Meritec

Australian Competition and Consumer Commission

ElectraNet SA Operational Expenditure Review

July 2002

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ElectraNet SA Operational Expenditure Review

Prepared for

Australian Competition and Consumer Commission

Prepared by

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A review of ElectraNet SA's proposed operational expenditure for the period Jan 2003 to June 2008

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Summary of Findings

As part of the Australian Competition and Consumer Commission's (ACCC's) regulatory decision in regard to the South Australian Transmission Network Revenue Cap for the period from 1 January 2003 to 30 June 2008, Meritec was engaged by the ACCC to review ElecraNet SA's (ElectraNet's) forecast operational expenditure.

A summary of the findings is set out below:

- ElectraNet has an established, robust asset management planning process. It is sound and consistent with transmission network asset management practices elsewhere.
- The allowance sought for Grid support should be passed through.
- In our view compliance costs associated with the NEM appear reasonable and should be allowed on a pass through basis subject to verification so that only the actual costs incurred are awarded.
- From the information provided to date it would appear that all other imposed costs such as licence fees & levies are already included in existing operating expenditure and have therefore been removed.
- In line with the Powerlink decision the application for hedging as an imposed cost has not been allowed.
- When compared to previous reported operational expenditures a number of items of operational expenditure proposed by ElectraNet appear to have been accounted for in more than one location. They have therefore been removed from the recommended Opex provisions.
- All refurbishment expenditure originally included by ElectraNet in its Opex application has been considered in the capital expenditure review by Meritec and removed from the operational expenditure provisions, resulting in an immediate reduction of the proposed Opex spend of $77m over the period or 19% of the application.
- The majority of the Opex spend is associated with the maintenance and operation of the existing assets, however a small proportion of the proposed operational expenditure is related to the operations and maintenance of additional new assets. As such it is estimated that for every 5% change in the Capex budget a 0.024% change in the same direction will occur in the Opex budget.
- ElectraNet's application for operational expenditure has been adjusted by Meritec as a result of this review to be as follows:

	Jan-Jun 2003 ($m)	2003/04 ($m)	2004/05 ($m)	2005/06 ($m)	2006/07 ($m)	2007/08 ($m)
Total Opex Proposed by Meritec	22.2	44.4	44.3	44.6	45.2	45.5

1.0 Introduction

1.1 Background

In accordance with the requirements of the National Electricity Code, the ACCC will become the economic regulator of ElectraNet's transmission network business from January 2003. The ACCC is conducting an enquiry into an appropriate revenue cap to be applied to the non-contestable parts of ElectraNet's transmission network services covering the period from 1 January 2003 to 30 June 2008.

The revenue cap is built up from a number of building blocks, one of which is the costs involved in operating and maintaining the asset base over the regulatory period, generally known as operational expenditure.

The purpose of this report is to review the operational expenditure forecast put forward by ElectraNet and provide comment on the methodology employed, the validity of the expenditure levels put forward and to identify any issues which might impact adversely on ElectraNet's ability to deliver their proposed expenditure levels.

1.2 Scope

Meritec was engaged to simultaneously review the asset base, capital and operational expenditure put forward by ElectraNet in their *Transmission Network Revenue Cap Application 2003 – 2007/08*. This report examines the operational expenditure section of their application. A separate report prepared in parallel examines their capital expenditure.

The Terms of Reference for the operational expenditure review were as follows:

1 The consultant is to undertake a review which analyses and comments on the following matters in relation to the contribution of Opex expenditure to ElectraNet's delivery of transmission services:

- an assessment of whether ElectraNet's target for reducing controllable operating costs for each of the next five years is achievable and whether there is scope for additional efficiency gains during the five year regulatory period commencing on 1 January 2003;
- an assessment of ElectraNet's Opex performance against current available indicators, with a view to improving and implementing benchmark indicators and targets, based on key controllable costs and with reference to national and international best practice;

- the appropriateness of ElectraNet's allocation of Opex costs to specific activities, including the distinctions between regulated and non-regulated activities, between routine maintenance and renewals, and the treatment of joint and common costs, especially corporate administration expenses, financing charges and depreciation;
- the effectiveness of ElectraNet's operating practices and asset management system in ensuring that only necessary (and efficient) Opex expenditure occurs, with reference to the acceleration or deferral of capital expenditure;
- in the context of a benchmarking methodology, the degree to which this methodology should account for differences in network age, design and configuration, operating environment, service standards and economies of scale; and
- comment on the internal and external factors that may affect the level of Opex costs over the five year regulatory period commencing 1 January 2003.

2. The consultant is to perform the following procedures as part of that analysis:

(a) forecast vs historic cost comparison:

- analyse the movements (by expense category and in total) in the forecast information contained in ElectraNet's financial projections for the five year period from 1 January 2003 through to 30 June 2008;
- compare the forecast information to available historic financial information;
- analyse and comment on the trends in relation to the forecast and historic cost data; and
- advise as to any limitations with the use of such information; and

(b) benchmarking:

- consider and recommend appropriate benchmarks for analysis of Opex costs;
- review appropriate benchmark data from available national and international information sources, and analyse and comment on the performance of the operational and maintenance costs with reference to the benchmark data; and
- advise as to any limitations with the use of such information.

Meritec has addressed the requirements of the Terms of Reference in the following sections.

1.3 Timetable

The project was conducted in a condensed timeframe due to the delayed submission of ElectraNet's Application and the need to meet the ACCC's deadlines for handing down a decision by October 2002. The timetable was as follows:

Date	Activity
16 April 2002	Initial project meeting between Meritec and ACCC ElectraNet lodged Application with ACCC
17 April – 22 April 2002	Prepare questionnaire detailing data requirements from ElectraNet and issue to ElectraNet.
10 May – 16 May 2002	Receive responses from ElectraNet and assess,
21 May – 23 May 2002	Site visit to ElectraNet to interview ElectraNet staff and view high-level evidence of the processes applied
24 May – mid July 2002	Analyse data received and develop draft reports.

In the time available the review has focussed on the processes undertaken, supported by a detailed review of a number of significant operational expenditure areas, and analysis of a number issues that affect the proposed operational expenditure.

1.4 Process

A similar process was followed for both capital and operating expenditure reviews. In both cases, Meritec prepared questionnaires covering the key issues relating to the expenditure programs. These were forwarded to ElectraNet for completion and return.

Following return of the questionnaires Meritec spent 3 days on-site at ElectraNet. The questionnaires were used to identify areas for further examination during the site visit and to formulate questions and data requirements from ElectraNet.

The site visit also allowed Meritec staff to view high-level evidence of the processes applied by ElectraNet to the formulation of their operational expenditure forecast.

Based on the information obtained, a general review and "sense check" was carried out on the processes followed by ElectraNet. A number of issues were also identified for further consideration. These were analysed and conclusions drawn regarding their impact on ElectraNet's submission.

1.5 Materiality

We have taken the view that an item is to be considered as material if its inclusion or exclusion would lead to a material change in ACCC's determination. Material in the context of general purpose financial reporting would generally be considered to be of the order of 5%. For the purposes of the review, we have considered items as material if they comprise 5% or more of the expenditure for the year in which they fall. Where several such items aggregate to 5% or more, we have considered them as material.

Against this, the inherent lack of un-predictability of significant operational events occurring such as lighting, storms and ageing equipment failure rates, needs to be recognised. In our opinion, it would be misleading to pretend that the projections are accurate within +/- 10%.

1.6 This Reports Structure

To aid in the assimilation of the information contained in this report, it has been broken down into a number of sections as follows;

- Section 1. Includes the introduction, background and terms of reference;
- Section 2. Describes the principals of the review;
- Section 3. Contains a brief description of ElectraNet's network and how it compares to other transmission Network Service Providers;
- Section 4. Has an outline of ElectraNet's Opex Budget planning processes;
- Section 5. Details Meritec's review of ElectraNet's Opex application;
- Section 6. Provides some comparisons of ElectraNet performance;
- Section 7. Has commentary on ElectraNet's ability to meet the requested Opex levels;
- Section 8. Lists Meritec's recommended Opex adjustments; and
- Finally for completeness the report concludes with references and appendices

1.7 Acknowledgements

In preparing this review Meritec acknowledges the assistance of the ACCC and ElectraNet in responding to our enquires and requests for information.

2.0 Principles of the Review

In this section of the report, the general principles of operational expenditure (Opex) review in electricity transmission businesses are outlined with particular reference to the present task. It is assumed that the reader has a sound general knowledge of electric power transmission systems and their operation and accordingly we generally do not go into descriptive detail.

Operational expenditure can be broken down into categories of direct costs, as expenditure that is directly related to operating or maintaining the system assets of the lines business; and indirect costs which are not directly related to managing the system assets of the line business, such as administration and office expenses.

In the following sections we will discuss items associated with network maintenance such as the principle of asset maintenance and renewals before dealing with issues associated with operational costs.

2.1 Directed Costs

(a) Maintenance Expenditure

A transmission network service provider incurs maintenance expenditures to ensure that its system assets continue to provide their pre-determined service capacity and quality and achieve their expected useful life. Maintenance normally comprises two components: routine maintenance and periodic planned maintenance. Routine maintenance is of an ongoing and regular nature whilst major periodic maintenance is sizeable and cyclical in nature, incurred under a periodic maintenance plan.

A TNSP's maintenance policies are normally described in its Asset Management Plan. The policies are often expressed in terms of objectives such as, maintaining and operating assets in line with good industry practice and ensuring that system performance targets are met at least cost. It would be expected that a TNSP would review its maintenance plans annually in light of industry developments, performance of current polices and system performance targets.

To meet its overall targets of customer service, reliability and cost effective operation, asset maintenance drivers would include:

- Safe network operation;
- Regulatory compliance;

- Cost effective maintenance;
- Minimisation of life cycle costs through planning, design, operation, maintenance, renewal and replacement; and
- Improvements in network reliability.

Network reliability performance and cost target improvements ultimately determine the maintenance programme mix. Improvement of both of these factors can be brought about through improved preventative maintenance, greater use of live line maintenance or quicker fault response, corrective action or a combination of all of these.

Maintenance can be categorised as reactive, do nothing until failure occurs, or planned. Planned maintenance can be further broken down into,

- Periodic, time based dependant on manufacture instructions, company experience or cost;

Predictive or condition, determined by need from inspections or condition monitoring; and

- Reliability, work done taking into account plant performance and function rather than the individual asset itself.

Individually none of the above methods provide the optimum approach and instead most companies find a combination is best. From a reliability standpoint, experience generally shows that routine inspections do not have a significant impact on network reliability and instead performance improvements come from the detailed analysis of outages and their causes.

Consideration of the appropriateness of present maintenance practices and those proposed for future adoption are an important part in reviewing maintenance related operational expenditure projections. Present maintenance polices and their associated costs will be a combination of corrective repair for certain assets, reliability driven for other assets, condition based for others and a combination of more than one for some.

It is important to understand the historical maintenance practices given their effect on the effective lives of the assets. This is because the previous ad-hoc inspections or corrective maintenance previously undertaken may not enable the full technical life of an asset to be realised. In a similar manner the displacement of in house staff and their associated institutional knowledge of older plant by contractors may require the early

replacement of an asset that although performing satisfactorily is unable to be maintained, as the skills required to do this have been lost.

(b) Monitoring and control

In addition to asset maintenance expenditures are expenditures associated with operating the transmission system. These include expenditures to do with System Control, fault call out, recording, and network switching. Unfortunately due to the differing cost allocation, and financial treatments used by the various network companies direct comparisons are not possible and only general comments can be made.

2.2 Indirect Operational Costs

Indirect operational expenditures include those costs incurred by the business that indirectly support the operation of the network. In this review these types of expenditures are assessed by benchmarking with other similar service providers and comparing the historical expenditure breakdowns.

(a) Corporate Costs

Corporate costs are those associated with the provision of facilities, resources and staff required for the operation of the business as a whole but not directly linked to an individual asset. Such costs include internal labour, directorships, buildings, rates and the like.

(b) Risk Management

Risk and its management imposes certain costs on a business over and above those required to just provide the goods or services that its customers purchase.

A TNSP's assets can be at risk from:

- Natural disasters such as climatic conditions, floods, storms and land slides.
- People related activities such as excavations, vandalism and poor workmanship.
- Asset failures involving factors such as reliability, structural integrity, capacity.

A TNSP would be expected to document its risk management practices and formalise its contingency plans. Natural disasters and people risks can be assessed by evaluating the risk cost for each event and developing appropriate contingency plans and procedures to ensure continuity of business and mitigation of impacts. Asset failure can be assessed by evaluating the failure modes and effects.

(c) Imposed Costs

Imposed costs relate to costs that the business has no control over but are required by other that it meets such as National Electricity Market (NEM) charges

2.3 Asset Renewals and Refurbishment

The principles of asset renewal are described in the Capital Expenditure Review report although ElectraNet's revenue application includes renewals and refurbishment amongst operational expenditures.

At the direction of ACCC, Meritec has removed such expenditure from the Opex review and considered it within the Capex review. The reader is therefore referred to the Capex review for these items and section 8 of this report.

3.0 ElectraNet Network

3.1 The Network

General

The ElectraNet transmission system connects the major load centre of metropolitan Adelaide with the two largest sources of generation at Port Augusta and Torrens Island, and the Victoria-South Australia interconnector at Mount Gambier. The network is characterised by long generally radial 132 kV lines with a backbone of 275 kV single and dual circuits that have been added over the years as load as grown. A small amount of 66 kV equipment is also is present.

The major components of this network are summarised in the table below.

Table 1 ElectraNet Network Component Summary

Item	275 kV	132 kV	66 kV	Total
Lines(Circuit km)(Note 2)	2,562	2,989	14	5,565
Substations	20	46	2	68
Transformer Capacity (MVA)	4,833	1,269	0	6,102

Note 1 Company data from 2000 Annual Reports

Note 2 Underground cables ignored where total length is <10km

To support the operation of the network listed above ElectraNet operates an extensive communications network using radios, Power Lien Carrier (PLC), Optical Overhead Ground Wire (OPGW) and pilot cables for the secure transfer of data associated with the Supervision, Control and Data Acquisition (SCADA) and protection systems.

Asset Age Profile

ElectraNet indicate in their application that they have a significant number of assets across the board that are in excess of 40 years old (24%)

Typical average industry accepted asset life spans utilised in power planning are given in the table below.

Table 2 Typical Asset Life Span

Item	Life (yrs)
Overhead Lines	50-55
Circuit Breakers	45
Transformers	45-55

The Australian Treasury in the evaluation of electricity network businesses has also used these average asset life spans.

From information provided by ElectraNet the following life profiles have been produced for the major assets of power transformers (referenced to the HV winding), circuit breakers and transmission lines showing the number of assets in each age band.

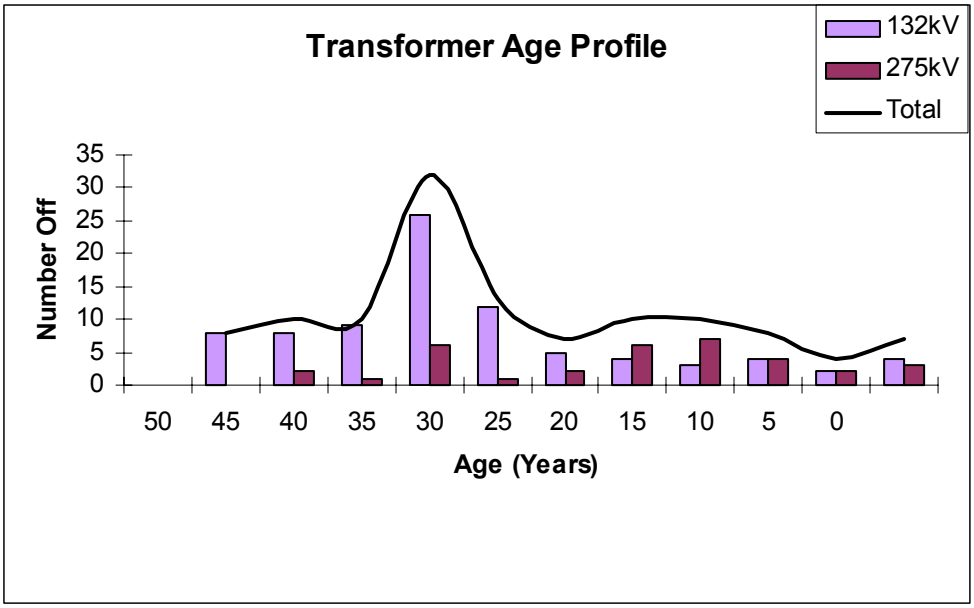

Figure 1 Transformer Age Profile

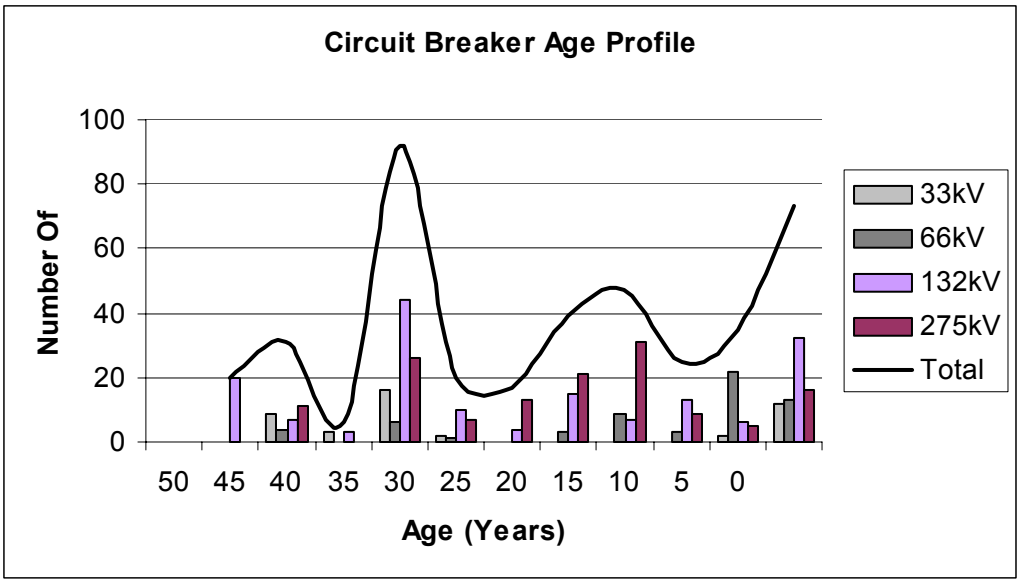

Figure 2 Circuit Breaker Age Profile

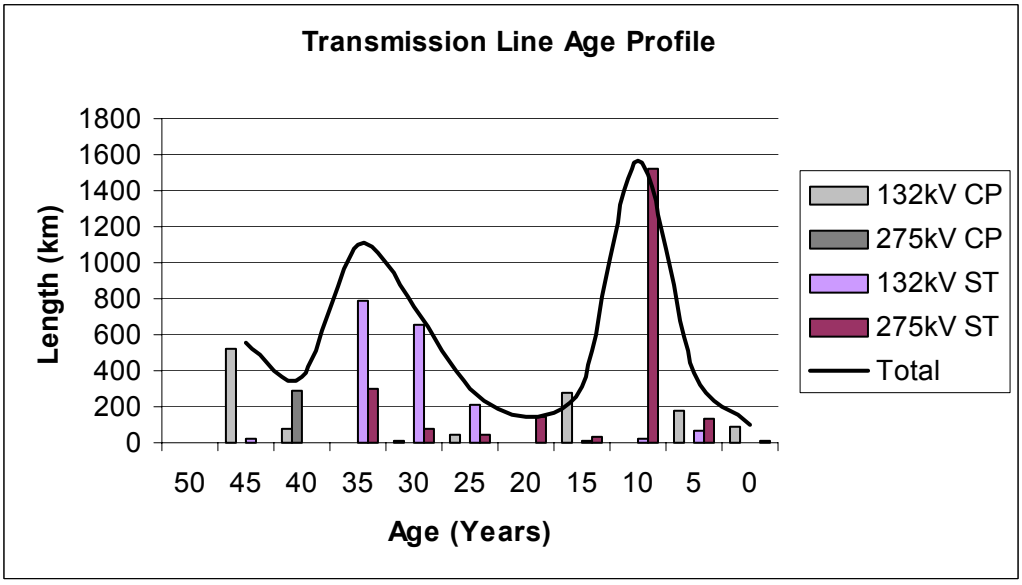

Figure 3 Transmission Line Age Profile (Note CP is Concrete Pole & ST is Steel Tower)

In general ElectraNet's asset age profile is no worse than other network companies in Australia and New Zealand where a significant expansion of the electricity infrastructure occurred during the 1960s and 1970s. Over the next 10 to 15 years a significant portion of this equipment will require replacement as it fails or becomes difficult to maintain,

however some of this equipment may be able to have its life extended and continue to provide cost effective service for the rest of its service life and not its nominal life.

This is particularly important with regard to transformers where the often-quoted design life of 55 years is stated as the need for replacement. Unless the transformer has been subject to all of the designed for conditions over its life, the unit may have additional serviceable life remaining. This concept also applies to other assets on the electricity system. Good asset management practices should seek to defer as long as possible equipment replacement, provided it is economically sound to do so and system performance measures such as security and reliability are not reduced below what the customer is prepared to fund. To do this a sound asset maintenance plan that identifies and manages the risks and costs associated with each item of equipment is required. As part of this review we will examine the asset management planning techniques and principals to ensure that they are robust and that the outputs from the process can be accepted, however we will not review the asset management plan itself on a line by line basis.

3.2 Comparison with Other TNSP's Networks

General

To understand the size and scope of the ElectraNet network comparisons with other Transmission Network Service Providers were made. A number of different companies were initially considered however two, Transpower and TransGrid were chosen as being typical and relevant.

With regard to some of the other companies considered WesternPower in WA although having a similar low load density and long lines was disregarded when it was not possible to separate its distribution and generation statistics and costs from those of its transmission company. Both SPI PowerNet and Powerlink were not considered due to the lack of detailed publicly available information from which results could be drawn.

A brief summary of key network parameters is contained in the table below.

Table 2 ElectraNet, Transpower & TransGrid Comparison

Item	ElectraNet	Transpower	TransGrid
Lines (Circuit km)	5,566	11,991	11650
Substations	68	180	72
Transformer Banks (Each)	118	646	200
Power Transferred (GWhr)	11,960	36,757	66235
Peak Demand (MW)	2,649	5,830	11,573
In House Staff	173	300	945
Opex (AU$m, 2000)	33.8	172.3	188.2
ODV (AU$m, 2000)	972	1725(Note 1)	2,212

Note 1 Converted at AU$/NZ$ of 0.82

2. Opex excludes current fixed asset depreciation in each case where identified

3.All data is from companies 2000 Annual Report

4. Transpower includes $31.3m grid support cost

From the above table it can be seen that there is not one standard unit of measure for comparison and that ratios between length of lines, number of transformers and power transferred are not linear. In general however it can be expected that Opex costs will be lower for those companies with higher GWhr, lower line km, and lower numbers of transformers & substations and reduced peak demands.

With the above in mind only general comparisons can be made and a range of views need to be considered when making any determination on the appropriateness of ElectraNet's Opex expenditure forecast.

Section 6 of this report includes comparison of ElectraNet's Opex with Transpower and TransGrid.

Asset Age Profile

Although a significant number of ElectraNet assets are approaching the end of their nominal life, there could still be significant serviceable life left in them depending on their condition, this is particularly so with regard to power transformers.

The author is experienced in the cost effective refurbishment of existing transformers that have been returned to service in a new location. These particular transformers although being 40 years old were tested to confirm their remaining life was circa 25 years and that it was the best economic solution to proceeded with their overhaul.

With reference to Transpower's Asset Management Plans a significant percentage of their transformer population is between 30 and 49 years of age, with the bulk of 110 kV and 220 kV lines being between 45 to 75 years and 25 to 45 years of age respectively. With appropriate asset maintenance techniques these assets have been able to be cost effectively retained in service without affecting reliability performance indicators while at the same time deferring the need for significant capital expenditure on replacements.

4.0 ElectraNet Operational Processes

4.1 Asset Management Planning

The maintenance group of ElectraNet have been pro-active in developing asset management techniques and although not having a Board approved business plan, they have prepared the existing asset management plan to be in line with the policies and goals of the company as a whole.

The asset management plan, which is reviewed annually, provides details on;

- Asset Management drivers and planning process;
- Details on performance and asset age profiles;
- Proposals for asset augmentation and renewals; and
- Risk profiles of all assets so as to identify those most needing attention

The plan also makes reference to the comprehensive planning approach with regard to future supply options, including load forecasting. The details relating to the expenditure associated with these works is covered in the separate Capex report prepared by Meritec.

ElectraNet adopts a whole of life-cycle cost approach to asset management centred on the principal of reliability and risk management. This approach utilises preventative, scheduled, and on-condition techniques depending on the best mix for each asset.

To keep track of and evaluate the various requirements ElectraNet currently uses the MAXIMO maintenance package but will be changing to SAP in the near future, as well as some in house or proprietary software tools for specific tasks not able to be supported in MAXIMO.

ElectraNet also undertakes detailed analysis of power system faults to determine their cause and identify corrective or preventative actions required. This process includes the investigation and reporting of each event so that the results are widely disseminated to all stakeholders.

ElectraNet's asset management plan is comprehensive in that it links asset management strategies to required levels of performance and other drivers. The planning approach is satisfactory and the tools used appear to be effective. ElectraNet should ensure that

during the next review cycle the asset management plan is updated to reflect the companies business plans when the board approves them.

4.2 Expenditure Definitions

The definition of a unit of plant forms ElectraNet's basis for determining whether expenditure should be classed as Opex or Capex. A test commonly applied is whether the unit under consideration is physically or commercially separable, and to what level is it integrated into a system as a whole.

ElectraNet adopts the switchgear bay as the unit of plant with this including the circuit breaker, disconnectors current transformer etc. ElectraNet in their application expensed all costs incurred on parts of the unit while the entire unit is capitalised.

Should a new unit be required or a unit of greater capacity is needed then it is treated as capital.

Costs incurred in restoring the unit to full service or to prevent deterioration are expensed as per ElectraNet's' capitalisation policy.

The effect of this policy if implemented could be that any replacement less than the unit of property would be able to be expensed and not capitalised. Meritec disagrees with this definition as it could mean that instead of replacing the mechanism on an otherwise serviceable disconnector the entire disconnector is replaced, or should a bushing require replacement on a transformer the entire transformer is replaced. As an example of this effect if all of the capital provisions for asset refurbishment contained in ElectraNet's application were removed an immediate $15m reduction in 2004 (19%) in Opex would result.

5.0 ElectraNet Opex Budget Evaluation

5.1 Historical Comparison

Meritec has been unable to undertake any meaningful historical cost comparison pre 1999 due to ElectraNet being unable to provide data on a comparable basis within the time available. Due to changes in their capitalisation polices and accounting treatments ElectraNet was only recently able to assist in providing some comparative data back to 1999/00.

Due to these changes in accounting practices, recording and reporting, the ability of the review to comment on such matters has been restricted and is based on the information assembled by ElectraNet.

In evaluating all of the categories of the Opex application we have tried to link costs from the submitted application spreadsheet to costs that appear in the companies annual report on a line by line basis. An example of this is Grid Support that appears in ElectraNet's 2000 annual report as $1.8m and $1.4m for 2000 and 1999 respectively and is shown in their application as $4m.

Where a direct line by line comparison has not been possible allocations have been based on similar appearing categories while at the same time keeping a running total to ensure that double counting of items does not occur but at the same time trying to apportion historical costs over the application.

When reviewing this report it is to be remembered that because of the difference of all network companies that direct comparisons can not be made and as such line by line comment is not the most helpful rather a more holistic view looking at trends for various categories and the total Opex spend will give greater confidence in the outcome.

5.2 Budget Envelope

As part of the evaluation of ElectraNet's Opex application the review team established a budget envelope using two methods each based on existing asset value. It must be stressed that no two companies are the same and that the use of these techniques does not provide a definitive answer but provides an indicative guide only. The first method compared the percentage of Opex of a number of TNSPs and ElectraNet to their existing asset value. The second method assumed that as an average most network companies appear to have an Opex spend of 20-30% of their Capex . To evaluate this a common maximum service life of 50 years for all assets and that an idealised normal distribution

would be used to keep the average asset life to 25 years by replacing all assets as they fell due.

Results from the first method showed annual Opex spend excluding depreciation of between 4% and 10%. This would give ElectraNet an Opex envelope of between $28 to $70 million, assuming an asset base of $700m, while the second method suggested an Opex spend of around $77 million.

The first method was selected as it enabled the use of readily available data from the various network companies annual reports even if these companies were not used in the benchmarking evaluation that followed. The second method was used as a check on the first and again made use of information in annual reports that tended to show that companies equipment replacement spend was equivalent to 20% to 30% of their Opex budget.

Both methods are acknowledged to be crude but are used to establish some boundaries and to get a feel for where ElectraNet places with respect to others in the industry. For greater comment on this and benchmarking refer to Section 6.

5.3 Network Maintenance

This category is broken down into

- Service Contracts, External labour & Materials
- Operational Maintenance & Management
- Materials
- Network Support Costs.

Historically this item appears to have absorbed between $14m and $17m pa of the ElectraNet Opex budget allocation. The increase to $18.8m or $20.6m is significant and is equivalent to an overall increase of between 24% and 34% over previous years.

(a) Service Contracts, External Labour and Materials

With regard to the first item service contracts, external labour and materials this item's total spend according to previous annual reports has been around $10m to $12m pa including contractors and consultants fees. All maintenance works for lines and substation plant are outsourced through contracts. Meritec has reviewed maintenance tender documents that covered a range of works and confirmed that only suitably qualified contractors were invited to tender. These tenders are arranged in multi work site packages and are competitively let, evaluated and awarded. Due to its location and size ElectraNet has a limited pool of maintenance contractors from which to call tenders and because of this prices may be affected when resources are constrained.

Even allowing for increases in efficiency ElectraNet's budget of $7.2m to $8.4m appears optimistic and as such a more realistic $11m pa indexed to 25% of the increase only in the ElectraNet asset base has been used.

Meritec recommends that the amount allocated for Network Maintenance Service Contracts be increased to $11m pa, and be indexed to 25% of the increase in asset value.

(b) Materials

Materials costs also appear to be budgeted lower than has historically been the case However it is assumed that the reason for this difference is that historically ElectraNet provided contractors with materials but the existing maintenance contracts require the contractor to supply all required plant and materials.

Meritec recommends that the materials budget be accepted

(c) Network Support

From the information provided we could not identify common items relating to Network Support costs in either the annual reports or ElectraNet's application and as such we question this large increase. Unless additional evidence supporting ElectraNet's position is available we would suggest that the only item in support of the Network that is not allocated is the Telecommunications and IT maintenance function. This has historically been around $2.4m, excluding 1999 where it jumped to $3.5m to accommodate Y2K issues. Again this item should be linked to the number of assets on the ElectraNet system as these support functions will grow as the network grows.

Meritec recommends that the network support cost be reduced to $2.4m pa and be indexed to 25% of the increase in asset value.

(d) Operational Maintenance and Management

Operational and Maintenance Management is assumed to be related to ElectraNet's internal labour costs for providing support to the management of the network. If this is so then we have accepted the costs as stated by ElectraNet ($2.8m in the first year) but have reduced the total internal labour budget recorded under Corporate Services ($7.6m in the first year) by an equivalent amount. As the yearly increase for this item is approximately 1%, which is less than the projected rate of inflation, it is assumed that ElectraNet will meet any shortfall through efficiency gains.

Meritec recommends that the costs associated with operational maintenance management be accepted but an equivalent amount be deducted from the corporate services amount for internal labour.

In summary ElectraNet requested $108.16m for this item over the regulatory period with the amount evaluated by Meritec being $93.06m.

5.4 Network Refurbishment

In their application ElectraNet has outlined its case for $14.7m to $13.1m per year for Network Refurbishment over the regulatory period .

The largest component of this expenditure $11.4 to $10.5m is for the replacement of at risk or aged assets identified as part of ElectraNet's Asset Management Plan, while the smaller remaining component has been described as being for projects associated with operational mitigation measures and the disposal and reparation of obsolete assets.

Meritec has been directed by ACCC to consider all refurbishment expenditure as capital expenditure and Meritec has therefore deleted all such costs from the Opex budget provisions.

However, with regard to the second item identified in their initial application "Other associated refurbishment projects" a requirement for between $3.3m & $2.6m per year over the regulatory period for various works was noted. After additional requests for information ElectraNet provided a revised breakdown that appeared to indicate a requirement for $7.4m to $8.1m. In either case it was not possible to identify specific projects for which funds were allocated or if they related to the additional operating projects identified in ElectraNet's Asset Management Plan, as such these costs totalling $15.3m over the period in ElectraNet's application have also been transferred to Capex.

The Asset Management Plan identifies projects of an operational nature such as transformer oil reclamation, installation of anti bird nesting devices, or SF6 gas monitoring and control. These projects all involve the modification of existing assets in some minor way that will ensure that the asset will perform as originally designed. These projects total $24.78 m over the regulatory period and in general appear reasonable and as such Meritec would agree with them being classed as operational expenditure.

Meritec recommends that the funds identified for Other Operating Projects be deleted and replaced with those identified in the Asset Management Plan as totalling $24.78m over the regulatory period

In summary ElectraNet requested $77.4m for this item over the regulatory period with the amount evaluated by Meritec being $24.78m, the balance of funds being transferred to Capex.

5.5 Network Monitoring & Control

These include the costs associated with network switching, asset monitoring and the control centre

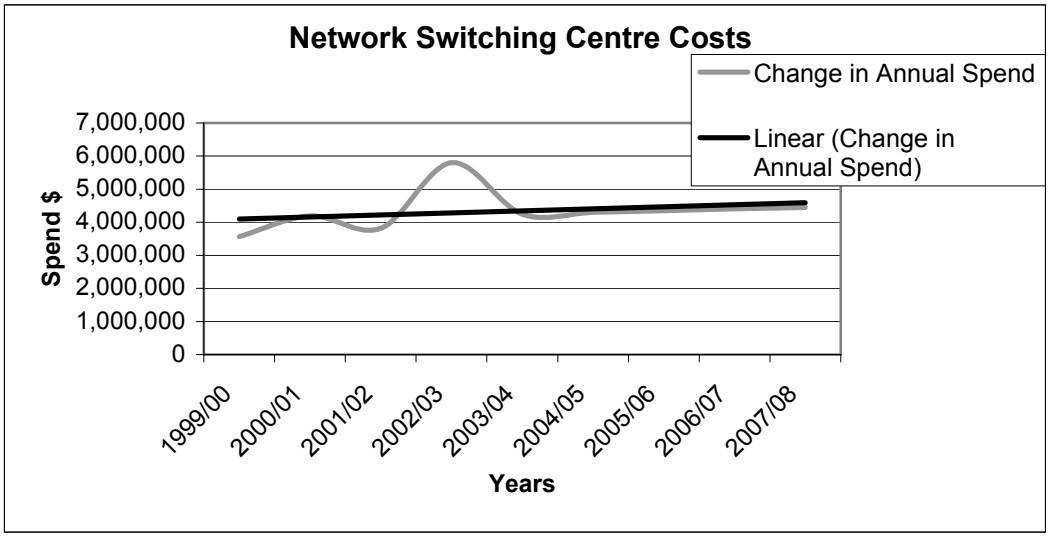

Figure 4 Network Switching Centre

(a) Network Switching Centre

Network switching centre costs have historically ranged from $3.5m to $4.2m and as can be seen from the ElectraNet application and the above graph generally follow this trend, apart from a requirement for $5.8m in year 2002/2003. As the additional costs associated with operating the network switching centre increase at a rate (1.2%) less than the additional equipment being added to the system we consider that these costs are reasonable and should be allowed.

Meritec recommends that the costs associated with the network switching centre are reasonable and should be allowed as proposed.

(b) Technology Service Function

The costs associated with the technology service function these appear to have been around $650k pa historically and grow generally in line with the increase in assets on the ElectraNet system, except for years 2002/2003 & 2003/2004 where they are proposed to increase by 5% and 11% respectively. Without ElectraNet identifying specific projects it is felt that these costs should be held to no more than those of other years at around 3.5% growth, consequently Meritec has revised back the expenditure in these and subsequent years.

Meritec recommends that costs associated with the technology service function be revised back to $713k pa in 2003/04, and be indexed to 3.5% increase per annum.

(c) Asset Monitoring

Contained in the ElectraNet asset management plan is a section on the asset-monitoring plan that identifies specific asset monitoring projects. As noted earlier we believe the asset management planning process utilised is robust however the project expenditure identified in the asset management plan does not agree with that in ElectraNet's breakdown of costs for this item. Meritec has therefore adjusted the proposed ElectraNet budget to conform with the asset monitoring project costs contained in the asset management plan. Even though we could not identify the proposed individual amounts we could identify individual projects from the asset management plan and for reasons of transparency we have adopted this approach.

Meritec recommends that costs associated with asset monitoring be adjusted to those contained in ElectraNet's Asset Management Plan

In summary ElectraNet requested $39.16m for this item over the regulatory period with the amount evaluated by Meritec being $36.12m.

5.6 Support & Corporate

These costs include internal staff labour, office expenses, audit fees, property and buildings, depreciation and directorship costs.

(a) Internal Staff Labour

Internal staff labour costs have historically been around $11.2m pa, with the number of staff having stabilised around 170 full time equivalents. Allowing for network size and ElectraNet's outsourcing policy this is comparable to other companies. It has been noted earlier in this report that some of the staff costs may be attributed to network operations

and support and as such this amount ($2.87m) has been removed from the internal staff labour costs for support and corporate leaving a balance of $8.35m.

(b) Office Expenses

Office expenses have normally been around the $750k to $850k, while audit fees and property and building costs have been between $65k to $67k and $500k to $700k respectively.

It is felt that allowances of $8.35m, $800k, $66k and $600k are therefore appropriate. In making these allowances it is assumed that any movements in staff costs will be able to be met through efficiencies in other expense areas.

Meritec recommends that a corporate cost allowance of $10.2m pa be made.

(c) Directorship Costs

Directorship costs have shown a large movement increasing from $295k in 1999 to $373k in 2000 and are projected to rise to $592k per year for the regulatory period, equating to a 26% and 58% increase respectively. Generally these rates are comparable with other utilities in Australia, however due to the significant rise in such a short time Meritec is unable to form a view on this matter.

(d) Abnormals

ElectraNet has not made any provision for abnormal expenditure and Meritec agrees that such a provision is not required.

The table below has been compiled to show that allowance has been made for internal labour costs between network maintenance and corporate overheads.

Item	Historical	Applied For	Reviewed
Network maintenance Operational Management	Not Itemised Out	$2.87m	$2.87m
Corporate Services Internal Labour	$11.22m	$7.66m	$8.7m
Corporate Services Office Expenses	$0.749m	Included	$0.80m
Corporate Expenses Audit Fees	$0.067m	Included	$0.066m
Corporate Expenses Property & Buildings	$0.702m	Included	$0.6m
TOTAL	$12.738	$10.53m	$12.686m

In summary ElectraNet requested $45.44m for this item over the regulatory period with the amount evaluated by Meritec being $57.9m.

5.7 Risk Management

The risk management costs involve items such as insurance, management functions, self-insurance, mitigation projects and network contingency provisions.

(a) Insurance Premiums

With reference to ElectraNet's supplied spreadsheet information that reconciles historical costs and future ones into the same categories as shown in their application, the category of risk management appears at first reading to require an additional $5.9m to $6.7m pa during the regulatory period.

Historical insurance premium costs were able to be provided as far back as 1999. These costs jumped considerably between 1999 and 2000 due to ElectraNet being required to insure against items they were previously exempt from, such as Workers Compensation. From 2000 to 2002 insurance cost increase were generally in line with market increases. The insurance budget for 2003 onwards has again increased significantly and this reflects recent increases and expected future increases in insurance costs throughout the world. These allowances appear to be justified.

However the historical cost of insurance premiums must have been included in the Network Maintenance or Corporate budget as no separate line item for insurance can be found in the ElectraNet Annual Reports. Meritec considers that historical levels of insurance have already been provided within the other categories and that the historical costs of insurance should be deducted from those that ElectraNet are claiming in its submission. This reduction of historical premiums of circa $1.18m has a net effect of reducing this item from $13.1m to 5.8m during the period.

Meritec recommends that the historical costs of insurance be deducted from those amounts claimed as some insurance appears to have already been included in other budgets

(b) Risk Management Function

The risk management function referred to in the ElectraNet application costings has been removed, as it would appear from information to date that this function is already being undertaken as part of the labour content associated with Network Maintenance.

Meritec recommends that the costs associated with Risk Management Function be removed as they appear to have been included in other budgets

(c) Self Insurance Allowance

ElectraNet like other utilities has been making allowance for a portion of self-insurance where there is no commercially available cover or the premiums of such cover are greater than what ElectraNet could self-insure for. As part of this process ElectraNet has had a separate report prepared by AON & Partners looking at the likely insurance cost. The report has indicated that ElectraNet's current and future potential self-insurance losses are assessed as being $2.175m. Although not being able to form a view on this item we have accepted the value from the AON & Partners as being experts in their field and that this value was arrived at based on ElectraNet's decided risk profile. We note however that the value indicated in the ElectraNet costing sheets is $2.8m and as a result we have reduced this to the value given in the AON & Partners report of $2.175m.

Meritec recommends that the costs associated with self-insurance be reduced to those shown in the AON & Partners report of $2.175m pa.

(d) Risk Mitigation Projects

Risk Mitigation projects have been allocated $2.6m pa over the regulatory period. No additional specific projects were identified as requiring these funds apart from those in the Asset Management Plan under either the Operating Projects budget or the Asset Monitoring Budget. Both of these budgets appear to make allowance either for the installation of monitoring equipment to assist in the identification of problems on at risk assets before they eventuate or for the application of mitigation measures should they occur, for example transformer bunding. For this reason we have removed the costs associated with this Opex category.

Meritec recommends that the costs associated with risk mitigation projects be removed as they appear to have been accommodated elsewhere.

(e) Network Contingency Provisions

No specific supporting information with regard to network contingency provisions has been provided by ElectraNet. It is to be assumed that ElectraNet already make such provisions in their existing budget either as part of Network Support costs or as part of corporate costs. As no specific line item for Network Contingency could be identified under the existing application costings or in previous Annual Reports the costs associated with this item has been removed.

Meritec recommends that the costs associated with Network Contingency Provisions be removed.

In summary ElectraNet requested $52.04m for this item over the regulatory period with the amount evaluated by Meritec being $17.75m.

5.8 Imposed Costs

These cover a number of items including the South Australian Code (SA Code), NEM and legislative compliance costs, and grid support (generation). The SA Code is more prescriptive than the NEM code and sets minimum standards of security and vegetation control based on the type of load etc.

(a) Vegetation Management Licence Fees & Levies EtAl

With regard to the Vegetation Management, Licence Fees & Levies, Regulatory Management and Legislative & Code Compliance Audit costs, these are all costs that ElectraNet would be meeting now and therefore appear to be met by ElectraNet from within its current operating budget and as such have been excluded by Meritec from the Opex provisions.

Meritec recommends that the costs associated with vegetation management, licence fees & levies, and legislative and code compliance be removed as they appear to have been accommodated elsewhere.

(b) NEM & Hedging

New costs imposed on ElectraNet resulting from the NEM such as NEM compliance and audit costs will need to be allowed for in any new revenue determination. As to the exact magnitude of these costs, ElectraNet's allowances appear to be a reasonable estimate of the likely magnitude but we would suggest that they be approved subject to being passed through so that ElectraNet cannot claim for higher costs than it actually incurs.

From the information provided it would appear that hedging costs are for protection against interest rate movements for capital projects and that the EPO allowance is for items not covered in the EPO agreement. As refurbishment has been removed from Opex to the Capex budget and as hedging was not allowed in Powerlink's case these items have been removed from the application allowance.

Meritec recommends that the costs associated with the new NEM be allowed subject to pass through to ensure that ElectraNet only recovers costs actually incurred. However all other costs except for Grid support should be removed.

(c) Grid Support

The costs associated with generation support for Port Lincoln have been based on historical costs, that have been between $1.9m and $1.4mpa. The amount claimed appears large ($4mpa) and has been reduced to be in line with the historical levels and then held constant through the regulatory period. Should any network developments occur during the regulatory period that remove the need for this allowance then these funds should be recovered by the ACCC, likewise however should the costs for Grid Support increase then ElectraNet should be able to recover them and as such we suggest that this item becomes a pass through.

Meritec recommends that the costs associated with generation for grid support be subject to a pass through arrangement so that ElectraNet are fairly compensated for such cost only when they occur.

In summary ElectraNet requested $71.2m for this item over the regulatory period with the amount evaluated by Meritec being $16.5m.

The effects of all of these recommended expenditure adjustments are shown in Appendix A and summarised in Section 7 of this report.

5.9 Efficiency Gains

Meritec believes that the ability to show significant efficiency gains between years within any given regulatory period is limited due to the nature of the business and the type of assets involved. For example the effect of replacing 10% of the air-blast circuit breakers on the circuit breaker budget may be significant but its effect on the overall operations and maintenance budget would be more diluted. That said however ElectraNet should be able to show efficiency gains between regulatory periods particularly after a number of years have passed.

6.0 ElectraNet Performance Comparisons

6.1 Benchmarking

Benchmarking is a useful aid in assessing the comparative performances of different companies. However direct comparisons, or attempting to obtain absolute results, is not possible due to the differences of each company with regard to asset types, ages, geographic location, load density and profile and maximum demand.

A simplified example as to why benchmarking can only be used as a guide would be to consider two networks, exactly the same in terms of physical assets and load, with the only difference being the staff that manage them. Even with the networks having these similarities, a difference in Opex spend would still be observed if the staff of one company were more conservative in the operation of their network in contrast to the others who may be less risk sensitive.

Another example is that the financial instruments, accounting treatments and reporting may differ between companies providing that some companies are significantly better in some areas than others.

Allowing for this limitation, some comparisons have been undertaken by both ElectraNet and ourselves and are commented on in the following paragraphs.

6.2 International Benchmarking

ElectraNet is a member of the International Transmission Operations & Maintenance Group (ITOMs), and regularly benchmarks its performance against other members of the group. After a period of historically satisfactory results, ElectraNet's service levels have started to show a decline while their expenditure levels have remained comparatively similar to the other TNSPs in their group. This could either be due to factors outside ElectraNet's control or as a result of ageing equipment, results over a number of survey periods would be needed to confirm the true cause so that appropriate action could be taken.

As this review was to comment on the appropriateness of Opex expenditure of ElectraNet it is felt that the benchmarking undertaken in comparison to other non-electricity network providers is not entirely relevant and has not been reviewed any further.

6.3 Opex Measures

A number of comparisons were made between the Opex expenditure of ElectraNet, Transpower and TransGrid, using utility measures such as Asset Value, Peak Demand, Annual Power Transmitted and Line Length. These comparisons were conducted using ElectraNet's existing, requested and Meritec-evaluated Opex expenditure, with the

results being presented below. These results indicate the percentage spend of Opex when compared to the value of each of the other categories, whose data was sourced from sections 3 & 4 of this report. All of the figures were obtained from the companies year 2000 annual report.

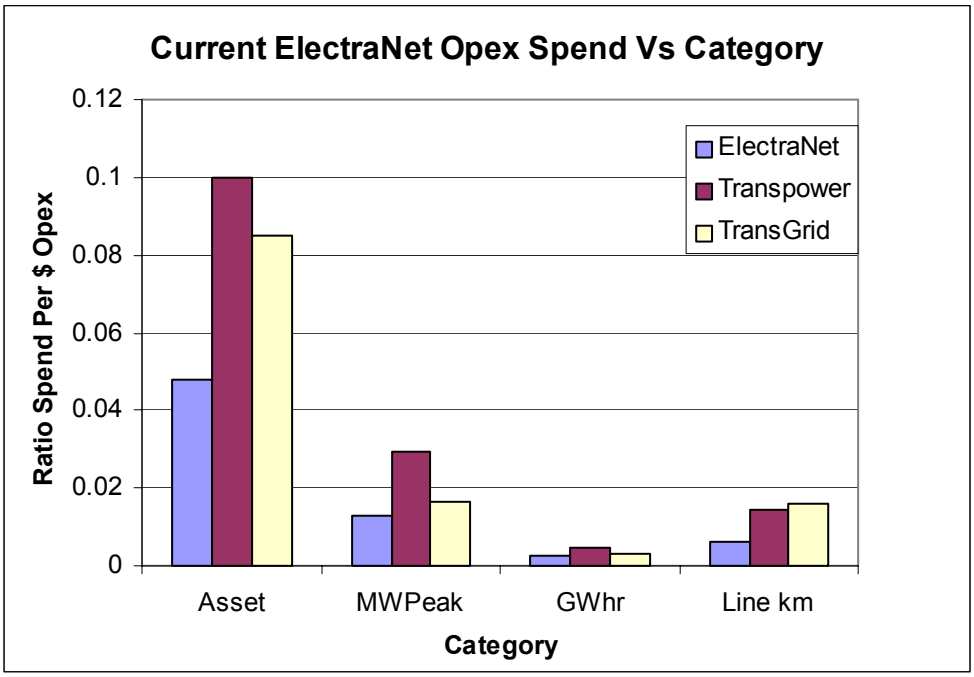

Figure 7 Current ElectraNet Opex Spend

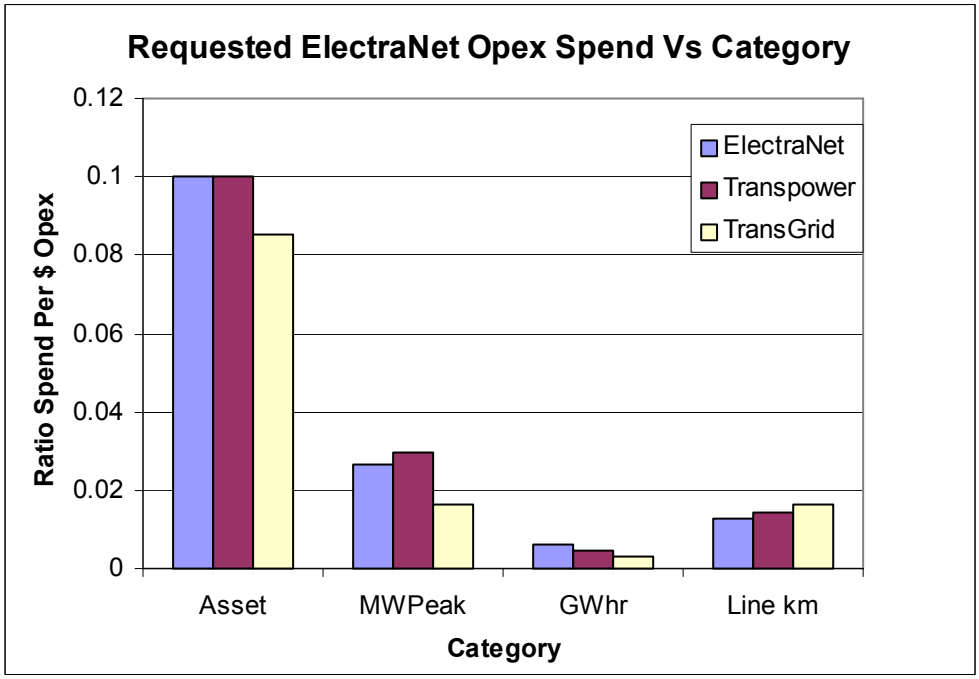

Figure 8 ElectraNet Requested Opex Spend

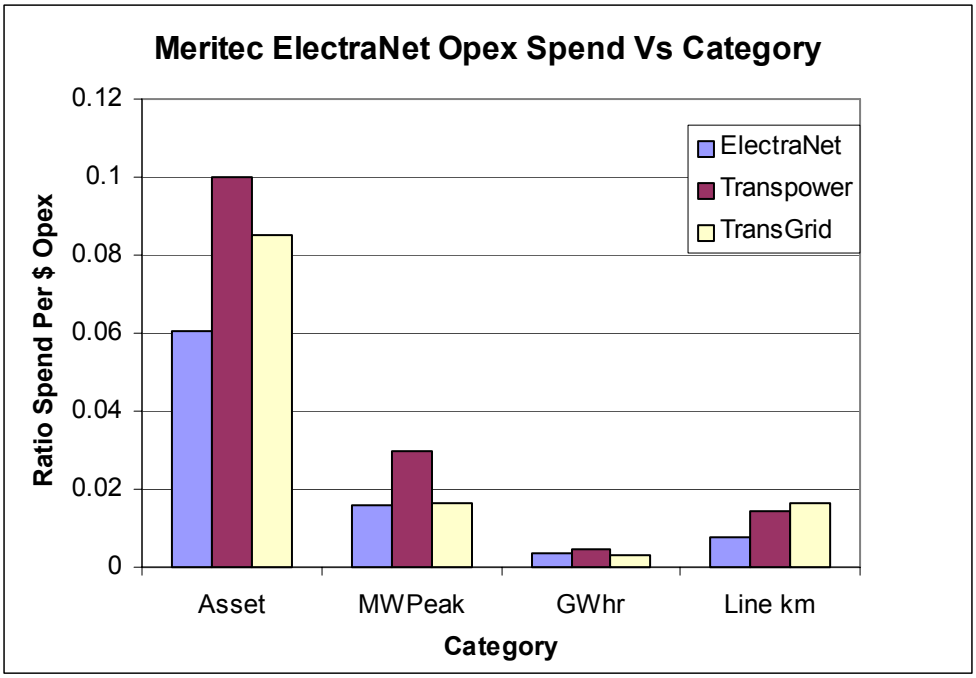

Figure 9 Meritec Evaluated Opex Spend

With regard to their existing Opex spend, ElectraNet appear to be either behind or equal to the other network companies. When ElectraNet's requested Opex spend is used their ranking changes so that they are more comparable to other TNSPs. When the Opex figure suggested in this review is utilised ElectraNet appear to be more evenly balanced across all categories.

On balance we believe that ElectraNet has historically been spending less on Opex than other network companies but their requested amount may be too high and that over time the suggested Opex expenditure is not only reasonable but reduces over time in real terms as shown in the graph below. The graph shows that when compared as a percentage to the asset base that ElectraNet's Opex spend will decrease over time. This is due to ongoing efficiency improvements such as when a more modern piece of equipment that requires less maintenance replaces an older asset.

The break in the historical Opex spend is where data for the various categories was not readily available.

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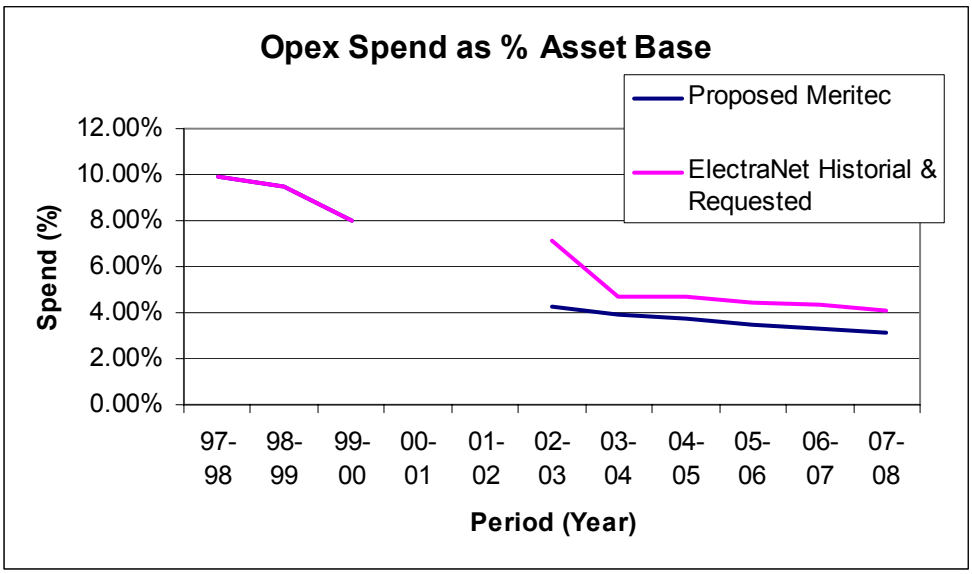

Figure 10 Opex Spend Vs Asset Value Over Period

6.4 Other Measures

One of the deliverables of this review was to suggest other measures that could be used in assessing the performance of TNSPs.

There are a number of existing measures that could be used to assist in gauging the performance of TNSPs such measures could include,

- System performance measures such as system interruption minutes, customer interruption, circuit availability etc
- Return on assets both transmission and total before tax
- Accident rates

Meritec have also considered this issue more widely and would like to suggest that in addition to the above that the following extra measures are possible ways of further judging Transmission Network Service Provider Opex performance.

Table 3 Possible TNSP Opex Performance Measures

Item	Description
Opex vs Network Capacity	A measure that relates Opex expenditure to the transmission capacity achieved. Assuming capacity does not increase then for controllable cost this measure should improve as newer less costly practices take effect
Opex vs Power Transfer	A measure that relates Opex expenditure to the amount of power transferred. This is foreseen as a four-quadrant measure with the best quadrant being reduced Opex and increased power transfer.

7.0 Adjustments to ElectraNet's Proposed Opex Expenditure

Meritec believes that the preparation of the core Opex forecast by ElectraNet is reasonable however a number of adjustments to non operations and maintenance elements of the proposed Opex plan are required. These adjustments are based on the information available to Meritec at the time.

A summary of ElectraNet's operational expenditure projections, and Meritec's recommended adjustments, are given in Table 4.

Table 4 – Summary of Adjustments to ElectraNet's Proposed Operational Expenditure

ElectraNet Proposed Operational Expenditure						
	Jan-Jun 2003 ($m)	2003/04 ($m)	2004/05 ($m)	2005/06 ($m)	2006/07 ($m)	2007/08 ($m)
Total proposed Opex by ElectraNet	36	70.8	71.1	71.5	72.6	71.4
Adjustments All Categories	(13.83)	(26.42)	(26.84)	(26.85)	(27.38)	(25.93)
Total Opex Proposed by Meritec	22.17	44.38	44.26	44.65	45.22	45.47

For a breakdown of the above please refer to Appendix A which details the adjustments proposed for each category assigned by ElectraNet in its application

8.0 Allocations to Opex and Capex

ElectraNet has taken a decision to treat a number of projects as operating expenditure in their Revenue Cap Application. These consist of refurbishment and replacement projects such as transmission line rating upgrades, either by increasing the design temperature or by replacing restrictive terminal equipment such as CT's. In many cases in the past, expenditure of this nature would have been treated as capital.

ElectraNet has put forward the argument that expenditure of this nature is subject to revaluation risk. That is, the mechanism used for the determination of the asset base used to calculate the revenue cap makes no distinction between a line that has had this type of expenditure and one that has not. Therefore, even if such expenditure were allowed as capex in a review such as this, it would be likely to disappear when standard asset values were applied in the next ODRC valuation.

ElectraNet has taken the decision to treat this refurbishment and replacement expenditure as operating expenditure in order to avoid this risk. ElectraNet has put forward a capitalisation policy (effective from 1 Jan 2003) that sets out a position in support of this strategy.

Further, treatment of these costs in this way will result in customers incurring the full cost of those works over the regulatory period, instead of a charge for WACC and depreciation if they were capitalised.

It should also be noted that if these costs were to be allowed as operating expenses, then some mechanism would be required to ensure that the resulting enhancements to the assets involved were not included as an increase in their value during subsequent asset base reviews.

The economic treatment of this decision is an issue for consideration by the ACCC.

Meritec has assigned these expenditures to the capital expenditure allocations and dealt with them under that category for the purposes of this review. The effect of this transfer is to immediately remove $11.4m from the Opex budget in the first year or $62.1m over the period which is approximately 16%.

Most Opex expenditure is associated with the maintenance and operation of the existing assets, however as new assets are added the network maintenance costs will increase slightly as additional inspections or tests are required. We estimate that for every 5% change in the Capex budget a 0.024% change in the same direction will occur in the Opex budget.

9.0 References

ACCC, *Decision, NSW and ACT Transmission Network Revenue Caps, 1999/00-2003/04,* 25 January 2000

ACCC, *Decision, Queensland Transmission Network Revenue Cap, 2002-2006/07*, 1 November 2001

ACCC, *Statement of Principles for the Regulation of Transmission Revenues*, 27 May 1999

ElectraNet, *Transmission Revenue Cap Application, 2003-2007/08*, 16 April 2002

ElectraNet, *Response to Questionnaire from Meritec*, 13 May 2002

PB Associates, *Powerlink Queensland, Review of Operational Expenditure Requirements,* 10 April 2001.

ElectraNet SA, *Risk Management Asset Ranking Methodology*, 7 December 2001

ElectraNet SA, *Asset Risk Ranking*, May 2002

ElectraNet SA, *Asset management Plan 2003-2008*, 16 April 2002

PowerLink, *Review of the Reliability Performance of the ElectraNet Network Over the Past Five Years*, August 2001

Price Water House Coopers, *ElectraNet SA 2003 Revenue Reset Regulatory Treatment of Risk Management Items*, September 2001

Aon Partners, *Self-Insurance Risk Quantification & Modelling Exercise*, November 2001

ElectraNet SA (ETSA), *Statement of Accounting Practice for the Classification of Expenditure*, November 1996

ElectraNet SA (ETSA), *Guidelines for the Classification of Expenditure*, November 1996

ElectraNet SA, *Annual Reports*, 1999, 2000

TransGrid, *Annual Reports*, 1999, 2000

Transpower, *Annual Reports*, 1999, 2000

TransGrid, *Annual Reports*, 1999, 2000

ElectraNet, *Operational Event Investigation Management,* 31 October 2000

ElectraNet, *Operational Investigation Debrief,* 22 May 2002

Transpower, *Asset Management Plan 2001-2*

Australian Treasury, Policy Guidelines for the Evaluation of Electricity Network Business, 1995

10.0 Appendix A Spreadsheets

MODIFIED EXPENSE CATEGORY		Jan - Jul 2003	2004	2005	2006	2007	2008
Opening Asset Base		**996,800,000**	**1,008,200,000**	**1,082,500,000**	**1,148,400,000**	**1,234,500,000**	**1,323,300,000**
Capital Additions from Capex		**11,400,000.0**	**74,300,000.0**	**65,900,000.0**	**86,100,000.0**	**88,800,000.0**	**58,000,000.0**
Revised Asset base		**1,008,200,000**	**1,082,500,000**	**1,148,400,000**	**1,234,500,000**	**1,323,300,000**	**1,381,300,000**
	Percentage Increase in Opex Due to Capex Project Asset Base Change		**25%**				
Network Maintenance		**8,201,295.04**	**16,436,049.83**	**16,685,986.93**	**16,987,239.77**	**17,280,712.20**	**17,468,879.35**
	Service Contracts, External Labour & Materials	*5,500,000.00*	*11,000,000.00*	11,167,413.39	11,376,729.46	11,581,317.07	11,708,218.82
	Operational & Maintenance Management	*1,422,638.52*	*2,871,243.51*	*2,908,651.86*	*2,946,011.19*	*2,981,479.41*	*3,008,205.62*
	Materials	*78,656.52*	*164,806.32*	*173,395.12*	*182,303.60*	*191,082.91*	*197,934.44*
	Network Support Costs	*1,200,000.00*	*2,400,000.00*	2,436,526.56	2,482,195.52	2,526,832.81	2,554,520.47
Network Refurbishment		**2,153,000.00**	**5,011,000.00**	**4,406,000.00**	**4,406,000.00**	**4,406,000.00**	**4,406,000.00**
	Ongoing asset specific projects (Refurbishment Plan)	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Other associated refurb projects (Operating Projects)	*2,153,000.00*	*5,011,000.00*	*4,406,000.00*	*4,406,000.00*	*4,406,000.00*	*4,406,000.00*
Network Monitoring & Control		**4,777,699.07**	**6,193,560.57**	**6,233,205.84**	**6,213,653.87**	**6,382,243.52**	**6,328,995.53**
	Asset Monitoring Projects	*1,190,000.00*	*1,240,000.00*	*1,200,000.00*	*1,100,000.00*	*1,190,000.00*	*1,070,000.00*
	Technology Services Function	*689,641*	*713,778*	*738,761*	*764,617*	*791,379*	*819,077*
	Network Switching Centre	*2,898,058.16*	*4,239,782.23*	*4,294,445.26*	*4,349,036.67*	*4,400,864.72*	*4,439,918.47*
Support & Corporate		**4,135,024.95**	**10,758,500.00**	**10,758,500.00**	**10,758,500.00**	**10,758,500.00**	**10,758,500.00**
	Corporate Services	*3,838,774.95*	*10,166,000.00*	*10,166,000.00*	*10,166,000.00*	*10,166,000.00*	*10,166,000.00*
	Directors Fees & Expenses	*296,250.00*	*592,500.00*	*592,500.00*	*592,500.00*	*592,500.00*	*592,500.00*
	Abnormals	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Risk Management		**1,404,588.30**	**2,983,713.91**	**3,175,704.96**	**3,281,300.04**	**3,392,174.87**	**3,508,593.44**
	Insurance Premiums	*317,088.30*	*808,714*	*1,000,705*	*1,106,300*	*1,217,175*	*1,333,593*
	Reduction based on requested lee historical allowance						
	Risk Management Function	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Self Insurance Allowance	*1,087,500.00*	*2,175,000.00*	*2,175,000.00*	*2,175,000.00*	*2,175,000.00*	*2,175,000.00*
	Risk Mitigation Projects	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Network contingency provision	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Imposed Costs		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	Vegetation Management / Clear	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Licence Fees & Levies	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Regulatory Management	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Legislative & Code Compliance Audits	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Hedging Costs	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
	Under recovered EPO costs	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Pass Through Imposed Costs		**1,500,000.00**	**3,000,000.00**	**3,000,000.00**	**3,000,000.00**	**3,000,000.00**	**3,000,000.00**
	NEM Imposed Costs	*500,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*
	Grid Support	*1,000,000.00*	*2,000,000.00*	*2,000,000.00*	*2,000,000.00*	*2,000,000.00*	*2,000,000.00*
Total	Excluding Depreciation	**22,171,607.36**	**44,382,824.31**	**44,259,397.74**	**44,646,693.69**	**45,219,630.60**	**45,470,968.33**
	Asset Base (Replacement Value less Easements)	**504,100,000**	**1,082,500,000**	**1,148,400,000**	**1,234,500,000**	**1,323,300,000**	**1,381,300,000**
	Opex /%Asset Base	4.40%	4.10%	3.85%	3.62%	3.42%	3.29%
	Previous Expenditure Including Depreciation		**60,038,000**				
	Previous Expenditure Excluding Depreciation		**33,872,000**				
	Original Application Including Depreciation		**99,423,516**				
	Original Application Excluding Depreciation		**70,823,516**				

PROVIDED EXPENSE CATEGORY	Jan - Jul 2003	2004	2005	2006	2007	2008
Network Maintenance	**9,249,985.90**	**18,886,428.88**	**19,343,178.44**	**19,809,009.68**	**20,260,850.22**	**20,609,436.38**
Service Contracts, External Labour & Materials	*3,511,240.23*	*7,281,719.34*	*7,575,818.67*	*7,877,465.32*	*8,171,469.45*	*8,398,543.47*
Operational & Maintenance Management	*1,422,638.52*	*2,871,243.51*	*2,908,651.86*	*2,946,011.19*	*2,981,479.41*	*3,008,205.62*
Materials	*78,656.52*	*164,806.32*	*173,395.12*	*182,303.60*	*191,082.91*	*197,934.44*
Network Support Costs	*4,237,450.63*	*8,568,659.71*	*8,685,312.79*	*8,803,229.57*	*8,916,818.45*	*9,004,752.85*
Network Refurbishment	**6,780,284.00**	**14,773,792.22**	**14,288,366.87**	**14,128,814.30**	**14,286,174.37**	**13,146,916.95**
Ongoing asset specific projects	*5,432,000.00*	*11,445,838.08*	*11,628,200.84*	*11,473,295.44*	*11,626,072.20*	*10,519,997.04*
Other associated refurb projects	*1,348,284.00*	*3,327,954.14*	*2,660,166.03*	*2,655,518.86*	*2,660,102.17*	*2,626,919.91*
Network Monitoring & Control	**4,709,015.52**	**6,807,834.93**	**6,852,100.15**	**6,837,024.83**	**7,008,390.86**	**6,950,239.34**
Asset Monitoring Projects	*1,460,000.00*	*1,780,000.00*	*1,740,000.00*	*1,640,000.00*	*1,730,000.00*	*1,610,000.00*
Technology Services Function	*350,957.36*	*788,052.70*	*817,654.89*	*847,988.16*	*877,526.14*	*900,320.87*
Network Switching Centre	*2,898,058.16*	*4,239,782.23*	*4,294,445.26*	*4,349,036.67*	*4,400,864.72*	*4,439,918.47*
Support & Corporate	**4,135,024.95**	**8,260,411.90**	**8,260,411.90**	**8,260,411.90**	**8,260,411.90**	**8,260,411.90**
Corporate Services	*3,838,774.95*	*7,667,911.90*	*7,667,911.90*	*7,667,911.90*	*7,667,911.90*	*7,667,911.90*
Directors Fees & Expenses	*296,250.00*	*592,500.00*	*592,500.00*	*592,500.00*	*592,500.00*	*592,500.00*
Abnormals	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Risk Management	**4,286,482.61**	**8,845,876.53**	**9,320,695.38**	**9,581,846.35**	**9,856,053.96**	**10,143,972.35**
Insurance Premiums	*989,186.57*	*2,152,910.45*	*2,344,901.50*	*2,450,496.58*	*2,561,371.41*	*2,677,789.98*
Risk Management Function	*176,339.92*	*351,353.84*	*351,353.84*	*351,353.84*	*351,353.84*	*351,353.84*
Self Insurance Allowance	*1,414,138.50*	*2,828,277.00*	*3,111,104.80*	*3,266,660.69*	*3,429,993.47*	*3,601,493.29*
Risk Mitigation Projects	*1,250,150.00*	*2,600,000.00*	*2,600,000.00*	*2,600,000.00*	*2,600,000.00*	*2,600,000.00*
Network contingency provision	*456,667.62*	*913,335.24*	*913,335.24*	*913,335.24*	*913,335.24*	*913,335.24*
Imposed Costs	**6,840,339.69**	**13,249,172.36**	**13,072,198.36**	**12,812,633.77**	**12,897,800.81**	**12,332,790.59**
Vegetation Management / Clear	*615,358.09*	*1,276,148.76*	*1,327,690.78*	*1,380,555.49*	*1,432,080.82*	*1,471,876.40*
Licence Fees & Levies	*1,280,054.52*	*2,751,217.23*	*2,956,658.52*	*3,177,507.91*	*3,414,921.00*	*3,670,140.08*
Regulatory Management	*371,132.26*	*576,288.52*	*576,288.52*	*576,288.52*	*1,076,288.52*	*1,076,288.52*
Legislative & Code Compliance Audits	*136,269.32*	*272,081.64*	*272,081.64*	*272,081.64*	*272,081.64*	*272,081.64*
Hedging Costs	*1,107,723.00*	*2,404,914.00*	*2,022,654.00*	*1,462,144.50*	*759,118.50*	*0.00*
NEM Imposed Costs	*500,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*	*1,000,000.00*
Under recovered EPO costs	*880,000.00*	*880,000.00*	*880,000.00*	*880,000.00*	*880,000.00*	*880,000.00*
Grid Support	*1,949,802.50*	*4,088,522.21*	*4,036,824.90*	*4,064,055.71*	*4,063,310.33*	*3,962,403.95*
Total	**36,001,132.67**	**70,823,516.82**	**71,136,951.10**	**71,429,740.83**	**72,569,682.12**	**71,443,767.51**
Asset Base (Replacement Value less Easements)		**1,495,973,755**	**1,524,817,457**	**1,606,303,658**	**1,679,173,641**	**1,756,582,094**
Opex/Asset Base Ratio		**4.73%**	**4.67%**	**4.45%**	**4.32%**	**4.07%**