities.

The forecast functional costs are set out in the table below.

Table 3 – Functional

Functional ($'000)	**2007/08**	**2008/09**	**2009/10**
Total Functional costs	**350**	**300**	**320**

Expenditure under the "Functional costs" category relates to:

- Power System Operating Procedures.

  A number of procedures have been approved providing further definition concerning System Management's functions under the Market Rules. [1]

  System Management has allowed for non-recurrent expenditure related to the development, maintenance and updating of power system operating procedures.

- Monitoring and compliance.

  System Management is required, pursuant to clause 2.13.6 of the Market Rules, to monitor Rule Participants' behaviour for compliance with the provisions listed in clause 2.13.9. In addition, clause 8.1 of the power system operating procedure: monitoring and reporting protocol charges System Management with the ability to conduct investigations into SWIS incidents.

  While the bulk of System Management's functions in this regard will be undertaken using internal resources and expertise, it is anticipated that some external assistance will be necessary.

- Updating ancillary service requirements.

  System Management has a responsibility under clause 3.11.2 of the Market Rules to update the ancillary service requirements each year. There are also requirements under clause 3.11.11 to prepare a report for the IMO on an annual basis on ancillary services and may be a need to respond to the IMO's audit of ancillary service requirements (clause 3.11.12 of the Market Rules).

- Ancillary service contracts.

  Clause 3.11.8 of the Market Rules affords System Management the option to enter into ancillary service contracts with market participants should it be unable to meet the ancillary service requirements with Verve Energy's registered facilities, or if another option presents a less expensive alternative.

  While Verve Energy currently provides the bulk of the ancillary services required in the market, it is expected that competition for the provision of ancillary services will arise as more generating facilities connect to the system. With greater competition amongst likely suppliers of ancillary services, System Management will be required to enter into appropriate contractual arrangements.

- Corporate governance.

  System Management is required to be "ringfenced" (segregated) from the remainder of Western Power, by virtue of regulation 13 of the *Electricity Industry (Wholesale Electricity Market) Regulations 2004* and clause 2.2.1 of the Market Rules.

  In order for the requirement for segregation to have practical effect, it is necessary for System Management to develop and implement a number of processes and systems which are independent to those which apply to Western Power as a whole. Chief amongst these processes is a revised governance and risk management framework suitable for a segregated System Management.

- Audit.

[1] Current versions of the procedures are available at http://www.imowa.com.au/10_5_1_a_vi_market_procedures.htm

Clause 2.14.6 of the Market Rules provides that the IMO must, at least annually, audit System Management's compliance with the Market Rules each year. The Authority must also annually review the effectiveness of System Management in performing its market functions.

It is anticipated that System Management will incur costs in responding to the audit or effectiveness review.

5.4 Legal costs

Legal expenditure for the review period has been forecast as follows.

Table 4 – Legal costs

Legal costs ($'000)	**2007/08**	**2008/09**	**2009/10**
Total Legal costs	**300**	**330**	**363**

System Management anticipates that legal expenditure will be necessary, given the nature of the market (embodied in a complex legal instrument), its relative "newness" and the potential financial exposure of market participants. As well as the requirement for ad hoc legal advice concerning the interpretation of the Market Rules (which has proved extensive to date), with the key role System Management plays in the market it is expected that some disputes will involve System Management.

Legal expenses are extremely difficult to forecast, with the limited experience in the operation of the market to date, and System Management's previously limited need to act as a consumer of legal services. In addition, there is inherent uncertainty in forecasting for the costs involved in dealing with legal disputes; as the Authority would be aware, it is possible that a single market dispute could mean that the above forecast is inadequate.

Nevertheless, System Management has made best endeavours to forecast its legal costs for each year of the review period, set out above. In support of these values it is noted that an allocation of $250,000 was attributed to legal expenses in the budget approved by the Minister for Energy for 2006/07. Consequently, it is submitted that $300,000 (escalated by 10% in each subsequent year of the review period) is a reasonable forecast of likely expenditure.

5.5 Self-insurance costs

System Management has made provision to cover self-insurance requirements.

Advice has been received that System Management has an exposure under the *Electricity Industry Act 2004* and *Electricity Industry (Wholesale Electricity Market) Regulations 2004*. This exposure arises purely as a result of an application of the Market Rules and represents new potential liability.

With the wholesale market still in its infancy, System Management considers it would be hasty to seek to insure for the full extent of the exposure. Nevertheless, the Market Rules do provide a level of risk for System Management which it will be necessary to mitigate. As a comparison, the Authority should be aware that the National Electricity Market Management Company (**NEMMCO**) faces annual insurance premia in the order of $4.2m[2],

[2] NEMMCO Annual Report 2005/06, page 3. Note that NEMMCO incurred insurance costs of $5.1m in 2004/05.

an amount which is recovered from NEM participants in an equivalent manner to other costs which are incurred.

System Management does not consider that the risks incurred through its operation in the wholesale market are on a par to the risks faced by NEMMCO, but, an exposure exists which even with appropriate processes, staff and systems in existence, it is prudent to maintain an allocation as "self-insurance" to cover.

System Management proposes to self-insure as it is not yet able to obtain suitable insurance coverage. System Management is currently working with its insurance brokers to fully identify the risks in the market and also appropriate policies to mitigate these risks. System Management intends to shortly approach the insurance market with a view to obtaining an appropriate policy, which may lead to revisions to the amounts allocated as self-insurance within this submission.

In the absence of an ability to obtain appropriate insurance, and at least in the short term, System Management seeks to incorporate a self-insurance amount which would be included on a "carry-forward" basis. In other words, System Management will carry forward any unspent self-insurance costs into the following financial year. In the absence of such an allowance, System Management would not have an ability to cover a liability which might arise.

Clause 2.23 of the Market Rules simply contains a general provision allowing System Management to make a budget proposal consistent with allowable revenue (as defined). The composition of the budget proposal is a matter left to System Management. Clause 2.23.12 then lists the factors that the Authority must have regard to in determining the allowable revenue.

On this basis, the Authority is asked to approve the annual proposed self-insurance costs on the proviso that any amounts that were not expended during that year will accrue for use in a subsequent year within the review period. However, System Management also continues to seek appropriate insurance cover which will more efficiently mitigate its risk in operating under the Market Rules. System Management intends to be in a position to revise its forecast insurance costs prior to 31 March 2007.

Table 5 – Self-insurance costs

Cover ($'000)	**2007/08**	**2008/09**	**2009/10**
Self-insurance costs	**500**	**500**	**500**

6 IT costs

6.1 Summary

System Management is currently engaged in a program of work designed to implement the minimum IT systems and processes required to fulfil legislative obligations in the new wholesale electricity market.

The introduction of the market has resulted in the need for System Management to design, develop and implement a number of systems that support the operation of the market. Initially, System Management undertook an IT program designed to provide the minimum systems and processes.

With the initial phase of work due to be completed in the 2006/07 financial year, System Management has developed a new program of work, spread over the next review period.

The goal is to build upon and enhance the IT systems already in service and scheduled to be finalised during the current financial year, as well as redevelop and replace existing legacy IT systems not suitable for the new market environment, noting that many of these systems were retained as an interim measure only.

It should be noted by the Authority that only the minimum IT solutions were developed prior to market start. This reflects the following key factors:

- the aggressive timetable set for energy market commencement;
- the disaggregation Market Rule amendments were not drafted until November 2005 and not finally gazetted until just prior to market commencement; and
- ongoing evolution of the Market Rules and system specification, right up to market start.

The forecast IT costs for the review period are set out in the table below.

Table 6 – IT costs

IT costs ($'000)	**2007/08**	**2008/09**	**2009/10**
Phase 1 capital recovery	1,000	1,000	0
IT expenditure (capital)	152	408	562
Operating expenditure	100	110	120
Total IT costs	**1,252**	**1,518**	**682**

It is noted that all costs have been calculated in accordance with the Western Power IT&T estimation process and using the published Western Power IT&T resource rates.

Western Power's software capitalisation and depreciation policy is set up to conform with the *National Tax Equivalents Regime and The New Business Tax System (Capital Allowances) Act 2001*. Under this policy Western Power is required to capitalise software at the date it is commissioned or is installed ready for use. The software is required to be depreciated over two and a half years, on a straight-line basis.

Consequently, System Management has depreciated each year's IT program expenditure over two and a half years, commencing in the year of commissioning. System Management has determined to capitalise half a year's depreciation in the year of commissioning, with the remainder being capitalised in the two years which follow. It is submitted that this method accords with the requirements of clause 2.23.12(a)(ii) of the Market Rules.

The Authority should also be aware that the intended depreciation method accords with other comparators:

- the IMO depreciates software over three to five years (five years if the software is an integral part of the related hardware);[3] and
- NEMMCO depreciates its NEM IT Systems Software over three years.[4]

The following sections of the document detail the cost and justification for the work currently identified and planned for each of the financial years.

[3] IMO Annual Report 2005/06, page 35
[4] NEMMCO Annual Report 2005/06, page 37

6.2 Phase 1 capital recovery

Included in the costs for each of the 2007/08 and 2008/09 financial years is an amount of $1,000,000. This is to recover costs incurred by System Management that are related to market commencement, which is a total sum of $2,500,000 (with an amount of $500,000 to be recovered in the 2006/07 budget).

The Minister of Energy's approval of the System Management budget for 2006/07 included an allocation for capital recovery of the IT system costs involved in System Management's market preparations. The depreciation and recovery of this amount was to be over five years.

Recovery of this amount is considered to be consistent with the requirements of clause 2.23.12(a)(iii) of the Market Rules, which authorises the recovery of:

> *costs incurred by System Management that are related to market establishment, as designated by the Minister, are to be recovered over a period determined by the Minister from Energy Market Commencement…*

However, System Management now seeks to recover the market establishment costs over a period of two and a half years, rather than the five years originally proposed in the 2006/07 budget.

The reason for doing so is to align the depreciation of the capital expenditure required for energy market commencement with "generally accepted accounting principles". It is submitted that System Management's decision to do so is consistent with the requirements of clause 2.23.12(a)(ii) of the Market Rules.

6.3 Proposed program of work – 2007/08 financial year

The proposed expenditure in the 2007/08 financial year is targeted at improving and building upon the systems and process implemented to get System Management ready for market.

Work is also intended to stabilise the day-to-day market operations as the market itself "beds-down". The 2007/08 program of work will commence the replacement of legacy IT systems that are no longer suitable for use, as well as bring in new systems required by System Management staff and market participants generally.

The main components of this program of work and the reason for their inclusion are each detailed below. The total capital expenditure for the 2007/08 work program is $760,000 (see Table 7). In accordance with clause 2.23.12(a)(ii) of the Market Rules, this cost has been depreciated over two and a half years in Table 6.

Table 7 – 07/08 IT program of work

IT costs ($'000)	**2007/08**
NOIW	465
PASA upgrade	95
ELB Finalisation	100
Market Rule/System changes	100
Total IT program costs (07/08)	**760**

6.3.1 Replacement of Notice of Intended Works (NOIW) application

System Management has the responsibility in the market to schedule, coordinate and approve market participants' requests for outages of registered facilities.

The Notice of Intended Works (**NOIW**) system is System Management's main planning tool used to coordinate and approve transmission network circuit outages, Independent Power Producer and Verve generation machine outages.

The principal purposes of the application are to ensure system security is not compromised by an outage application and that the risk of contingencies are analysed and subsequent plans developed to cover long-term loss of supplies. NOIW is a legacy application that was first implemented within Western Power Corporation approximately 10 years ago.

NOIW functionality has evolved many times over since its original implementation and purpose. The functionality has recently changed further from its original implementation purpose (concerning purely transmission system outages) to accommodate market based processing. The changes were made as an interim measure to connect the new Market IT Systems and NOIW, and to ensure that System Management could perform outage scheduling at market start.

NOIW, while having been made to work for the market in the interim, is not a viable long-term solution for System Management going forward. The application had been developed on ageing and now unsupported technology.

In addition, outage functionality is now split across the NOIW application and the new Market IT Systems (SMMITS), with the Market IT systems handling the interface and communications to the market participants. Data is therefore duplicated across the new Market IT Systems and the existing NOIW databases with complex and difficult to maintain logic to ensure the databases stay in sync.

NOIW also has issues with auditability and security. The longer NOIW stays in place as an interim measure the greater the risk to System Management that the security weaknesses will pose a threat to the integrity of outage planning in the market.

Replacement of NOIW will result in a more cost effective, maintainable and secure application to allow System Management to perform outage scheduling for the market.

As noted earlier, development costs have been calculated in accordance with the Western Power IT&T estimation process and using the published Western Power IT&T resource rates.

6.3.2 Redevelopment of Short and Medium Term PASA Study Tools

System Management has a number of study tools that allow the performance of actions required by the wholesale electricity market. The tools are used by System Operation Planning Engineers to evaluate requests for resource outages received from market participants and maintain a schedule of all accepted/approved outages.

Market Operations personnel use the tools to perform the PASA studies System Management must publish under the Market Rules (clauses 3.16 and 3.17).

A PASA study tool was developed as a prototype spreadsheet application approximately eight years ago, and was built up to interface with the NOIW program. The PASA application is not considered robust enough for long term use in the market, as it carries with it a number of legacy issues concerning data security and auditability.

Further, the main source of data for the current PASA study tools is the NOIW application.

As indicated above, the NOIW application is due to be replaced as part of the 2007/08 program of work. This replacement will force a change to the existing PASA study tools in order to ensure that the data can be sourced from the application that replaces NOIW.

As noted earlier, development costs have been calculated in accordance with the Western Power IT&T estimation process and using the published Western Power IT&T resource rates.

6.3.3 ELB Finalisation

The Electronic Log Book (**ELB**) is a tool used by the System Operations Control Centre staff to view market data supplied by the IMO and to log market related data that will be sent to the IMO. The ELB is one of many monitoring and control tools used by control room staff with the main tool being the SCADA system.

The electronic log book is a windows based application that runs on a standard desktop PC in the control room. Most of the other tools used by the control room staff run through SCADA functionality. It was created as an Access based database, and needs to be rebuilt in a more robust fashion, possibly in the SCADA environment.

Control room staff have requested that the ELB's operating environment be reviewed for the following reasons:

- the current setup adds unnecessary complexity and creates potential problems as market related data is accessed through the ELB on the desktop PC; and
- real-time operational information and data is available through the SCADA system. Having the data spread across two sources makes it more difficult for operators to make decisions quickly when issues arise.

New functionality is therefore required that will implement the ELB in a more user friendly and robust environment, which will also centralise the sources of data for control room staff.

As noted earlier, development costs have been calculated in accordance with the Western Power IT&T estimation process and using the published Western Power IT&T resource rates.

6.3.4 Expected Market Rule/Market IT Change Contingency

It is expected that the Market Rules will change and evolve over time as wholesale electricity market operations stabilise and market participants (including System Management and the IMO) request and propose changes.

In all likelihood System Management will have to adjust Market IT Systems and business processes as these rule changes take effect. This contingency will allow System Management to fund the necessary changes to Market IT Systems and business processes and fulfill its revised obligations under the Market Rules.

6.4 Proposed program of work – 2008/09 financial year

The proposed expenditure in the 2008/09 financial year will continue to provide ongoing improvements and streamlining of the interfaces used on a day-to-day basis by both market participants and System Management.

The main components of this program of work and the reason for their inclusion are each detailed below. The total capital expenditure for the 2008/09 work program is $520,000 (see Table 8). In accordance with clause 2.23.12(a)(ii) of the Market Rules, this cost has been depreciated over two and a half years years in Table 6.

The main components of this program of work are set out below.

Table 8 – 2008/09 IT program of work

IT costs ($'000)	**2008/09**
Dispatch Planning Modelling Tool	270
Market Rule/System Change	250
Total IT program costs (08/09)	**520**

6.4.1 Dispatch Planning Merit Order Modelling Tool

The Market Rules place certain obligations on System Management to dispatch generation around both the Dispatch Merit Order and Dispatch Plan. Chapter 7 of the Market Rules provides a number of dispatch related constraints, and these, coupled with the physical requirements of the power system (eg. Fuel availability), impact upon the dispatch process.

The processes adopted by System Management to create and issue daily plans needs to address the various requirements included in the Market Rules. There is also a need to ensure that the current internal planning processes are consistent with control room operations and requirements.

A tool is required for use by the operations, planning and control room staff to compute the order of dispatch for the Generation and Curtailable Load Facilities over each trading interval of the trading day such that the output of the Generation and Curtailable Load Facilities meet the forecast SWIS load, whilst also adhering to the following:

- SWIS Dispatch Merit Order sequence;
- Verve plant schedule;
- Verve fuel availability indications over the trading day;
- Ancillary Service Requirements;
- Network Security and Equipment Limits; and
- Operating Standards.

This tool is intended to decrease the workload on the control room staff, as it will automate the creation of an overall dispatch plan for the trading day. The tool will enforce a repeatable process for the calculation of the dispatch plan, as the business rules will be configured into the tool guaranteeing a consistent approach.

It is therefore intended that the modelling tool will remove elements of discretion from the dispatch decision and further the pursuit of market objectives, particularly the objective expressed in clause 1.2.1(e) of the Market Rules.

As noted earlier, development costs have been calculated in accordance with the Western Power IT&T estimation process and using the published Western Power IT&T resource rates.

6.4.2 Expected Market Rule/Market IT Change Contingency

It is expected that the Market Rules will change and evolve over time as the Wholesale Electricity Market operations stabilise and market participants (including System Management and the IMO) request and propose changes.

In all likelihood System Management will have to adjust Market IT Systems and business processes as these rule changes take effect. A contingency has therefore been included

during the 2008/09 year to allow System Management to fund necessary changes to Market IT Systems and business processes and fulfill its revised obligations under the Market Rules.

6.5 Proposed program of work – 2009/10 financial year

A specific IT program has not been identified for the 09/10 financial year.

However, it is considered prudent to allow an amount of $250,000 to allow for necessary IT system upgrades, enhancements and developments. The principal example of the likely IT expenditure relates to system changes to respond to Market Rule changes, such as to deal with competitive balancing and the acquisition of ancillary services.

Table 9 – 2009/10 IT program of work

IT costs ($'000)	**2009/10**
Contingencies	250
Total IT program costs (09/10)	**250**

It is submitted that catering for an IT capital expenditure contingency would be in accordance with good electricity industry practice.

6.6 Operating expenditure

Amounts of $100,000 (2007/08), $110,000 (2008/09) and $120,000 (2009/10) have been included as an allowance for IT operating expenditure.

The SMMITS system is built on an IT infrastructure platform which includes the Oracle database, the Web Methods enterprise services platform, the IT&T LAN and a number of different servers, clients, routers, switches and firewalls and their operating systems and base applications. Each infrastructure component brings with it a recurring maintenance and licensing requirement.

It is noted that the budget allocation sought is commensurate with the Minister for Energy's approval of an amount of $100,000 for this purpose for the 2006/07 financial year.

7 Ancillary Services costs

7.1 General

An ancillary service is defined in the Market Rules as a service required to maintain power system security and power system reliability, facilitate orderly trading in electricity and ensure that electricity supplies are of acceptable quality.

Five types of ancillary services are defined in clause 3.9 of the Market Rules:

- Load Following, which is the primary method to ensure that supply and demand are balanced.
- Spinning Reserve Sufficient spinning reserve must be available to cover 70% of the total output, including parasitic load, of the largest generated quantity at the time.
- Load Rejection, which is the ability to either reduce generation or increase consumption to maintain power system security.

- Dispatch Support includes any other service not mentioned, including voltage control.
- System Restart, which is the service provided by a generator with black start capability.

The determination of ancillary service requirements is the responsibility of System Management and is subject to IMO approval.

Clause 3.11.7A provides:

> *The Electricity Generation Corporation* [Verve] *must make its capacity to provide Ancillary Services from its facilities available to System Management to a standard sufficient to enable System Management to meet its obligations in accordance with these Market Rules.*

Clause 3.11.8 gives System Management the power to enter into an ancillary services contract where it is not able to meet the ancillary service requirements through Verve Energy, or believes that another alternative is less expensive.

As System Management is responsible under the Market Rules for securing the provision of adequate ancillary services, any costs associated with entering into and maintaining ancillary service requirements (including contracts) will be wholly recovered from market participant fees.

Pursuant to clause 2.23 of the Market Rules, System Management is required to budget the cost of procuring ancillary services sufficient to meet the ancillary service requirements. The budgeted costs are subject to the Authority's approval.

However, System Management will not fund ancillary services. Rather, the IMO will recover a payment for ancillary services from market participants through the wholesale market settlement systems, and will use the revenue received to fund ancillary services provided by Verve Energy and contracted ancillary service providers.

Consequently, the "budget" for ancillary services is really a forecast of likely pass-through costs. System Management does not receive any part of the ancillary services costs as revenue. Ancillary services costs are merely a forecast of amounts market participants are likely to pay to ancillary service providers for the service.

7.2 Costs for the Review Period

As required under clause 2.23.1(b) of the Market Rules, System Management has identified the costs associated with its functions and obligations under the Market Rules in relation to the provision of ancillary services.

In forecasting a budget for ancillary service requirements for each year of the review period, System Management has derived the forecast payments for each ancillary service using the approved 2006/07 amounts as a base-line, escalated by 4% each year. This method has been employed because the original derivation of ancillary service costs remains valid, with the market having only operated for a limited period to date.

The 2006/07 forecasts of ancillary service costs – approved by the Minister for Energy – are derived from a consultancy report prepared by McLennan Magasanik Associates Pty Ltd (**MMA**) for the Office of Energy in 2005.

The table following details the ancillary service costs forecast for the review period.

Table 10 – Ancillary Services costs

Ancillary Service ($'000)	**2007/08**	**2008/09**	**2009/10**
Load Following	4,992	5,192	5,400
Spinning Reserve	13,000	13,520	14,061
Load Rejection	0	0	0
Dispatch Support	0	0	0
System Restart	250	250	250
Ancillary Services	**18,242**	**18,962**	**19,711**

7.3 Load Following Service

Load following service is defined in clause 3.9.1 of the Market Rules:

> *Load Following Service is the service of frequently adjusting the output of one or more scheduled generators within a trading interval so as to match total system generation to total system load in real time in order to correct any SWIS frequency variations.*
>
> *Load following is the primary mechanism in real-time to ensure that supply and demand are balanced. In effect, load following accounts for the difference between the schedules and dispatch instructions and the actual load.*

Load following is effectively the first 30 MW of spinning reserve. Currently, System Management acquires load following services from Verve Energy.

System Management has escalated the 2006/07 approved load following service budget by 4% for each year of the review period. The original budget amount was derived from the MMA study completed for the Office of Energy in 2005.

In the absence of evidence of the incidence of spinning reserve service in the new wholesale electricity market, this consultancy study is considered to provide a satisfactory baseline.

7.4 Spinning Reserve Service

Spinning reserve service is defined in clause 3.9.2 of the Market Rules:

> *Spinning Reserve Service is the service of holding capacity associated with a synchronised Scheduled Generator, Dispatchable Load or Interruptible Load in reserve so that the relevant Facility is able to respond appropriately in any of the following situations:*
>
> *(a) to retard frequency drops following the failure of one or more Registered Facilities;*
>
> *(b) to supply electricity if no Fifteen Minute Reserve is available and the alternative is to trigger involuntary load curtailment; and*
>
> *(c) to avoid the need to start and stop a Scheduled Generator over a short period during the peak system load.*

Spinning reserve response is measured over three time periods following a contingency event. A provider of spinning reserve service must be able to ensure the relevant facility can respond appropriately and in accordance with clause 3.9.3 of the Market Rules.

The basis for calculating costs associated with the provision of spinning reserve is the report prepared by MMA for the Office of Energy in 2005. This comprehensive report contained an analysis of the impact of spinning reserve on generation, profit foregone, additional operating costs and total opportunity costs. Essentially, the purpose of the MMA study was to ensure that the availability payments for spinning reserve calculated under the rules governing the operation of the wholesale market will be sufficient to compensate a spinning reserve provider for profit foregone and increased generation costs resulting from provision of spinning reserve.

The analysis is consistent with the requirements of clause 2.23.12(d) of the Market Rules, and the amount derived from this study was approved by the Minister for Energy as representing the budget for spinning reserve services in 2006/07.

As the market is in its infancy, there is an absence of historical data to underpin further estimation of the likely quantity of spinning reserve which will be required in each year of the review period. Given this, System Management considers that the findings in the report continue to be valid and as such are used as the basis of System Management's proposal, with an escalation of 4% applied to each year following the 2006/07 baseline.

7.5 Load Rejection Reserve Service

Load rejection service is defined in clause 3.9.6 of the Market Rules:

> *Load Rejection Reserve Service is the service of holding capacity associated with a Scheduled Generator or Dispatchable Load in reserve so that:*
>
> *(a) the Scheduled Generator can reduce output rapidly; or*
>
> *(b) the Dispatchable Load can increase consumption rapidly,*
>
> *in response to a sudden decrease in SWIS load*

A load rejection ancillary service allows the system frequency to be maintained within acceptable limits should there be an instantaneous loss of system load, which may occur should a significant part of the network separate from the main system or voltage dip cause automatic disconnection of customer's equipment.

This service is maintained by shutting down generators as load decreases (and starting as load increases) to ensure that the remaining generators are sufficiently above their minimum loadings.

Clause 3.13.1(c) of the Market Rules provides for payment for the provision of load rejection service.

It is noted that the costs associated with shutting down and starting up a generator is normally attributed to the load rejection service. However, the current market design under the Market Rules requires generation facilities to start and stop their generators once a day without further financial compensation as part of their reserve capacity obligations. This is pursuant to clause 6.18.3 of the Market Rules, which provides:

> *No Commitment Compensation will be payable:*
>
> *(a) …*
>
> *(b) for the first start in the Trading Day of a Scheduled Generator if the relevant Market Participant has Reserve Capacity Obligations in respect of that Facility; …*

Given the principle espoused in clause 6.18.3 of the Market Rules, System Management did not ask the Minister for Energy to approve an allocation for load rejection service for

2006/07. Further, System Management does not at this time foresee a need to seek a budget allocation for load rejection service for the review period beyond that provided for in the Market Rules.

Consequently, the load rejection service allocation has been set to zero.

7.6 Dispatch Support Service

Dispatch Support is defined in clause 3.9.9 of the Market Rules:

> *Dispatch Support Service is any other ancillary service that is needed to maintain Power System Security and Power System Reliability that are not covered by the other Ancillary Service categories. Dispatch Support Service is to include the service of controlling voltage levels in the SWIS, where that service is not already provided under any Arrangement for Access or Network Control Service Contract.*

The Market Rules included an explanatory note for this ancillary service:[5]

> *Most of the voltage control is likely [sic] be provided under the access regime, and any provision under the requirements of an access agreement will not require Ancillary Service payments. The service here is to allow for the possibility that System Management requires provision of a service in excess of that required by access.*

Power system security requires the system operator maintain both frequency and voltage within predefined tolerances for existing various operating states.

The access provisions currently provide for facilities not forming part of the network to aid in the control of frequency and voltage. In particular, controllable generators (excluding windfarms which do not control their output) must be capable of accurately altering their output for changes in frequency of the power system and maintain the nominated voltage at the connection point.

Both generators and network equipment such as capacitors and Static Var Compensators (SVC) provide voltage control. The technical rules[6] limit the amount that must be provided by each generator. The quantities that are currently provided have also been shown to be sufficient in keeping voltages within acceptable limits. In the short term the growth in requirements for voltage control is being met by installation of network control equipment, hence the supply of these control facilities from generators is forecast to be sufficient.

Primarily, Verve Energy generators supply frequency control. To date this has kept frequency fluctuations within acceptable limits. The supply of frequency control facilities is forecast to be sufficient over the review period as the requirements for frequency control are not expected to rise.

It is noted that the Market Rules are unclear as to the services intended to be procured as dispatch support. Given this uncertainty it is difficult to envisage how an allowance can be provided for within the budget if there are no identified services within this category.

Therefore, as it is considered that there will be no increase in the necessity for frequency control, nor have any additional ancillary services been identified, it is not considered that there is a need to procure dispatch support services during this review period.

Consequently, the dispatch support service allocation has been set to zero.

[5] Removed in the version gazetted on 19 September 2006.
[6] As defined in the *Electricity Networks Access Code 2004*.

7.7 System Restart Service

System restart is defined in clause 3.9.8 of the Market Rules:

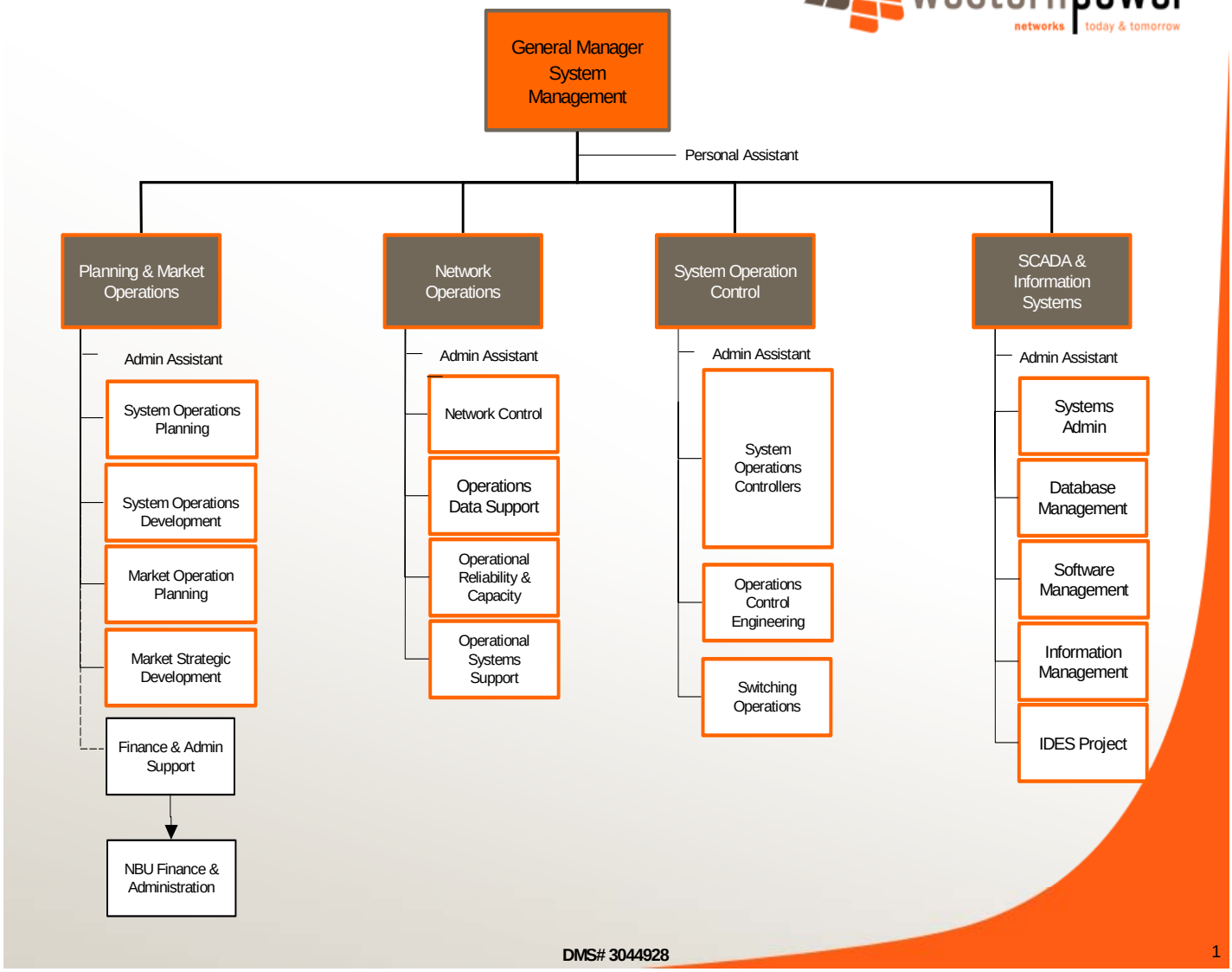
> *System Restart Service is the ability of a Registered Facility which is a generation system to start without requiring energy to be supplied from a Network to assist in the re-energisation of the SWIS in the event of system shut-down.*

System restart service is supplied at three sites (Pinjar, Kwinana and Tiwest) by Verve Energy on the basis of an annual availability payment of $250,000. This reflects a charge of $70,000 per location per year, and a $10,000 operating and maintenance provision for each location (the latter amount subject to CPI adjustment).

The above amounts were approved by the Minister for Energy in the 2006/07 budget.

System Management has held the budget for availability constant through the review period, and escalated the operating and maintenance component in line with CPI increases of 4% each year.

Appendix A -


General Manager System Management
Personal Assistant
Planning & Market Operations
Admin Assistant
System Operations Planning
System Operations Development
Market Operation Planning
Market Strategic Development
Finance & Admin Support
NBU Finance & Administration
Network Operations
Admin Assistant
Network Control
Operations Data Support
Operational Reliability & Capacity
Operational Systems Support
System Operation Control
Admin Assistant
System Operations Controllers
Operations Control Engineering
Switching Operations
SCADA & Information Systems
Admin Assistant
Systems Admin
Database Management
Software Management
Information Management
IDES Project
DMS# 3044928
1

Appendix B -

Benchmarking

1 Introduction

Clause 2.23.12(c) of the Market Rules requires the Authority to benchmark the allowable revenue against the costs of providing similar services in other jurisdictions where possible. In assisting the Authority to understand what parallels can be drawn between System Management and other service providers across Australia, System Management has sought to conduct the benchmarking or comparison exercise itself. This is aimed at assisting the Authority in understanding where comparisons with other jurisdictions can be drawn, whilst highlighting where the services System Management provides are unique to Western Australia and cannot be benchmarked against another service provider.

As the Authority would be aware, the functions and responsibilities of System Management are not easily comparable to any other jurisdiction in Australia. This is largely because the market in Western Australia is unique and operates in a way largely dissimilar to that of the National Electricity Market (**NEM**).

1.1 First review period

It is recognised that the first budgetary period in the new market is designed to provide both the Authority and System Management with some detail over what costs may be incurred in a new wholesale electricity market environment. It also serves as a means to gather data from which to base future budgets on rather than relying on benchmarking costs with other service providers.

System Management's costs of fulfilling its role under the Market Rules is recovered through market participant fees, but not on a "stand-alone" basis. In other words, System Management has recognised and made allowance for its network source of funding. This results in a fair incremental cost allocation across market participants based on the total costs of providing system operation services.

It is also noted that System Management found it difficult to draw meaningful parallels with other "comparable" service providers, as the information is:

- not readily available;
- in aggregate form; and
- not entirely representative of the costs associated with truly comparable activities.

On the whole, however, System Management's attempt to benchmark its costs of performing market functions have demonstrated that the costs included in System Management's proposed budget for the review period fits comfortably within the costs incurred by comparable service providers.

1.2 Network operations

The Western Australian electricity market operates over a network that is not interconnected with any other state or system (the SWIS). Western Power is the owner and operator of both the transmission and distribution networks within the SWIS. These networks are the only covered networks subject to regulation by the Authority. Further, Western Power is the only Rule Participant registered as a network operator under the Market Rules.

Conversely, the NEM is serviced by a number of individually registered network operators. There are eight transmission network service providers (**TNSP**) that are monitored or

regulated in different ways by the Australian Energy Regulator (**AER**), National Electricity Market Management Company (**NEMMCO**) and Australian Energy Market Commission (**AEMC**). Each individual jurisdictional regulator monitors the operations of the 14 distribution network service providers (**DNSP**) within the NEM.

1.3 Market operations

In relation to market operations, the IMO performs the function of administering the Market Rules, including having responsibility for settlement of the wholesale market. In the NEM a body separate to the jurisdictional networks' businesses, NEMMCO, carries out these functions. NEMMCO differs from the IMO in that not only does it administer the National Electricity Rules, but it also ensures security and reliability of the power system. In Western Australia this is a role assigned to System Management.

As such, while the functions of NEMMCO can be loosely compared with those of System Management, it is critical that there is a firm understanding that System Management does not have a corresponding role to NEMMCO's functions of market administration and settlement.

2 Overarching comparison

An overarching comparator is the System Operation Fee, as a dollar amount per MWh.

The System Operation Fee for 2006/07 as published by the IMO on 1 August 2006 produced a rate of $0.093/MWh. On a rough calculation, this fee rate will increase to a rate in the order of $0.200/MWh for the forthcoming review period.

This fee may be compared to the participant fee to be collected by NEMMCO for 2006/07 of a notional $0.340/MWh.[7]

3 Comparable service providers

3.1 Introduction

One of the methods of benchmarking the costs of providing comparable services is to consider budget forecasts of other service providers. Annual reports are publicly available documents and generally provide some high level material on budget estimates. This is where the majority of information has been sourced in an attempt to benchmark costs of System Management.

However, the information available concerning budgets is provided at an aggregate level. This poses considerable difficulties in attempting to benchmark costs of service against System Management where there is no "unbundling" of the costs, making it difficult to easily attribute costs relating solely to such matters as power system security. Attempts at obtaining more granularity of budget items were not fruitful, resulting in a lack of meaningful data from which to benchmark the performance of System Management against.

Given the inherent difficulty in benchmarking the allowable revenue of System Management against the costs of providing similar services in other jurisdictions System Management has sought to draw comparisons based on some reasonable assumptions. For instance, while the NEM is a significantly larger market than the wholesale electricity market, costs are more reasonably compared against functions, rather than compared based on MW throughput.

Therefore the first assumption employed was based on identifying comparable functions to those prescribed for System Management under the Market Rules. The majority of

[7] NEMMCO Annual Report 2005/06 page 3

functions can be compared to those of NEMMCO as prescribed under the National Electricity Rules. However, the AEMC and network service providers also share some of the responsibilities related to system operations. This comparison is illustrated in Table 11.

Table 11

System Management activity under Market Rules, compared with functions conferred under the National Electricity Rules	**NEMMCO**	**AEMC**	**NSP**
2.2.1. Western Power, acting through the segregated business unit known as System Management, has the function of operating the SWIS in a secure and reliable manner for the purposes of regulation 13(1) of the Regulations.	4.3.1		
2.2.2(a) to procure adequate Ancillary Services where Verve Energy cannot meet the Ancillary Service Requirements;	3.11.2 Market		3.11.3 Non-market
2.2.2(b) to assist the IMO in the processing of applications for participation and for the registration, de-registration and transfer of facilities;	2.4.1		
2.2.2(c) to develop Market Procedures, and amendments and replacements for them, where required by these Market Rules;		s.91 of NEL	
2.2.2(d) to release information required to be released by these Market Rules;	8.6.6		
2.2.2(e) to monitor Rule Participants' compliance with Market Rules relating to dispatch and Power System Security and Power System Reliability; and	4.3.1		
2.2.2(f) to carry out any other functions or responsibilities conferred, and perform any obligations imposed, on it under these Market Rules.			
2.2.3. System Management may delegate any of its functions under the Market Rules (other than the power to do the things indicated as not able to be delegated in the Regulations) to a person or body of persons that is, in System Management's opinion, competent to exercise the relevant functions. A function performed by a delegate is to be taken to be performed by System Management. A delegate performing a function under this clause 2.2.3. is to be taken to do so in accordance with the terms of the delegation unless the contrary is shown.	4.3.3		

3.1.1 NEMMCO

NEMMCO has approximately 245 staff. It operates with approximately 97 staff working in divisions with comparable functions to those of System Management.

Regarding other comparable costs incurred by NEMMCO, Table 12 outlines the operating budget as outlined in the Statement of Corporate Intent (SCI) 2006. The major costs that can be compared with the functions of System Management relate to labour, insurance and IT Operations. Each of these items is considered in turn below.

Table 12 (NEMMCO budget forecast)

Aggregate Operating budget ($m)	**Forecast 05/06**	**Budget 06/07**	**Budget 07/08**	**Budget 08/09**
Labour	30.09	31.23	32.17	33.14
Contractors	0.98	0.66	0.68	0.70
Consultants*	3.85	3.68	3.79	3.90
Agency Fees	1.99	2.31	2.43	2.55
IT Operations**	3.92	4.46	4.82	5.21
Travel & Accom	1.19	1.48	1.52	1.57
Rent	1.37	1.19	1.23	1.43
Insurance***	4.27	3.85	3.97	4.09
Other	5.01	4.99	5.14	5.55
Contingency	0.50	0.50	0.50	0.50
Depreciation / Amortisation	6.10	4.39	5.02	4.62
Finance Charges	1.06	0.77	0.16	0.05
Sub Total	60.33	59.51	61.43	63.31
New Sydney Control Centre				
Depreciation / Amortisation		1.35	1.35	1.35
Finance Charges		1.79	1.72	1.63
Sub Total		3.14	3.07	2.98
Total	60.33	62.65	64.50	66.29

* Decrease due to completion of work plus conversion to FTE
** Licences for new tools, commissioning, etc
*** Savings in changes to insurance placement

Considering that NEMMCO's budget is at an aggregate level covering all 245 staff and associated functions, for comparative purposes costs (discussed further below) have been

apportioned across the 97 staff working on comparable activities to those of System Management. This equates to approximately 40% of NEMMCO's aggregate costs which can be attributed to functions comparable to System Management's market functions.

3.1.2 TransGrid

Further comparison can be drawn against transmission network service providers in the NEM.

For example, TransGrid operates the transmission networks in NSW. It has a System Operations Business Unit that is responsible for ensuring the security and reliability of the electricity transmission network throughout NSW in accordance with the National Electricity Rules. As stated in its Annual Report 2005, TransGrid's business unit "determines operating policy and implementation requirements for the operation of the transmission system, including facilities required to monitor and control the high voltage network. System Operations staff liaise with both NEMMCO and the electricity distributors to ensure close coordination of operating activities"[8].

Similar to the comparison drawn against NEMMCO, TransGrid provides its financial statements as an aggregate of all operations, given that it "operates in one industry being the transmission of electricity in New South Wales".[9] As such, it is difficult for System Management to determine which costs are directly attributable to comparable functions in TransGrid's Systems Operations. However, in attempting to benchmark System Management's costs against comparable service providers as required under the Market Rules, it is assumed that costs can be compared based on apportioning staff employed by each service provider.

TransGrid employs almost 900 people, however, 65% of those work in purely network management functions. The remaining 35% work in divisions labelled as Engineering, Corporate Development, Commercial and Board Secretary, Business Resources and System Operations. As it is unclear what proportion of the remaining 35% of staff work within those divisions System Management assumes that they are spread evenly across the five divisions. This equates to 63 staff working on system operation activities.

3.2 Establishment costs

3.2.1 NEMMCO

The costs associated with establishing NEMMCO to perform its functions in the NEM totalled $44,470,000, which is recovered evenly over 10 years at $4,447,000 per annum.[10] In establishing a body to monitor the NEM it is assumed that there would be costs such as development and implementation of appropriate infrastructure and systems, employment of suitable resources to perform the functions under the NEL, consultant and legal costs associated with developing the operational framework for NEMMCO and general logistical costs in establishing the organisation.

System Management has similar costs in establishing itself as a rule participant under the Market Rules. These include:

- new systems that have been designed and implemented to support necessary elements of the Market Rules such as standing data requirements;
- contracts that have been entered into for market services, such as system restart; and

[8] TransGrid Annual Report 2005 page 11
[9] TransGrid Annual Report 2005 page 55
[10] NEMMCO Annual Report 2004/05 page 33

- staff with specialist skills that have been appointed to facilitate the effective operation and compliance of System Management.

However, it is noted that establishment costs are not recovered as a separate item, but are incorporated within the operating costs of the division.

3.3 Labour costs

3.3.1 NEMMCO

The costs allocated against labour in NEMMCO's budget include overheads and are therefore not just actual salary costs. Similarly, System Management's labour costs include both direct salary costs and overheads. Considering that the information available to System Management is aggregated it is difficult to directly infer which costs are comparably incurred.

As discussed earlier, System Management applies an overhead amount derived from 30% of direct labour costs. In order to draw a comparison with NEMMCO System Management has benchmarked the aggregate labour costs as it is unclear what allowance NEMMCO has made in relation to overheads. As such, the labour costs forecasted by NEMMCO relate to $12.87m in 2007/08 and $13.26m in 2008/09, based on 40% of the aggregate, and for approximately 97 staff.

The costs proposed by System Management in its budget as related to labour ($2.89m, $3.06m and $3.24m for each year of the review period) are based on 19 FTEs.

Given that the market functions of System Management include functions comparable to NEMMCO and other service providers, using NEMMCO as a comparator it can be demonstrated that System Management's proposed labour costs are reasonably equivalent.

3.4 IT Operations

3.4.1 NEMMCO

NEMMCO allocated $4.8m and $5.2m in 2007/08 and 2008/09 respectively for IT Operations. It is noted that these costs "have increased by $0.40 million due to licences for new tools and recently commissioned systems, increases in the number of licences required due to a larger NEM following the entry of Tasmania, and increased communications costs related to data links and volumes" [11].

System Management has directly comparable anticipated costs in establishing systems as required under the Market Rules, including new licences, increased communication facilities, data links and reporting systems. While the NEM is a somewhat larger market, and NEMMCO has a number of functions not performed by System Management (eg. Settlement), the "newness" of the wholesale electricity market means that a proportionately greater amount of expenditure is required.

As explored more fully in the submission, the new wholesale market in Western Australia has required System Management to upgrade its IT existing infrastructure and develop additional systems in order to perform its functions under the Market Rules.

[11] NEMMCO SCI 2006, page 33

3.5 Insurance

3.5.1 NEMMCO

NEMMCO includes an amount of approximately $4m each year for insurance. Considering the level of risk NEMMCO is exposed to in the NEM it is difficult to benchmark this cost against the risk System Management is exposed to in the SWIS. Whilst System Management experiences significant risk as the body responsible for ensuring the safe and reliable operation of the SWIS, NEMMCO is a different organisation with a different risk profile.

As discussed in the submission, System Management has sought an estimate of the insurance necessary to mitigate against its risk in the market. Given the need for System Management to only incur expenses in a prudent manner and in accordance with good electricity industry practice, System Management has determined that an amount reflecting self-insurance would be most appropriate, until System Management is in a better position to put “bounds” around the risk and enter into suitable insurance.

3.6 Contingency

3.6.1 NEMMCO

NEMMCO has included a contingency of $500,000 each year.

Given that the NEM has been in operation for a number of years there is considerable historic evidence from which to base forecast expenditure. This results in a higher probability of NEMMCO being able to readily plan for market activities, with only a limited number of unforeseen events occurring.

Alternatively, the establishment of a completely new electricity market in Western Australia creates an attendant environment of considerable uncertainty. There is a high probability of market participants, including System Management, experiencing unplanned incidents as the market establishes itself and matures.

Despite the contingency provided for in NEMMCO’s budget, System Management has opted to rely on the ability to recover any costs in addition to those forecast in its budget as allowed by clauses 2.23.7 and 2.23.8 of the Market Rules.

3.7 Other costs

3.7.1 NEMMCO

For some greater clarity around costs incurred by NEMMCO the ‘other’ expenses are broken down in Table 13. The cost that is comparable to that of System Management relates to costs allocated against audit.

Table 13

"Other" expenses breakdown	Forecast 2005/06	Budget 2006/07	Budget 2007/08	Budget 2008/09
Audit	0.60	0.54	0.56	0.58
Directors' Fees & Exp	0.65	0.73	0.75	0.77
Printing & Stationery	0.27	0.25	0.26	0.27
Wind Forecasting	0	0.17	0.18	0.19
Maintenance	0.72	0.67	0.69	0.97
Training	1.02	0.93	0.96	0.99
Amenities	0.12	0.10	0.10	0.10
Subscriptions & Research Data	0.39	0.45	0.46	0.47
Telephone	0.29	0.28	0.29	0.30
Utilities	0.28	0.35	0.36	0.37
Misc	0.67	0.52	0.53	0.54
Total	5.01	4.99	5.14	5.55

3.8 Audit

3.8.1 NEMMCO

NEMMCO has provisionally allowed for expenditure related to audit activities. This is based on its need to "continue with its practice of arranging an annual independent audit of its market and system operator roles and the provision of market audit reports to all participants".12 There is a corresponding requirement on System Management to undertake a similar audit, hence these costs are directly comparable.

Section 2.14.6 of the Market Rules requires the IMO to at least annually audit System Management's compliance with the Market Rules and Market Procedures. It is expected that the costs will be significant in the first budgetary period as both the IMO and System Management work together to understand the audit requirements and to ensure that System Management is operating effectively. The next budgetary period should deliver cost reductions once participants have a greater understanding of the obligations under the Market Rules. There will also be the opportunity to draw upon historic details to benchmark performance, which should lead to a reduction in the costs related to System Management's ability to demonstrate compliance with the Market Rules.

System Management has allowed an amount to audit its activities within the "functional" costs component of the submission.

[12] NEMMCO SCI page 24