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11 March 2010

Ms Michelle Groves
Chief Executive Officer
Australian Energy Regulator
GPO Box 520
MELBOURNE VIC 3001

By email to: NSWACT@accc.gov.au

Dear Ms Groves

EnergyAustralia's submission on AER's draft decision for public lighting

Please find attached our submission responding to the AER's February 2010 draft decision for EnergyAustralia's public lighting services. Our submission addresses the issues raised by the AER in its draft decision. Where appropriate, we have revised our cost input assumptions to address these issues.

In general, EnergyAustralia considers that the AER has made its draft decision in accordance with the directions of the Australian Competition Tribunal and has appropriately addressed the issues arising from the review of the AER's April 2009 decision.

In particular, we note and support the AER's draft decision to vary its April 2009 decision in respect of the opening value of the RAB. The AER's decision is based on an appropriate review of material put forward by EnergyAustralia in its January 2010 and earlier submissions.

Our main concern lies with the AER's draft decision to reduce the proposed operating expenditure by over 12 per cent.

Public lighting prices should be cost reflective of the service provided. In response to customer demands, EnergyAustralia has embarked on a strategy of reducing outage time for street light repairs, improving our reporting to customers, and has introduced quarterly night patrols for certain categories of lighting.

Our improvements in service delivery, until now, have come at a cost to EnergyAustralia and not to our customers. The expenditure incurred by EnergyAustralia in these years is well above the allowance assumed in the underlying prices charged to customers.

Our January 2010 submission included what we considered to be an efficient forecast of operating expenditure for the public lighting business. Our proposed expenditure is consistent in real terms with the actual operating expenditure we have incurred in 2007-08 and 2008-09, and is significantly below our expected expenditure in the current regulatory year.

However, the AER's recommended changes to operating expenditure will necessarily result in a reduction in the standard of services currently provided to customers, if we are to promote cost reflective prices.

We request the AER to reconsider its decision in respect of public lighting operating expenditure in light of our submission.

If you have any questions on this submission, please do not hesitate to contact Mr Trevor Armstrong on (02) 9269 2611.

Yours sincerely

GEORGE MALTABAROW
Managing Director

EnergyAustralia

Submission responding to the AER's February 2010 decision - public lighting prices 2010 to 2014

March 2010

Contents

1. Summary

EnergyAustralia notes that the AER's draft decision has been made in accordance with the directions of the Australian Competition Tribunal (Tribunal). We consider that the AER has appropriately corrected modelling errors in the AER's 2009 Final decision, as identified by the Tribunal.

We also note that the AER has varied its decisions on the value of the regulatory asset base and the forecast operating expenditure.

Our submission indicates where we accept or reject the AER's draft decisions, and the reasons for our position.

1.1 Outline of our Submission

Regulatory Asset Base

EnergyAustralia supports the AER's decision to vary its April 2009 decision in respect of the opening value of the RAB. We note that the AER's decision is based on an appropriate review of material put forward by EnergyAustralia in its January 2010 and earlier submissions.

Subject to the AER confirming the accuracy of its inputs and assessing the merits of the inclusion of a half WACC assumption in its roll forward model, we accept the AER's draft decision to determine an opening RAB of $140.9 million as at 1 July 2009.

Our submission also addresses the concerns raised by SSROC. We note that the AER's decision to roll in actual capex to the opening RAB established by IPART in 2004, is the correct approach.

Operating Expenditure

EnergyAustralia has reviewed the AER's findings on operating expenditure, and has revised its proposed operating expenditure where necessary to address matters raised by the AER. We have also made some changes to assumptions in the model based on better and more updated information.

We have highlighted all changes made to our cost build up assumptions in this submission. The key points raised in our submission are:

- We accept and support the AER's conclusions regarding the robustness of our cost build up model. We also note the AER's support of Bulk Maintenance contract prices but provide reasons as to why these rates should be used with caution if moving to longer cycles.
- We accept the views of the AER's consultant regarding including additional cost for quarterly night patrols as an addition to indirect overhead. We have identified that the inclusion of a separate costs for night patrols was an inadvertent duplication and have made adjustments to the model accordingly.
- We have partially accepted the AER's decision to address inconsistencies in failure rates for multi-lamp luminaries. We have adjusted our assumptions accordingly.
- We note the AER's decision to move away from a commonly applied labour rate calculation for EnergyAustralia and instead focus more directly toward the actual costs incurred by the street lighting business. However to ensure we capture all the direct costs of the public lighting maintenance crew, we engaged SKM to undertake a more thorough analysis.
- We note inconsistencies between our assumed failure rates for miscellaneous asset types and our actual failure rates for this asset class and have made adjustments accordingly.
- We reiterate our concerns with the underlying data supporting our proposed spot failure rates and, in the absence of any further evidence explaining our analysis inconsistencies, recommend the AER move back to its determined spot failure rates for a three year cycle.
- We do not accept several recommendations made by EMS regarding assumed travel times and mixed bulk lamp replacement cycles. We raise particular concerns with EMS's assessment of the PB report on benchmarking and the potential consequences of EMS's conclusions in this regard.
- We provide additional evidence in response to EMS's concerns regarding reconciliation with our previous model.

Pricing arrangements for assets replaced at the customers request

The AER's draft decision accepts EnergyAustralia's method to calculate the residual value of asset being replaced early at the customers' request. We agree and support this decision. The

method for calculating the residual value ensures consistency with the principle of financial capital maintenance and improves transparency for customers.

Correction of other errors

EnergyAustralia's January 2010 submission included previous determination models, which were corrected for modelling errors identified by the Tribunal. These have been accepted by the AER. We therefore believe the AER has correctly amended its determination for the application of the appropriate WACC, connections operating costs, and Vlookup errors.

In respect of other errors identified by the Tribunal, we note:

- The AER's indexation calculations appear to correct the errors identified by the Tribunal, however we have not audited the calculations.
- We do not accept the AER's decision to allocate 42 minutes to the construction of a public light and consider that the AER should use 60 minutes as proposed by EnergyAustralia.
- We do not accept the AER's draft decision to change the proportion of labour in constructing a public light from 60 per cent to 23 per cent. We propose the AER should use 42 per cent as the appropriate labour cost proportion of total capital cost.

Control mechanism

EnergyAustralia generally agrees with the AER's small changes to our proposed control mechanism, however we wish to clarify:

- Whether the AER's outturn CPI calculation is the same as that applied in standard control services? If not, we propose that they be brought into line in the AER's final decision.
- Whether the annual RAB adjustments will only take place for cases where EnergyAustralia recovers the residual value.
- When the AER expects customers to start paying the new charges for early replacement assets that are installed at the customers' request. We consider that the charges should commence from the month that the asset is installed.

2. Regulatory Asset Base

EnergyAustralia supports the AER's decision to vary its April 2009 decision in respect of the opening value of the RAB.

We noted in our January 2010 submission that our preferred approach for establishing the opening RAB would use the method set out in NERA Economic Consulting's report, which results in an opening asset base of $142.4 million.

Due to the limited time available to respond to the AER's draft decision, we have not undertaken a detailed reconciliation of the AER's method against that used by NERA.

We note however that if the AER were to include a half WACC in its calculations, the opening asset base would be closer to the value recommended by NERA.

Subject to the AER confirming the accuracy of its inputs and assessing the merits of the inclusion of a half WACC assumption, we accept the AER's draft decision to determine an opening RAB of $140.9 million as at 1 July 2009.

2.1 Basis for AER's decision in April 2009 and additional information

We understand that, in making its re-determination, the AER has adjusted the roll forward model used in its April 2009 decision, by changing the remaining asset life assumption to 16.2 years.

The AER has also varied its decision to incorporate the orders of the Tribunal to apply the same indexation approach used to roll forward the RAB for standard control services.

The AER's basis for its decision is based on material put forward by EnergyAustralia in its January 2010 and earlier submissions.

While the AER's description of events leading up to its April 2009 determination[1] is not fully consistent with our description of those events[2], we are nevertheless satisfied that the AER has now appropriately reviewed the material provided by EnergyAustralia including:

- a letter to EnergyAustralia from IPART on 2 March 2005, which rejected EnergyAustralia's 2004 price proposal, and indicated that a significantly lower depreciation allowance would be more appropriate.
- EnergyAustralia's 2005 revised pricing proposal, which was approved by IPART, and which was based on a deferral of the depreciation allowance by extending the remaining life assumption to 16.2 years.
- IPART's spreadsheet models, which included a range of input assumptions that IPART had regard to in its assessment of EnergyAustralia's revised proposal, and which used a remaining asset life of 16.2 years as proposed by EnergyAustralia.

We support the AER's analysis and support its conclusion to revise the opening RAB.[3] We also note that the AER's draft decision appropriately incorporates the orders of the Tribunal to remove the lagged inflation indexation applied to the opening RAB.

2.2 Financial Capital Maintenance and customer prices

We support the AER's decision to maintain the principle of financial capital maintenance under an asset base roll forward approach. Such a decision is consistent with common regulatory practice and precedent.

It is clear from the evidence before the AER that IPART's decision to approve EnergyAustralia's prices included deferred depreciation. The AER has therefore correctly determined that

1 AER March 2010 Draft Determination, p11
2 We have outlined our interpretation of events in previous submissions to the AER and the Tribunal
3 AER, March 2010 Draft Determination, p12

the recovery of depreciation had been deferred in the prices established by IPART in 2005.

IPART acknowledged that it could not bind a future regulator. However, the AER's decision to adopt a financial roll forward of the RAB compels it to take into account IPART's decisions regarding asset valuation and asset returns.

The AER's decision to do this represents appropriate and sound regulatory practice.

We do not agree that customers were unaware of the impact of deferred depreciation on customer prices. Our submission to IPART in June 2005 made it clear that revisions to the original proposal will result in a higher RAB and higher prices in the medium to long term than would otherwise have been the case.[4]

We note the AER's comments regarding our June 2008 proposal

> The AER notes that EnergyAustralia in its June 2008 proposal put forward a rebate mechanism in order to address concerns it had about price shocks by limiting the increase to a customer's total bill…It appears that EnergyAustralia was willing to forgo the principle of financial capital maintenance at that time but now seeks to rely on this principle to vary the roll forward of the RAB.[5]

There is a fundamental difference between the current approach being adopted by the AER and EnergyAustralia's June 2008 proposal approach.

EnergyAustralia's June 2008 proposal sought to revalue all assets, at the start of each regulatory period, based on replacement cost to establish an annual capital and operating charge for all assets. This approach:

- Was aimed at setting cost reflective prices at the levels that would be determined in a competitive market, which was appropriate in the context of the nature of alternative control services.
- Was not based on financial capital maintenance
- Involved the risk that some assets would increase in value and some reduce in value over time. The customer prices would vary over time based on these changes.

We proposed rebates which would cap customer price increases at 11% each year in order to transition to cost reflective pricing arrangements in future years. It is difficult to see how this rebate could forgo the principle of financial capital maintenance. Our approach to asset base revaluation was not based on financial capital maintenance in the first instance.

Our proposed valuation approach was rejected by the AER on the basis that the approach could not guarantee there would be no windfall gains and losses between periods. In effect, the AER's decision rejected our approach on the basis that it did not meet the principle of financial capital maintenance.

The AER also rejected our control mechanism and rebate arrangements. There was no basis for re-establishing these arrangements in the context of our submission.

We therefore disagree with the AER's portrayal of EnergyAustralia's June 08 proposed rebate mechanism as a decision to "forgo financial capital maintenance." The decision on pricing and control mechanism arrangements should be separate from the decision on the appropriate value of the asset base.

2.3 NERA method for calculating RAB and AER decision

In its draft determination, the AER modified the remaining asset life assumption in the roll forward method used by the AER in its April 2009 decision.

This is a different approach to that recommended by EnergyAustralia in our January 2010 submission. Our proposed approach was based on the analysis and conclusions of NERA Economic Consulting. NERA used IPART's revenue model which underpinned IPART's 2005 determination on public lighting, to estimate an opening RAB for 1 July 2009 of $142.4 million.

In the time available, it has not been possible to undertake a complete reconciliation of the AER's RAB calculation against that used by NERA.

[4] EnergyAustralia submission to IPART, June 2005, p3
[5] AER March 2010 Draft Determination p13

2. Regulatory Asset Base (continued)

Therefore, it is unclear to us at this stage, what the principle difference is between the AER's preferred calculations and our own.

We do note that the AER's roll forward model does not include a 'half WACC' on capital expenditure. If the AER were to include a 'half WACC', the value of the opening asset base would be closer to the amount determined by NERA.

For these reasons, EnergyAustralia requests that the AER re-visit the NERA report, and if appropriate, adopt the approach and value set out in that report.

Subject to the above clarifications, EnergyAustralia considers that AER's determined value is reasonable and we accept the AER's decision on the basis that it satisfies the principle of financial capital maintenance and has appropriate regard to the regulatory arrangements (if any) applicable to public lighting immediately before the commencement of the AER's determination, consistent with clause 6.2.5(d)(3) of the Transitional Rules.

2.4 Other issues considered by AER

We note that SSROC did not support the RAB proposed by EnergyAustralia. The AER's draft determination addresses the following issues raised in SSROC's submission:

- the original capital for the majority of lights on EnergyAustralia's network was provided by Councils or county Councils, and at corporatisation no compensation was paid for those assets transferred to the state owned entities.
- there has been a pattern of misinvestment by EnergyAustralia, including inefficient labour costs and that these matters should be given consideration in the context of EnergyAustralia's RAB revision.

In response to these issues, the AER's draft determination noted that:

- The recovery of depreciation had been deferred in the prices established by IPART in 2005.
- The AER had previously considered the issues surrounding funded assets, and that its April 2009 decision noted that evidence must be presented to support such a claim.
- SSROC's claims of mis-investment and inefficient costs raise some concerns over the practices of EnergyAustralia. However, the AER noted that the transitional Rules relating to standard control services do not provide for an ex-post prudence review of past capex, and require that actual capex be rolled into the RAB. It considered that a similar approach should be adopted under the limited building block being applied to alternative control services.

It is clear from this material that IPART's decision to approve EnergyAustralia's prices included deferred depreciation. The AER has therefore correctly determined that the recovery of depreciation had been deferred in the prices established by IPART in 2005.

SSROC's claim that EnergyAustralia has systematically mis-invested or operated in an inefficient manner in previous periods is without any basis. We therefore disagree with the AER's statement that SSROC's claims raise some concerns over the practices by EnergyAustralia.

In its submission, SSROC has referred to the types of lamps installed by EnergyAustralia in previous periods. We note that EnergyAustralia liaised and consulted with Councils in respect of previous investment decisions.

SSROC has raised the issue of original funding of assets in previous submissions, but at no stage has its claim been substantiated by any records. EnergyAustralia previously provided evidence to IPART surrounding legacy dedicated assets, but this was rejected by IPART. At the time, we proposed that we would seek to address these "lost assets" in future reviews.[6] However, valuation issues are difficult to address under a financial RAB roll-forward as even with additional evidence it is not entirely clear the extent to which the value of assets has or has not been recognised in an original valuation.

[6] EnergyAustralia, Submission to IPART, June 2005, p6

We therefore agree with the AER that SSROC needs substantiate its claim. EnergyAustralia is not aware of any such material that would provide support for SSROC's claims.

Even if SSROC were to introduce new material in support of its claim, it would be difficult for the AER and EnergyAustralia to assess the veracity of the evidence within the short deadline for making the final decision.

We therefore accept that the AER's decision to roll in actual capex to the RAB established by IPART in 2004, without any review of past investment decisions is the correct approach. IPART's 2004 model established a 'line in the sand' for the value of the asset base, by removing $97 .8 million from the asset base relating to standard control services. The AER's decision is therefore consistent with the previous regulatory decision.

The AER's decision to be guided by the Transitional Rule provisions relating to the roll forward of the RAB for standard control services is also considered reasonable in the circumstances. These provisions do not provide for an ex-post review of past capital expenditure decisions, and requires that actual capital expenditure incurred in the regulatory period, be rolled into the RAB.

3. Operating expenditure

EnergyAustralia does not accept the AER's draft decision to reject our proposed operating expenditure of $16.2m and does not accept the AER's substituted value of $14.2m.

This submission addresses the issues raised by the AER in its draft decision, noting where we agree or reject the findings of the AER.

This submission also indicates where EnergyAustralia has revised its forecast of total operating expenditure to address the matters raised in the AER's determination. Accordingly, the revised proposed operating expenditure is $17.3m

3.1 Summary

EnergyAustralia's January 2010 submission included what EnergyAustralia considered to be an efficient level of operating expenditure for the public lighting business. It should be noted that this is consistent in real terms with the actual operating expenditure incurred in 2007-08 and 2008-09.

EnergyAustralia is proud of its improvements in service delivery to customers in recent years. In response to customer demands we have reduced spot lamp repair times. Currently the average repair time is under 3 days for our network. Over this time we have also improved our reporting, and introduced quarterly night patrols for specific Category V lighting.

Public lighting prices should be cost reflective of the service provided. Our improvements in service delivery, until now, have come at a cost to EnergyAustralia and not to our customers. The expenditure incurred by EnergyAustralia in these years is well above the allowance assumed in the underlying prices charged to customers.

Our proposed opex

At a high level, the cost inputs we assumed in our January 2010 proposal resulted in a total operating expenditure allowance that was within a reasonable range of efficient costs. Our proposed allowance was:

- below the actual expenditure EnergyAustralia will incur in 2009-10, and therefore represented a step down from our current costs.
- comparable with the forecast costs of other urban distributors, including NSW distributors operating under the same service standard framework.

The AER's approach

In response to our submission, the AER has generally adopted the recommendations of its consultant, Energy & Management Services. We consider that EMS's approach to reviewing EnergyAustralia's Forecast Operating Expenditure Model (model) has likely been influenced by its erroneous view that EnergyAustralia's proposed costs are of the same order as the worst performing distributors. This is an inaccurate picture of available benchmarking data, and is at odds with the conclusions of EnergyAustralia's consultant, Parsons Brinckerhoff (PB).

EMS's conclusions on benchmarking explain, to some extent, its approach to recommend alternative values in EnergyAustralia's model only where this results in reduced operating expenditure. As such, its review of the operating expenditure model results in providing an unfair allowance, significantly below our efficient costs. Our submission identifies these areas of inconsistency.

We also note that the EMS did not benefit from discussion with EnergyAustralia on the assumptions underlying the operating expenditure forecast model.

Nevertheless we do accept some of EMS's conclusions and have made changes to our opex model accordingly

Outline of our concerns

As such, this submission addresses many of the concerns raised by EMS and the AER on the assumptions in our model. In summary we note that:

- EMS commented favourably on the robustness of our cost build up model and accepted our Bulk Maintenance contract prices as efficient. We provide reasons as to why these rates should be used with caution if moving to longer cycles.
- EMS were correctly concerned with the additional cost for quarterly night patrols as an addition to indirect overhead.

On revision of the model we have identified that the inclusion of a separate costs for night patrols was an inadvertent duplication and have made adjustments to the model accordingly.

- EMS and the AER correctly identified modelling errors with lamp materials costs for luminaries with multiple lamps. We have corrected the model so that the cost of each lamp in a luminare only contributes once to the spot maintenance cost.
- EMS and the AER identified inconsistencies in failure rates for multi-lamp luminaries. We have adjusted our assumptions accordingly, but not to the extent recommended by EMS. We have also made some modifications based on information regarding failure rates of miscellaneous asset types.
- The AER has accepted EMS's decision to move away from a commonly applied labour rate calculation for EnergyAustralia and instead focus more directly toward the actual costs incurred by the street lighting business. However to ensure we capture all the direct costs of the public lighting maintenance crew, we engaged SKM to undertake a more thorough analysis and have made adjustments accordingly.
- EMS and the AER made no change to the assumed failure rates even though they both commented on how low they were. We reiterate our concerns with the underlying data supporting our proposed spot failure rates, and in the absence of any further evidence explaining the inconsistencies, recommend the AER move back to its determined spot failure rates for a three year cycle.
- EMS made several recommendations regarding assumed travel times and mixed bulk lamp replacement cycles which we do not agree with. We have addressed EMS's conclusions in this regard.

3.2 Reasonableness of EnergyAustralia's proposed operating expenditure

EnergyAustralia's model has been developed at a lower level of detail than our June 2008 proposal. We accept that the AER is seeking to assess the robustness of the model and its assumptions in accordance with prudent regulatory practice.

We note however that a cost build up model necessarily relies on input cost and quantity assumptions to predict the total costs incurred by a business. This is a different approach to what we previously proposed which escalated a total operating expenditure amount into future years. As such, the AER's assessment needs to also give weight to whether the total costs proposed are outside a reasonable range of efficient costs.

EnergyAustralia considers there are two high level 'tests' that the AER can take into account when assessing the efficiency of EnergyAustralia's proposed operating expenditure. It can assess:

- whether the proposed expenditure is consistent with the actual expenditure being incurred by the distributor.
- whether the expenditure is within a reasonable range when compared to other distributors, taking into account the circumstances of these businesses.

In respect of these matters, EnergyAustralia notes that the forecast operating expenditure proposed in our January 2010 submission was below the actual 'year to date' costs for 2009-10. That is, our proposed allowance is a step-down from our actual costs.

A decision by the AER to reduce the forecast allowance significantly below the proposed amount will necessarily result in a reduction in the standard of service currently provided by EnergyAustralia to customers.

The AER's draft decision also means that EnergyAustralia will not be able to recover the costs it incurs in the first year of this regulatory period.

In respect of the second test, we note that cost benchmarking has inherent limitations. Benchmarking is particularly difficult when distributors have heterogeneous operating conditions or are subject to different regulatory frameworks. Despite this, it can be useful test to gauge whether the proposed costs are significantly higher than other comparable distributors, and the potential drivers of this difference.

EnergyAustralia engaged PB to undertake analysis of forecast operating costs of NSW, Queensland and Victorian

3. Operating expenditure (continued)

businesses. The data suggests that our proposed costs are comparable with the costs of other urban distributors, when benchmarked against a range of relevant indicators.

Relevantly, our costs are lower than, or comparable with, the AER's determinations for other NSW distributors, on ratios such as 'street light to opex' and 'customer to opex'. In this respect, we note that the AER's 2009 April final decision noted that:

> The AER considers it is practical and sensible to directly compare the performance of the NSW DNSPs against one another, on the basis that direct comparison provides a reasonable gauge of the NSW DNSP's respective efficiency.[7]

The benchmarking outcomes should provide a level of comfort to the AER that our proposed costs lie within an efficient range, relative to other urban distributors.

3.3 Analysis and findings of EMS

The AER's consultant, EMS undertook a systematic review of EnergyAustralia's Operating Expenditure Forecasting Model and its inputs. EMS also reviewed a report prepared by PB for EnergyAustralia, which included a review of our model and a benchmarking study of operating costs of Australian distributors.

Until the AER released the draft decision, EnergyAustralia was unaware that the AER had engaged EMS to provide assistance and we did not have an opportunity to meet with EMS to provide input to its report. We consider that we could have addressed many of the issues raised by EMS in the course of such discussions.

The general approach of EMS was to review each assumption and then recommend whether EnergyAustralia's assumption be accepted or changed. We note in several instances EMS reduced the assumption proposed by EnergyAustralia, and in other instances, EMS accepted the assumption while noting it was conservative. EMS did not recommend any changes in inputs that increased total opex even if an assumption appeared to be too low. Consequentially, we consider EMS's approach imposes a downward bias on the total opex amount.

This is a concern because EnergyAustralia considers that certain assumptions, such as lamp failure rates, are likely to understate costs. If the same rigour was applied to assessing these assumptions, EMS would have likely found that failure rates should have been higher and would have served to offset EMS's other downward adjustments.

EMS has also disagreed with the conclusions of EnergyAustralia's consultant, Parsons Brinckerhoff (PB), in respect of benchmarking data presented in PB's report. EMS has concluded that EnergyAustralia's costs are of the same order as worse performing distributors.

We consider that this may have influenced EMS' view on the efficient level of operating expenditure for EnergyAustralia, and led to its approach to recommend a change in an assumption only where that resulted in a lower opex amount.

In the following sections, we address each issue raised by EMS and the AER on the assumptions underlying the model. Where relevant, we have revised our proposed forecast of operating expenditure to address the issues raised by the AER.

In the last section, we have provided an overview of EMS' approach to reviewing the benchmarking analysis prepared by PB, and indicated why PB's conclusions should be given greater weight than the views of EMS.

3.4 Labour unit rates and work in overtime hours

EnergyAustralia's operating expenditure cost build up model included an assumption for the rate of labour that could be independently verified so as to justify its relative efficiency.

EnergyAustralia's proposed labour rate was not calculated for the purpose of calculating the labour cost associated with public lighting maintenance. It was originally established to forecast costs for contestable and non-contestable public lighting works. Therefore, the labour rate is also efficient for use in the calculation of the labour cost of spot maintenance. The calculation of the labour rate was attached to our submission and appears on EnergyAustralia's website as part of its information disclosure consistent with Excluded Services

[7] AER, NSW Distribution determination 2009-10 to 2013-14, Final decision, April 2009, p340

Rule 2004/01. EnergyAustralia also assumed a proportional split in overtime/non-overtime work based on discussions with the public lighting team and past practice. The assumed overtime proportion was 20%.

The use of an average labour cost is necessary because it is nearly impossible to calculate the exact hourly labour rate to represent to all the different types of labour (direct and indirect) employed to maintain EnergyAustralia's suite of public lighting infrastructure.

In its February 2010 draft determination, the AER shared the concern of its consultant that both calculations of the proposed labour rate and overtime proportion did not reconcile to the specific allowances in EnergyAustralia's Consent Award.

On this basis the AER concluded that the rate proposed was too high, and the AER rejected EnergyAustralia's proposed labour rate and overtime split[8].

The AER substituted the EMS proposed rates of labour and overtime which focussed on EnergyAustralia's actual costs, that being:

- the labour cost rate assumed by reference to EnergyAustralia's Consent Award; and
- the proportion of labour hours worked in overtime based on an assessment of EnergyAustralia's historic costs.

Both the AER and EMS concluded that such an approach would result in an appropriate on-costed rate for normal and overtime labour rates.

EnergyAustralia accepts that its assumed labour rates will not perfectly reconcile with actual labour costs. Other things being equal, one would expect labour rate assumptions and a detailed analysis of actual labour costs to be relatively consistent, provided the assumptions were reasonable and the detailed analysis captured all of the labour costs associated with providing the public lighting service.

EnergyAustralia engaged SKM to review EMS's calculation of the labour rate (including overtime) and asked SKM using its experience in costing work in similar industries, what an appropriate labour rate assumption would be for standard control services.

SKM has used EMS's approach to calculate a labour rate for maintenance of EnergyAustralia's public lighting infrastructure. SKM's calculation has allowed EnergyAustralia to identify the labour costs that have been omitted from EMS's calculation. In particular:

- the costs of depot management and support services, which are allocated to labour costs in accordance with our cost allocation methodology (for the avoidance of doubt this labour cost is not part of the corporate overheads);
- the costs associated with the defined benefits superannuation scheme, to which many of EnergyAustralia's public lighting maintenance team belong; and
- the normal labour costs of constant afternoon workers, whose standard hours are 3pm to 12am 4 days a week, which attract a 30% loading.

EnergyAustralia would have welcomed the opportunity to explain these costs to EMS if it was made aware of EMS's engagement to examine these matters.

In respect of benchmarking with Victorian proposals, EnergyAustralia has not been privy to the Victorian DNSP assumptions or the relative basis and justification for them.

However, EnergyAustralia's proposed labour rate is comparable with other NSW DNSPs, who operate in the same labour market. We consider it is appropriate to benchmark EnergyAustralia's labour rates to those assumed by other NSW DNSPs, which the AER has already determined are efficient.

3.5 Overhead costs

EnergyAustralia proposed an additional 1.75% be added to the indirect overhead of 25% to reflect the cost of quarterly night patrols across its network.

The inclusion of quarterly night patrols into the model was identified late in the development of EnergyAustralia's cost build up model. With additional time EnergyAustralia would have applied a more transparent approach to recognising quarterly night patrols in the cost build up model.

[8] AER March 2010 Draft Determination p19

3. Operating expenditure (continued)

We accept the AER's decision to maintain the overhead assumption used previously as the costs of quarterly night patrols have been properly accounted for in the bulk maintenance building block in the model.

3.6 Lamp and non lamp materials costs

In response to the AER's concerns, EnergyAustralia has reviewed its assumptions and confirms that its proposed modelling overstated lamp materials costs for luminaries with multiple lamps.

We have modified our proposal model to account for this overstatement such that the cost of each lamp in a luminaire only contributes once to the spot maintenance cost.

3.7 Staffing and time requirements for spot maintenance tasks

We note that the AER has accepted its consultant's recommendations regarding the average time required for a maintenance task.

As noted earlier, EnergyAustralia did not have the benefit of discussing issues raise by EMS in its report. EnergyAustralia has several comments in respect of adverse findings noted by EMS. These are outlined below:

EnergyAustralia accepts EMS's conclusion that the actual job preparation time is reasonable but queries the statement that the average of 10 minutes is generous.

Page 4 of EnergyAustralia's public lighting management plan, which was developed to comply with the Public Lighting Code, states:

> When lamps are replaced, EnergyAustralia will inspect each luminaire and rectify:
>
> - Lenses that are opaque or substantially discoloured, cracked, improperly secured, damaged or missing;
> - Damaged or missing seals;
> - Moisture within the luminaire;
> - Damaged or corroded supports, luminaries, brackets or connections;
> - Improperly aligned luminaire or brackets
> - Other circumstances or defects which may affect the ongoing performance of the luminaire.
>
> Lenses and reflectors in serviceable condition will be cleaned using appropriate cleaning compounds.

While cleaning visors and minor repairs will occur co-incidentally with some jobs, the fact of the matter is that many jobs require additional time to fault find and repair.

Further, luminaires are cleaned routinely with every lamp replacement. This cleaning requires an adequate time allowance for every lamp replacement.

There are also a substantial number of repairs that are more complicated than lamp replacement.

On this basis we believe that 10 minutes is a minimum time period rather than a generous allocation.

In respect of travel times, EnergyAustralia notes that EMS has recalculated the time to repair by adjusting the average travel time per task into two categories

- travel time from depot to first/last repair task (20 minutes)
- travel time between tasks (5 minutes)

EMS then calculated an average number of tasks per day using these inputs and the assumed times taken before and after a shift. It noted that the assumed number of tasks per day for EnergyAustralia (14.1) is below the rates proposed by Integral and Country Energy in their respective proposals.

Nevertheless, EMS calculated an average time per task of 30.6 minutes per task.

This number is heavily dependant on the number of tasks that are completed in a day and the assumptions regarding time taken during and between each task.

We do not have access to Integral Energy's or Country Energy's detailed opex assumptions and therefore cannot verify the evidence behind their assumptions of 19 spot maintenance tasks per day.

However we consider an average completion rate of 14 tasks per crew per day to be optimistic across the network.

The most significant difference between EnergyAustralia's assumptions and those of EMS relates to the EMS

assumption of 5 minutes travel time between tasks. The basis for this reduction in travel time relates to:

- EnergyAustralia having an average repair time of 3.4 days in 2008-09.
- EMS noting that the target repair time is 8 days.
- EMS observing that EnergyAustralia could reduce costs by lowering the existing repair time thereby increasing the ability to bundle jobs closer together.
- A lower travel time allowance will incentivise EnergyAustralia to either increase the use of other depots and facilities or improved technology enablers.

EnergyAustralia believes EMS's assumption of 5 minutes travel between jobs is unrealistic in an inner city CBD and urban environment. Such analysis ignores:

- the reality of undertaking repairs in an urban environment where in addition to travel time, it can take as much as 5 minutes (or longer) to find a place to park the EWP safely.
- that many repair tasks are initiated by the public and are repaired during the day. This requires an educated guess to locate which light is in need of repair. If the complaint is initiated from an address, a crew must establish which of the lights close to the address is in need of repair. This of itself could take more than 5 minutes.
- the reality of driving a large truck through urban and CBD environments. It is likely that the maximum driving distance for an EWP for 5 minutes is between 2-3km.

EnergyAustralia has however revised the average time taken to undertake a miscellaneous maintenance task from 40 minutes to 10 minutes. This addressed a valid issue raised by EMS when it stated that mechanical and electrical repairs are frequently done while replacing a lamp or PE cell. This implies that many miscellaneous tasks are carried out at the same time that we replace a spot lamp or PE cell, and only require an incremental increase in the amount of time required to complete the task.

EnergyAustralia considers that an average time of 10 minutes is a conservative estimate as:

- Miscellaneous repairs that are undertaken separately to lamp or PE cell replacement require the full allocation of labour time including travel time, etc. In this case would take at least 40 minutes to repair in isolation, and potentially far longer if the problem is complex.
- Miscellaneous repairs are generally more complex than spot or PE cell tasks, and therefore an additional time.

More generally, we are proud of our achievements in moving from over 8 days repair time to an average of 3.4. This has largely been in response to customers expecting a better level of service to what we have previously provided.

We note EMS's comments that customers should not be expected to pay anything more than the service that was settled on when the Public Lighting Management Plan was finalised.

Put another way, EMS is effectively saying that customers should not be expected to receive any better service than the one they pay for. Given the EMS recommendations reduce assumed travel times on the basis that longer average repair times will allow better management of repair tasks, the EMS recommended cost input assumptions assume a lower standard of service than customers are currently receiving.

There is no basis for the claim of EMS that EnergyAustralia can employ better technology or use of other depots to improve the time taken to complete a task. The AER's decision on the efficient operating cost is based on two additional investments, for which there is no allowance in the AER's draft decision.

- First, in mobile field computing for public lighting maintenance crews, which not only requires the handheld devices but the back office, IT systems and software licenses to manage the information.
- Secondly, in new depots. Currently, EnergyAustralia's public lighting maintenance crew shares the fixed costs of depots with standard control services. Any new depots for public lighting would be wholly and directly allocated to public lighting customers.

We note EMS's conclusion regarding the use of better technology and the assumption that the implementation of this technology would be quickly recovered by EnergyAustralia. However, these costs will never be recovered if there is no

allowance for them. The AER has effectively enforced forecast opex savings from investment in technology that we don't have funding for.

We do not agree with the AER's conclusion that a decentralisation of scheduling and administration of public lighting tasks would result in more efficiencies. On the contrary it is likely to require additional costs with more staff and infrastructure. There is no justification for the conclusion that utilising additional depots and facilities will reduce costs.

3.8 Assumed spot lamp failure rates

Our January 2010 proposal applied equipment failure rates based on the analysis of spot repairs undertaken from 1 January 2006 to 30 June 2009 across EnergyAustralia's network. In cases where we did not have sufficient data we applied the failure rates from the AER's April 2009 determination.

EnergyAustralia's analysis revealed a very low rate of equipment failures, even when compared to the manufacturer published rates. EMS noted EnergyAustralia's concerns about the failure rate data but accepted the proposed failure rate without further analysis. In the case of other inputs, such as the labour rate, EMS's concerns were the impetus for its further analysis and recommendation of alternative assumptions.

Given the sensitivity of the model to failure rates, EnergyAustralia considered it would be appropriate to undertake further analysis regarding the previously surprising results.

The failure rate data applied in EnergyAustralia's January 2010 submission was based on analysis of work orders. A work order is intended to record every time a lamp is replaced, either:

- Because of a failure; or
- For another reason, was replaced before it had failed. A suspended lamp life was recorded when a lamp was replaced before it had failed. The majority of suspended lamps were those replaced under the bulk replacement program. Suspended lamps therefore did not count to the failure rate calculation.

To test our analysis we have compared the number of work orders which have resulted in the replacement of lamps with the number of lamps being booked in and out of stores. Significantly more lamps are booked out of stores than appear on work orders.

As a result, we are convinced that EnergyAustralia's proposal failure rates applied in its opex cost build up model are likely to be systematically low. Until EnergyAustralia has a better understanding for this discrepancy it is not possible to apply the lamp failure rates from its analysis.

There are two alternative sources of failure rates:

- first those from EnergyAustralia's 2004 maintenance requirements report and
- secondly from manufacturer failure rate data.

Given the AER has rejected the failure rates from our 2004 report we have revised our proposed operational expenditure to apply manufacturer failure rate data, which were obtained from the AER's 2009 determination.

EMS has also made comments on our proposed multi lamp failure rates. It noted that:

> …there appear to be some inconsistencies in the data. The EnergyAustralia failure rate appears to have been adopted in single lamp configurations but the AER figure in multi-lamp configurations of the same lamp type. Subject to the adjustment of inconsistencies of failure rates in multi-lamp configurations, EMS recommends that the failure rates adopted in the Cost Model be accepted.[9]

The exact nature of the inconsistency is not well articulated and it is difficult to understand EMS's point. EnergyAustralia, if given the opportunity to discuss this matter with EMS, would have quickly resolved this issue.

Further the AER noted that "The AER has also corrected formulae errors identified by EMS so that there is no inconsistency between the failure rate of a lamp and the failure

[9] EMS, EnergyAustralia Public Lighting Submission to the AER for Re-Determination 2010-14, Review of Operating Expenditure, 23 February 2010, page 18.

rate of multi-lamp configurations of the same luminaire type" (page 31 of draft decision).

We were unable to find any formulae errors identified by EMS and question this finding. The EMS report was finalised 2 days prior to the publication of the draft decision, which would not have allowed very much time for the AER to consider EMS's advice. If EMS provided informal advice to the AER further explaining the 'inconsistency' and its proposed adjustment, EnergyAustralia would appreciate this information being fully explained by the AER in the reasons for its decision.

Based on EMS's advice the AER changed those failure rates to the failure rate of only a single lamp. This adjustment only accounts for a single lamp failure. However, multiple lamps increase the probability of failure. An appropriate adjustment would be to multiply the failure rate of a single lamp by the number of lamps.

Table 1 - Multi-lamp luminaire failure rates

Lamp type	No.Lamps in luminaire	EA proposal		AER draft decision		EA revised proposal	
		3 year life	4 year life	3 year life	4 year life	3 year life	4 year life
MBF2x125	2	6.00	6.00	2.96	2.91	5.92	5.82
MBF2x400	2	6.00	6.00	1.45	1.29	2.90	2.57
MBF2x80	2	6.00	6.00	2.43	2.30	4.85	4.59
MBF3x250	3	6.00	6.00	1.68	1.47	5.05	4.40
MBF3x400	3	6.00	6.00	1.45	1.29	4.34	3.86
MBF3x80	3	6.00	6.00	2.43	2.30	7.28	6.89
MBF4x80	4	6.00	6.00	2.43	2.30	9.70	9.18
MBF6x125	6	6.00	6.00	2.96	2.91	17.77	17.46
MBI2x400	2	12.00	12.00	2.86	3.58	5.72	7.16
MBI4x150	4	12.00	12.00	5.28	9.06	21.11	36.24
SON2x250	2	5.00	5.00	3.66	3.65	7.33	7.29
SON2x70	2	9.00	9.00	2.39	2.18	4.79	4.37
SON3x70	3	9.00	9.00	2.39	2.18	7.18	6.55
SON4x250	4	5.00	5.00	3.66	3.65	14.66	14.58
SON4x70	4	9.00	9.00	2.39	2.18	9.58	8.74
SON8x70	8	9.00	9.00	2.39	2.18	19.16	17.48

The above table shows the different failure rates proposed by EnergyAustralia, adjusted by the AER and corrected by EnergyAustralia.

3.9 Top down versus bottom up opex model

Our June 2008 proposal was based on a top down model, which meant that a target opex ($15.8m) was allocated down to component prices. This allocation was based on the main drivers of public lighting opex:

- Bulk maintenance: annual average $41.81 per luminaire based on past total contract cost value.
- Spot maintenance: based on the cost of lamp replacements with failure rates scaled to achieve the opex target. This scaling of failure rates effectively included other spot maintenance costs, such as the use of an EWP, PE cell replacements and other miscellaneous maintenance tasks.
- Connection maintenance: based on the costs for repairing faults on dedicated underground connections to street lights.
- 25% overhead costs.

EnergyAustralia's current opex cost build up model was developed in response to the Tribunal's requirements and the AER's preference for a cost build up approach. The cost build up model has focussed on building up the costs of bulk maintenance and spot maintenance in a more detailed fashion.

The cost build up model uses the structure of EnergyAustralia's bulk maintenance contracts to model the future costs of bulk maintenance which is carried out under a 2.5 year cycle. The competitively tendered contract prices are now applied across a 3 year cycle. This, in itself, promotes an efficiency target and is likely to be lower than the true cost of a 3 year contract.

Contractors are likely to tender higher prices for contracts with lower total maintenance requirement. This is explained by the contractor recovering its fixed costs across less maintenance tasks.

3. Operating expenditure (continued)

For spot maintenance, the cost build up model now includes the cost of:

- spot lamp failure
- spot PE cell failure
- spot failure of other components
- the cost of an EWP in spot maintenance
- the cost of working during over time
- corporate overhead costs

EMS noted that it could not reconcile the top-down model and the bottom-up models proposed by EnergyAustralia. The main difference was that the June 2008 scaled the spot failure rates such that maintenance costs "other" than for lamp replacement were allocated into the lamp replacement category.

The following shows how they are reconciled when using the June 2008 proposal failure rates.

Table 2 – Top down and Bottom up opex

Opex ($m FY10)	
Cost build up with June 2008 failure rates	24.73
Less: costs not specifically included in the top-down model	
less: specific allowance for EWP	-4.13[10]
less: specific allowance for miscellaneous spot maintenance	-0.49
less: specific allowance for PE cell replacements	-0.74
less: specific allowance for non-lamp materials under bulk maintenance	-0.95
less: specific allowance for overtime work	-0.09
less: difference for more accurate bulk maintenance contract modelling	-1.96
less: increased overheads to 25%	-0.23
Total opex	**16.14**

3.10 Miscellaneous Equipment Failures

EnergyAustralia included 1% probability annually that a public light would require maintenance other than lamp or PE cell replacement. This was based on actual repairs to other minor components of a public light. This miscellaneous spot maintenance accounts for maintenance tasks such as replacing fuses; visors or starters.

Given the truncated time lines to develop a proposal, EnergyAustralia's used a basic average to approximate 1% per annum. This calculation was the simple sum of the failure rates excluding works on Luminaires and Brackets as they were assumed to be capitalised.

[10] EnergyAustralia only proposed $1.2m in EWP costs, however this amount rises when applying higher failure rates. In the top down model EWP costs were a part of the spot maintenance allocation calculated using the scaled failure rates. Therefore they should be excluded from the cost build up if the scaled failure rates are being applied.

Also, the failure rates associated with the PE cells and lamps were excluded because they are specifically calculated in the model.

We have reviewed these assumptions and found them to be incorrect. In particular, our assumption that all luminaire and bracket repairs are capitalised was wrong. Instead, 66% and 26% of the costs were, in fact, expensed. Therefore we have now calculated the miscellaneous failure rates based on the average weighted by the proportion of costs that are typically expensed. This calculation shows that 9.6% per annum is correct.

Table 3 – Miscellaneous equipment failure rates

Equipment type	Annual failure rate	Opex proportion	Original calculation	New calculation
Choke	0.23%	66.9%	0.2%	0.2%
Fuse Holder	0.00%	100.0%	0.0%	0.0%
Light bracket	1.82%	25.6%	Excluded	0.5%
Luminaire	12.89%	65.9%	Excluded	8.5%
Lamp	3.34%	69.3%	Excluded	Excluded
PE cell	1.42%	75.5%	Excluded	Excluded
Service wire	0.00%	100.0%	0.0%	0.0%
Shade	0.03%	79.5%	0.0%	0.0%
SL Cable	0.00%	0.0%	0.0%	0.0%
SL Wiring (excluding mains)	0.21%	84.2%	0.2%	0.2%
SLCP	0.04%	86.2%	0.0%	0.0%
Starter	0.16%	73.5%	0.2%	0.1%
Visor	0.16%	83.3%	0.2%	0.1%
Total			**1%**	**9.6%**

We have made corresponding changes to the model based on our revised assumptions.

3.11 Bulk maintenance assumptions

We note that the AER has largely accepted EMS recommendations in relation to Bulk Maintenance Assumptions:

- A BLR cycle of 4 years for high pressure sodium lights;
- A BLR cycle of 3 years for all other lamp types;
- A PE Cell replacement cycle of 4 years for high pressure sodium lights;

In making its conclusions, EMS noted the following:

- Bulk maintenance contracts are sourced from the competitive market, suggesting that the contract values and underlying prices are efficient[11].
- The advantage of the cost build up model is that it identifies the bulk maintenance price "per lamp" improving the level of allocative efficiency and cost reflectivity in the public lighting charges[12].
- Statistical analysis alone does not support a robust conclusion as to optimum BLR cycles and that real world experience indicates a range of cost benefit outcomes[13].
- The recommended cost of quarterly lamp inspections of $1 per lamp is generous compared to contractor patrol rates for lamp inspections.
- EnergyAustralia's public lighting inventory involves 41 different lamp types which are used in 102 different configurations. The complexity of inventory holdings will lead to additional costs.
- EnergyAustralia recognises the inefficiencies of disparate public lighting infrastructure but action has not been taken to address the situation.
- The retention of a mixed BLR cycle would provide EnergyAustralia an incentive to work with customers to

[11] EMS report, page 21
[12] EMS report, page 20
[13] EMS report, page 20

3. Operating expenditure (continued)

replace significant portions of non-standard lamps with standard lamps that support a four year cycle.

- TRL installations are generally standalone (not intermingled) and are extensive enough to provide for efficient work plans without the need to mix three year and four year cycles.
- The adoption of a four year cycle in TRL areas will capture information to provide a sound and practical basis for making future bulk maintenance decisions.

Bulk maintenance contract prices

EnergyAustralia supports the decision to accept bulk lamp prices provided by EnergyAustralia based on the fact that they are competitively tendered.

We also note EMS's statement regarding the flexibility of the model to adapt to different BLR cycles (as it establishes a BLR cycle cost per unit).However ,applying this to a "per lamp" rate and then extending the cycle distorts the true cost of increasing the BLR cycle.

We accept that increasing a BLR cycle may reduce total BLR cost *per annum* as less lamps are replaced per annum and therefore a lower total BLR cost per year.

For the same reason however, increasing the BLR cycle is likely to increase the *per unit* price. Because the cycle is extended, less lamps are replaced during the year. This means that fixed costs per annum are allocated to a lesser number of lamps.

Neither EMS or the AER have incorporated any premium for the per unit cost of moving to a longer cycle meaning that the bulk lamp per unit cost is effectively set below an efficient level. The extent of the impact is greater as the length of the BLR cycle increases.

While we do not have specific information regarding the expected increase in BLR per unit costs in moving to a longer cycle, we believe the AER should take this into account when determining overall opex allowances for EnergyAustralia.

Quarterly inspection costs

We also accept EMS's findings in regard to the application quarterly lamp inspections as an addition to indirect overhead. This was a last minute adjustment to the cost build up model as EnergyAustralia believed there was no cost recognised for quarterly inspections costs.

On review of our assumptions, EnergyAustralia noted its model already applied the quarterly inspection cost derived from BLR cycle contractor and applied this across all lamp types. The additional amount allocated to over head was in error and should therefore be removed.

EnergyAustralia notes that, in some regions, external contractors undertake quarterly inspections as part of their contractual arrangements for undertaking a BLR cycle. In other regions this work is undertaken in house. Our model assumes that all costs for this work are undertaken at the rates provided by the contractor under competitive tender.

Mixed bulk cycle and mix of assets

EnergyAustralia notes and agrees with EMS conclusions regarding the need for developing an optimum BLR cycles that reflects the real world experience of the network. Unfortunately, the EMS analysis does not uphold this principle. If EMS had properly addressed the specific circumstances of EnergyAustralia, we firmly believe that a mixed BLR cycle would never have been recommended.

We have provided exhaustive and substantial evidence supporting our reasons why a mixed 3 year/4 year BLR cycle will not work for EnergyAustralia:

- A mixed cycle increases the costs of bulk lamp replacement, through requiring two cycles of different periods within the same location, while providing no additional maintenance to cover such costs.
- Two bulk replacement programs will result in the likelihood of a DNSP incurring additional costs due to a loss of economies of scale.
- The two different cycles would result in higher contracted costs as each program would be less valuable and contractors would tender higher unit prices for each program. This would increase as a result of contractors' recovering their fixed costs over less work and over a longer period of time.

We accept that EnergyAustralia inherited a disparity of lamp types across the network and this characteristic is likely to

increase overall maintenance costs compared to businesses that have a more limited inventory.

The reality of the situation however is that EnergyAustralia owns and retains a mixture of assets on traffic routes that would require EnergyAustralia to replicate the same route twice if a mixed BLR cycle is introduced. If it doesn't, EnergyAustralia falls below agreed levels of reliability and safety based on Australian Standards.

We do not accept that the current circumstance is a result of inaction on behalf of EnergyAustralia. Our attached Distribution Guideline DG130 demonstrates that EnergyAustralia has a clear procedure for replacing Mercury Vapour Luminaries with High Pressure Sodium Luminaires upon failure.

> The 250W and 400W MBF/U luminaires are to be replaced with the corresponding 150W and 250W HPS luminaires when:
>
> - the luminaire cannot be made operable by replacing the lamp and/or cover (visor)…
> - it is not worthwhile repairing the installation (the cost of the repair is greater than replacing with a new fitting)[14]

The following table shows that there is still a significant mix of mercury vapour luminaires on traffic routes, which the AER is proposing be part of the 3 year bulk maintenance program. EnergyAustralia's replacement policy for 250W and 400W mercury vapour luminaires has been in place since July 2006. In summary our policy has been to replace any 250W and 400W mercury vapour luminaire upon failure and when a lamp change will not correct the failure.

Table 4 – Miscellaneous equipment failure rates

Mercury vapour luminaires	Population June 09	Replacement sodium high pressure luminaires	Population June 09
250W	24,211	150W	14,383
400W	11,221	250W	19,449
	35432		**33,872**

In light of the above we do not accept EMS's conclusion regarding the ability to set efficient work plans for traffic route lights without the need to mix three and four year cycles, as it is not based on any analysis of EnergyAustralia's network or circumstance.

EMS stated that many traffic route light installations comprise sodium high pressure luminaries. In our circumstances however they only represent about half of the traffic route lights.

Incentives to rationalise assets

We do not accept EMS's claim that a four year replacement cycle provides an appropriate incentive arrangement for EnergyAustralia. EMS's concluded that:

> The retention of some aspects of the AER's three and four year cycle will provide an incentive to work with its customers to replace significant portions of non-standard lamps with standard lamps that support a 4 year bulk maintenance cycle.[15]

Rather than providing an incentive, EMS effectively recommends penalising EnergyAustralia for the mix of assets inherited as a result of mergers and customer requests for different luminaire types.

A four year replacement program will mean that the AER's decision model will calculate a lower total opex, assuming a more standardised asset mix exists. This distorts the efficient cost of maintaining the existing suite of public lighting infrastructure and provides no incentive for customers to

[14] EnergyAustralia's Distribution Guideline DG130, page 3

[15] EMS, EnergyAustralia Public Lighting Submission for Re-Determination 2010-14, Review of Operating Expenditure, 23 February 2010, page 8.

change the asset mix, because they are effectively getting the price of a standardised mix already.

The only way to accelerate replacement is through replacing mercury vapour luminaires before the end of their economic life.

This option is available now. There is nothing inhibiting customers to choose to replace these luminaires should they wish to contribute the residual value of the historic investment.

Customers have stopped requesting the early replacement of public lighting infrastructure as they do not wish to pay for the residual value of the asset currently in place.

If an incentive is to be imposed, it is best imposed on the decision makers of the investment mix (customers). For example an appropriate incentive may be to allow EnergyAustralia to recover the residual value of the old assets regardless of whether the customer requests early replacement. This may accelerate replacement activity and allow for improved maintenance approaches in the medium to long term.

Allowing a maintenance cost that assumes these efficiencies already exists only reduces the incentive for customers to improve the mix of public lighting assets...

EMS also suggested replacing the non-standard "lamps" with standard lamps. We do not completely understand this conclusion but would note that luminaires with non-standard lamps will need to be replaced as well as the lamp, as in many cases the standard lamps are not compatible in those luminaires.

Apply it and see approach

EMS suggests that analysis of the available data be put to one side in favour of real in-field experimentation:

> EMS agrees that further data collection and review are required to assess whether EnergyAustralia's proposed three year bulk replacement cycle could be economically extended. However, we question how such data will be obtained unless a trial of an extended cycle is undertaken. EMS's recommendation for a four year cycle on SON lamps in TRL installations will be a key input into fulfilling PB's suggestion for further data collection and review.[16]

EMS effectively recommends a 4 year trial on all of EnergyAustralia's significant population of high pressure sodium lights to test whether a 4 year cycle is efficient. EnergyAustralia has successfully trialled other lighting types and could easily undertake a trial of a less significant portion of its population to collect data.

EMS also seemed to ignore its own analysis that there are higher costs of maintaining a mixture of asset types and that under the Public Lighting Code EnergyAustralia is required to maintain all assets until the end of their useful life or as agreed by the customer.[17] EMS even stated that this requirement was not fair or reasonable.[18]

EnergyAustralia does not support the EMS "apply it and see" approach to recommending a mixed BLR cycle on the basis that it will determine whether it works or not for future determinations. Too much is at stake to give weight to this consideration.

3.12 EMS conclusions on PB benchmarking study

As part of its review, EMS undertook a review of a report prepared by EnergyAustralia's consultant PB. PB reviewed EnergyAustralia's model, and also undertook a benchmarking study of the operating costs of NSW, Victorian and Queensland businesses. PB concluded that EnergyAustralia's forecast of operating expenditure for public lighting services is efficient as envisaged by the NEL and NER.

In respect of its benchmarking analysis, PB concluded that, on all indicators, EnergyAustralia's service provision is more efficient than other NSW distributors but worse than Victorian

[16] EMS, EnergyAustralia Public Lighting Submission for Re-Determination 2010-14, Review of Operating Expenditure, 23 February 2010, page 25.
[17] EMS, EnergyAustralia Public Lighting Submission for Re-Determination 2010-14, Review of Operating Expenditure, 23 February 2010, page 7-8.
[18] Ibid

and Queensland distributors. It noted that taking account the differences between the states that PB is aware of, the benchmarking supports that EnergyAustralia is operating at a reasonable level of efficiency.

EMS considered that PB's conclusion on the efficiency of EnergyAustralia's forecast was somewhat generous. In coming to this view, EMS considered that PB's conclusion on benchmarking is somewhat misleading. It noted that EnergyAustralia's performance in terms of opex per street light for city/urban distributors is of the same order as some the worst performing distributors.

This is an incorrect interpretation of the data presented in PB's reports. As can be seen from the graph on page 7 of PB's updated report[19], EnergyAustralia proposed costs are in the middle of urban distributors, in terms of the opex to street light measure.

EnergyAustralia has almost identical costs to Integral Energy, and has significantly lower costs than Country Energy in terms of opex per streetlight. EnergyAustralia also compares favourably on opex per streetlight with comparable Victorian CBD distributors, and does not have significantly higher costs than the Queensland urban distributor.

EMS' analysis disregards two Victorian businesses that have a higher 'opex per streetlight' measure than EnergyAustralia. This is on the basis that the amounts proposed by Victorian distributors have not been approved by the AER. We consider this approach to be inconsistent, and results in an inaccurate picture of the data, for instance:

- EMS includes three Victorian businesses (with lower costs) in its comparison, even though all Victorian data is based on proposed expenditure.
- The excluded Victorian distributors (with higher costs) have more similarities to EnergyAustralia's network than the other three businesses, and therefore are more relevant for the purposes of comparing operating costs.
- The AER itself uses Victorian business proposals to make comparisons with EnergyAustralia, despite the fact they are not AER approved[20].

By focussing on 'opex per street light', EMS has ignored other relevant measures of efficiency such as 'opex per customer'. On this measure, EnergyAustralia performs better than the majority of distributors.

This is symptomatic of EMS approach to reviewing the benchmarking study. It ignores the material that PB provide in terms of business characteristics that drive differences in costs between businesses. Meaningful benchmarking needs to consider the characteristics underlying the efficient costs faced by each business. This principle was acknowledged by the AER in its 2009 April decision when it stated that:

> In making comparisons between the NSW DNSPs, the AER is mindful of differences rather than identifying and applying least costs. The AER's objective is to provide each DNSP with efficient costs for their particular circumstances.[21]

EMS does not refer to its own findings that EnergyAustralia's public lighting holdings[22] lead to excessive inventory costs, the need for a broad scope of staff competencies, and a slow pace in bulk maintenance programs. This indicates that EnergyAustralia faces higher costs for operating and maintaining the public lights in its network, relative to other distributors.

There are other factors that increase EnergyAustralia's costs relative to other urban distributors, which are not identified in EMS' analysis. PB considered that Sydney's narrow carriageways and one way streets will result in greater access restrictions than experienced by Citipower or Energex. In addition, we note that traffic in Sydney is more congested (and for longer periods) than in Brisbane or Melbourne, and this also increases the efficient costs of operating and maintaining lights.

[19] PB, Independent review of public lighting costs – appendum, 19 January 2010, p7

[20] Refer to the AER comparison of Victorian business labour rates with EnergyAustralia on page 19 of the February 2010 draft determination.

[21] AER, NSW Distribution determination 2009-10 to 2013-14, Final decision, April 2009, p340

[22] EMS report page 7-8

EMS has also not given sufficient weight to how EnergyAustralia performs relative to other NSW distributors. Our proposed costs are at a similar level to Integral Energy on an 'opex per street light' ratio, and better than Integral Energy on an 'opex per customer' ratio.

We consider that Integral is a relevant comparator for our business, as we operate under the same service level framework (NSW Public lighting Code). The fact that our costs are within the range of costs determined by the AER for Integral Energy, and given that we operate in a highly congested CBD area, suggests that the proposed costs are reasonable from a high level perspective.

For these reasons, we consider that EMS' findings have not given sufficient weight to PB's analysis and conclusions on benchmarking. This includes:

- EnergyAustralia's forecast operating expenditure is at, the median range of urban distributors on a range of efficiency indicators.
- We perform at the median level, despite having business circumstances that increase our efficient level of operating costs relative to other urban distributors.
- Our forecast operating expenditure is comparable to the allowance determined by the AER for Integral Energy, who operate under the same service level framework as EnergyAustralia.

We are concerned that the review approach adopted by EMS reflected its erroneous view that EnergyAustralia's costs were at the 'worse' end of urban distributors. This has led to an unbalanced approach of limiting its recommendations to adjustments that result in a reduction of costs. It has also led it to discount PB's analysis and conclusions, which we consider are very relevant to the AER's assessment of our proposed operating expenditure costs.

As such, we request that the AER re-visit PB's reports and give weight to PB's independent view that EnergyAustralia's forecast of operating expenditure for public lighting services is efficient as envisaged by the NEL and NER.

3.13 EnergyAustralia's revised proposed operating expenditure

EnergyAustralia's revised input assumptions are:

Table 5 - EnergyAustralia's revised input assumptions

Input	Original (January 2010)	Revised March 2010
Spot failure rates	EA's work order data	AER April 2009 failure rates as they are based on manufacturer data.
Labour – normal time	$100	$80.50
Labour – overtime	$109	$88.68
Corporate overheads	26.75%	25%
Time for miscellaneous maintenance	40 minutes	10 minutes
Miscellaneous failure rate	1%	9.6%
Materials prices	Multiplied by the number of lamps in the luminaire	Single lamp price to prevent double counting

EnergyAustralia's revised opex is as follows:

Table 6 - EnergyAustralia's revised opex ($m nominal)

FY10	FY11	FY12	FY13	FY14
$17.30	$17.69	$18.05	$18.56	$19.05

4 Other Issues

This chapter outlines other issues including:

- Clarification of how CPI will be calculated in future years.
- Correction of other errors.
- Details about the practical implementation of the control mechanism.
- Comments on demonstrating compliance with the control mechanism.

4.1 Residual RAB Value

EnergyAustralia's proposal was based on calculating a residual RAB value from the time of the early replacement of a particular or group of particular assets.

To allow customers to understand the residual value of its assets at different points in time, EnergyAustralia developed a simple formula to allow each customer to calculate the residual RAB values. This formula is based on the real depreciation charge used to calculate the return of capital and the remaining life of the assets being replaced.

The AER's draft decision has accepted EnergyAustralia's method to calculate the residual value of assets being replaced early at the customers' request.

We agree and support the AER's draft decision on the basis that the method for calculating the residual value:

- ensures consistency with the principle of financial capital maintenance;
- improves transparency and allows customers to understand how residual values are calculated;
- avoids uncertainty about what age should be applied in the future to calculate residual values; and
- is clear and unambiguous.

Clarifying the appropriate CPI

EnergyAustralia would like to ensure that customers are aware of the role of CPI. Chapter 4 of the AER's draft decision states that the residual value will be calculated in real FY09 dollars. It should be noted that this amount will be converted to a nominal amount by applying the appropriate change in the consumer price index (CPI). The change in the CPI would be measured as the change in the index from 30 June 2009 to the time that the residual value is paid by the customer.

The AER has correctly recognised the need to apply CPI in table 6.1 of its draft decision. To avoid any doubt, we discuss the appropriate CPI calculation in our discussion of the control mechanism.

4.2 Correction of other errors

EnergyAustralia's January 2010 submission included models, within which we corrected the modelling errors identified by the Tribunal. These have been accepted by the AER. We therefore believe the AER has correctly amended its determination in respect of the following:

- Application of the appropriate WACC;
- Connections operating costs; and
- Vlookup errors.

Indexation of the RAB and depreciation

EnergyAustralia's proposal was based on a RAB value calculated by NERA. The AER has chosen to adopt a different roll forward calculation the one our proposal relied on. The AER's indexation calculations appear to correct the errors identified by the Tribunal. However we have not audited the calculations because:

- The AER's RAB value is not significantly different to our proposal.
- The short time available to respond to the draft decision.

Man hours to construct a new light

EnergyAustralia proposed that 60 minutes should be allocated to the construction of a new public light. This would require a standard crew of two people and, for traffic route lights, a third person as a traffic controller.

These assumptions were justified in our previous proposal however we did not discuss them in our January 2010 submission.

4 Other Issues (continued)

The AER's draft decision was to rely on its 2009 determination assumptions that 12 bulk luminaire replacements could be undertaken per 8.33 hour day.[23] This was based on the assumption that two lights could be installed in an hour, which the AER referenced to its own decision on Energy Efficient lighting in Victoria. As a result the AER allocated 42 minutes to the installation of a new public light.

EnergyAustralia has the following concerns with this approach:

- EnergyAustralia's employment agreement is for 7.2 hour working day[24].
- Not all lights are installed as part of a bulk capital program and travel time efficiencies are lost.
- The AER did not calculate a capital charge for its decision on Energy Efficient luminaires in Victoria so its assumptions are based on maintenance tasks.
- The assumption of two installations per hour under a bulk luminaire replacement program is not explained in the AER's decision document for Victoria, nor could we find this assumption in the model.

The AER's decision for energy efficient luminaires in Victoria states:

> - As customers fund the initial T5 installation, in either new housing subdivisions or in existing locations, the initial OMR charge for T5 luminaires consists of only operation and maintenance costs for the T5 luminaires and a replacement charge associated with the existing pole and bracket which will host the T5 luminaire.
> - The upfront installation cost of a T5 luminaire is negotiable between distributors and public lighting customers. Customers can obtain these services from a party other than the distributor and therefore the AER does not assess a charge for the initial installation cost of a T5 luminaire.[25]

If we assume that all luminaires are constructed in bulk as suggested by the AER, then EMS's calculation, used for spot maintenance, shows that the AER's allocation of 42 minutes falls short and that 55 minutes would be more appropriate. As set out in the chapter 3 of this submission we have concerns about EMS's calculation and we have only used it here to illustrate that the AER's current allocation of time is too low.

Table 7 - Time required to install a new light

Task	Per task (minutes)	Qty	Per day (minutes)
Start up time	30	1	30
Travel to first job	20	1	20
Site preparation	10	7.82	78
Installing new asset	30	7.82	235
Travel to next job	5	6.82	34
Return from last job	20	1	20
Admin/clean up	15	1	15
Total time			**7.2 hours**
Time allocated per task			**55.22 minutes**

Further, as not all luminaires are installed in a bulk program of works, replacements can not be scheduled and travel time between jobs cannot be limited to 5 minutes. This would result in much more travel time between jobs. Therefore EnergyAustralia recommends that the AER reconsider our assumption of 1 hour per installation.

Another important factor is that the annuity model allocates 10% of the labour cost to the luminaire, so if a new luminaire is installed, only 10% of this time will contribute to the price of the new luminaire paid by the customer. The remaining 90% will only be charged to the customer when the bracket is replaced. At the moment the vast majority of the capital cost of the bracket is embedded in the fixed charge for assets constructed before July 2009.

Weighting of labour in constructing a public light

In its draft decision, the AER changed the proportion of labour in capital from 60% to 23% on the basis of its analysis of capital and labour costs. In the AER's April 2009 determination

[23] AER, NSW distribution determination 2009-10 to 2013-14, 28 April 2009, page 385.
[24] This is confirmed by EMS in its report, p16
[25] AER, Energy Efficient Public Lighting Charges – Victoria, Final Decision, February 2009, page 5-6

the proportion of 60% was the labour cost (both capital and operating) as a proportion of public lighting revenue. Therefore 60% of the price paid by the customer was to be escalated by the real increase in labour costs (i.e. the EGW cost escalator).

Now that operating expenditure has been removed from the model we agree that this proportion must be changed to represent the proportion of labour cost in the total capital cost.

The AER explained its calculation of 23% to EnergyAustralia and we were able to reproduce the calculation of 23% using our January 2010 submission model. However, when using the AER's draft decision model we calculated 17%. In contrast, our year to date capital spend was made up of 42% of capitalised labour costs.

Table 8 - Labour proportion of capital expenditure (FY10)

Description	Labour cost	Total capex	Labour proportion
EA January 2010l	$0.95m	$4.14m	23%
AER draft decision	$0.66m	$3.85m	17%
Actual year to date proportionally extrapolated to full year	$4.76m	$11.36m	42%

As the AER's estimate of 23% was significantly different to the actual proportion of 42%, we looked into the calculation to determine why there was such a significant difference.

The AER's calculation was:

Proportion = Capitalised labour cost ÷ Total capitalised cost

Where:

Capitalised labour cost =

= ∑ (no.assets installed x labour cost per asset)

Total capitalised cost =

= ∑ (no.assets installed x capital cost per asset)

The annuity model calculates a total capital cost for each type of luminaire, bracket, support and connection. However, only the bracket and luminaire have the labour costs explicitly calculated in the model.

The labour cost in establishing new supports and underground connections are shown as zero in the column labelled "Labour to install". This is because the establishment costs for supports have been estimated specifically depending on the type of pole and there has been no labour cost included for establishing a new underground connection.

The accidental omission of the capitalised labour associated with establishing new supports and underground connections will underestimate the proportion of capitalised labour cost. This is highlighted by the comparison with our year to date actual costs.

Another factor that will distort the AER's calculation was that the model applies a 2% growth factor to the asset population to allow an indicative revenue calculation.

This means that the calculation of 23% implicitly assumes that 2% of all asset types will be constructed annually throughout the regulatory period. This 2% growth factor implies that there will be costs of installing redundant assets, including about 4,000 twin 20W tubular fluorescent luminaires over the regulatory period. This will clearly not occur.

The implication of a 2% growth factor is that neither the total capitalised cost or the capitalised labour costs will reflect actuals. The expected capital expenditure underlying the calculation of 23% was $4.14m, which is less than half of the actual capital expenditure that will occur this year.

The other reason why a growth factor cannot be used to estimate capital expenditure is that it does not take into account replacements, which occur in parts. That is, EnergyAustralia may install new luminaires and brackets on existing poles. This will result in a higher growth rates for some asset type and lower for others.

In conclusion, the calculation undertaken by the AER is highly sensitive to the input assumptions of the model and is not a reasonable estimate of the proportion of the labour costs of capital expenditure.

Based on the actual year to date capital spend we propose that the AER adopt 42% as the appropriate labour cost proportion of total capital cost.

4.3 Control mechanism

EnergyAustralia generally agrees with the AER's small changes to our proposed control mechanism. The main changes that have been accepted by the AER are to separate

4 Other Issues (continued)

the maintenance charges from the capital charges in a cost neutral manner and to apply an annual adjustment to prices and charges using outturn CPI.

The AER's variations to our proposed control mechanism and annual pricing adjustment that we would like to clarify are:

- Whether the AER's outturn CPI calculation is the same as that applied in standard control services? If not we propose that they be brought into line in the AER's final decision.
- Whether the annual RAB adjustments will only take place for cases where EnergyAustralia recovers the residual value.
- When the AER expects customers to start paying the new charges for early replacement assets that are installed at the customers' request?

Appropriate calculation of outturn CPI

In standard control services, an annual price adjustment occurs for outturn CPI, where the annual change in CPI is measured as:

> △CPI applied in year t "is the December to December change in the Consumer Price Index from year t-2 to year t-1"[26]

The AER approved this proposal on 28 May 2009.[27]

This formula applies the last two years CPI to forecast the inflation that will occur in the coming year. This creates a lag, but more importantly it creates an objective mechanism to ensure the annual pricing proposal remains a simple mechanistic approval process. The annual rate of inflation used in the price change is then also used to roll the regulatory asset base forward in the next determination, which helps to combat any lag in prices.

This formula was used to calculate the price change for 2010 as follows:

$$\text{Inflation}_{2010} = (\text{Sum of CPI}_{2008} \div \text{Sum of CPI}_{2007}) - 1$$

Where:

$$\text{Sum of CPI}_{2008} = \text{CPI}_{\text{Mar-08}} + \text{CPI}_{\text{Jun-08}} + \text{CPI}_{\text{Sep-08}} + \text{CPI}_{\text{Dec-08}}$$

$$\text{Sum of CPI}_{2007} = \text{CPI}_{\text{Mar-07}} + \text{CPI}_{\text{Jun-07}} + \text{CPI}_{\text{Sep-07}} + \text{CPI}_{\text{Dec-08}}$$

The 4.35% inflation applied in the FY10 price change was calculated as:

$$4.35\% = \frac{(162.2 + 164.6 + 166.5 + 166.0)}{(155.6 + 157.5 + 158.6 + 160.1)} - 1$$

Table 6.1 of the AER's draft decision appears to apply this approach. EnergyAustralia supports this approach and seeks the AER's confirmation in the final decision that this method should be applied in each pricing proposal.

RAB adjustments

The AER's February 2010 draft decision references what it believes EnergyAustralia is seeking in a redetermination which includes:

> the RAB adjustment, to account for recovery of residual value, be clearly articulated in a mechanistic manner in order to adjust for the change in inventory during the year over the 2009-14 regulatory period.[28]

We note this is not a direct quote from our submission and we would like to clarify what we are seeking as there maybe a slight mis-understanding.

EnergyAustralia's objective in proposing that the RAB value be annually adjusted was to reduce the dollar amount of the RAB value by the dollar amount of any residual value that we recover due to the early replacement of assets at the customers' request.

The RAB is adjusted on the basis of the change in value of the RAB, not a change in inventory. That is we do not propose to make the RAB adjustment by changing the levels of inventory in the model or to change the RAB value in the cases where

[26] EnergyAustralia, *Network Pricing Proposal*, May 2009

[27] AER website: http://www.aer.gov.au/content/index.phtml/itemId/728473

[28] AER, Draft Decision EnergyAustralia distribution determination 2009-10 to 2014-15, Alternative control (public lighting) services, 23 February 2010, page 56.

EnergyAustralia replaces an asset which has not been fully recovered.

Our adjustment was proposed in the context of a financial RAB value and roll-forward, which is consistent with the RAB roll-forward for standard control services. While current asset inventories are important for allocating the RAB value to customers and asset types, the roll-forward is undertaken on a dollar basis. The RAB roll-forward is not based on inventories.

There will be cases where assets fail before the RAB value has been depreciated to zero value. The opposite is also true. In some cases fully depreciated assets will still be in service and therefore have no RAB value. Customers will not pay a capital charge for an asset whose value has been fully recovered and only require a maintenance charge until they are eventually replaced.

This approach applies the principles of financial capital maintenance. Over time EnergyAustralia will recover its initial investment.

Maintenance charges for pre-July 2009 assets

EnergyAustralia's January 2010 submission proposed to charge all customers the same maintenance prices for the same assets regardless of age. We think that it is worth clarifying how this will operate in practice.

The maintenance charges paid by each customer will be based on a maintenance price list approved by the AER. These prices will be charged in customers' monthly bills against the inventory in service during that month. Prior to the commencement of the year EnergyAustralia will seek the AER's approval of those prices in the annual pricing proposal.

The annual pricing proposal will also set out an indicative annual maintenance charge for each customer based on the inventory in service at the commencement of the year.

We do not propose that this will be the actual control mechanism. In this regard, EnergyAustralia proposes the capital fixed charge combined with maintenance price would be the actual control mechanism for assets constructed before July 2009.

The alternative control mechanism would be a total fixed charge including both capital and maintenance charges. This alternative will require an end of year adjustment for the over recovery of maintenance charges, which would have been calculated based on the inventory in service at the time of the pricing proposal.

If the alternative control mechanism is formally adopted by the AER, we still propose to invoice customers the approved maintenance prices and the assets in service on a monthly basis. This approach to billing would ensure that we charge customers the allowed fixed charge less any adjustment that would be made at the end of the year.

Timing of customer charges

EnergyAustralia proposes to recover the approved prices as follows:

- In the case of the fixed capital charge for assets constructed prior to July 2009, the annual charge will be recovered evenly throughout the year. This is appropriate as the cost of financing is also incurred throughout the year.
- The annuity prices for assets constructed after June 2009 will also be recovered evenly through the year, which is also appropriate as the expenditure and financing costs are incurred throughout the year.
- In relation to maintenance charges, EnergyAustralia will recover maintenance charges evenly throughout the year as the cost of maintenance is also incurred throughout the year.

This approach is akin to customers paying throughout the year for services provided throughout the year. We understand that the AER is satisfied with this approach.

In the case of the residual value payment for assets replaced early, EnergyAustralia considers that customers should pay the residual value at the time the asset is replaced. However, to do so the fixed capital charge would need to be slightly reduced to account for the return of capital being recovered during the year.

An alternative to adjusting the fixed charges midway through the year is to reduce the residual value payment to offset the amount of capital that will be recovered in the remainder of the year as part of the fixed charge. Adjusting the residual value would be a relatively simple calculation in applying the remaining life from the RAB roll forward.

This is best illustrated by an example.

Example: A customer is being served by 100 assets and the fixed capital charge for the year has been calculated by reference to a RAB value associated with 100 assets. Midway through the year the customer requests that 10 assets be replaced. Those assets had a remaining life of 3 years at the commencement of the year.

Those three years represent three years of depreciation yet to be recovered. The first year of depreciation is included in the fixed capital charge for the current year.

As the asset is being replaced midway through the year, intuitive approach would be to recover 2.5 years of depreciation through the residual value and stop charging the fixed capital charge associated with the 10 assets being replaced.

The only problem is that the fixed charge is for 100 assets, so an adjustment could not be made easily. An alternative is to allow the fixed charge continue until the end of the year and at year end recover the 2 remaining years of depreciation as a residual value. We understand that this is what the AER has proposed in its draft decision.

The ideal situation to make all payments and adjustments at the time of replacement is too complicated, which is the reason for the AER's adjustment. The adjustment is the simplest way to avoid double counting for assets constructed before July 2009.

Because the new asset is a post June 2009 asset, EnergyAustralia considers there is no need to make an adjustment to the normal billing process.

However the AER has proposed that EnergyAustralia should install the new replacement asset (i.e. incur the cost of replacement) midway though the year, but start charging for the asset at the end of the year. We understand this from Table 6.1 in the draft decision.

The proposed adjustment to the normal billing process for the post June 2009 asset is not required and adds unnecessary complexity. The draft decision does not explain why this adjustment to the normal billing process is required or how the cost of capital from the time of replace to the time of recovery will be accounted for.

The annuity price for the new asset should be treated the same as the maintenance charge. That is, when the new asset is installed, EnergyAustralia should charge the price of capital and maintenance from the month that the asset is installed.

4.4 Compliance with the control mechanism

Clause 6.12.1(13) states that AER must make a decision on how compliance with the control mechanism must be demonstrated.

Our understanding is that the Tribunal set aside the AER's decision made under 6.12.1(12) in relation to how the control mechanism for alternative control services is to be complied with.

We understand that the constituent decision made by the AER in its April 2009 decision on demonstrating compliance with the control mechanism is still the applicable decision. However the AER's draft decision seems to clarify that decision. This clarification is welcomed by EnergyAustralia.

A new element in the AER's draft decision that seems to go beyond clarifying the 2009 determination is to report inventory information to customers every six months, showing the assets that have been installed and those that have been removed.[29]

This clarification is somewhat theoretical as EnergyAustralia already provides this information to customers on a monthly basis as part of the customers' bills.

[29] AER, Draft Decision EnergyAustralia distribution determination 2009-10 to 2014-15, Alternative control (public lighting) services, 23 February 2010, page 65.

Schedules

List of Schedules

Schedule 1:	Revised: Fixed capital charges for assets constructed prior to July 2009 [CONFIDENTIAL]
Schedule 2:	Revised: Residual capital value for assets constructed prior to July 2009
Schedule 3:	Revised: Capital prices for assets constructed after June 2009
Schedule 4:	Revised: Maintenance prices for all assets

Schedule 2: Revised: Residual capital value for assets constructed prior to July 2009

Residual Value ($ real FY09) "N/A" denotes that these assets have no residual value	
Bracket - 0.5	= 10.1034 x qty of assets x remaining life
Bracket - 0.6	= 10.1034 x qty of assets x remaining life
Bracket - 1.0	= 8.944 x qty of assets x remaining life
Bracket - 1.2	= 8.944 x qty of assets x remaining life
Bracket - 1.5	= 81.8207 x qty of assets x remaining life
Bracket - 2.0	= 16.2316 x qty of assets x remaining life
Bracket - 2.5	= 16.2316 x qty of assets x remaining life
Bracket - 3.0	= 38.0947 x qty of assets x remaining life
Bracket - 3.5	= 41.4073 x qty of assets x remaining life
Bracket - 4.0	= 41.4073 x qty of assets x remaining life
Bracket - 4.5	= 50.6825 x qty of assets x remaining life
Bracket - 5.0	= 47.7012 x qty of assets x remaining life
Bracket - 6.0	= 74.2018 x qty of assets x remaining life
Bracket - 6.5	= 74.2018 x qty of assets x remaining life
Bracket - 7.0	= 74.2018 x qty of assets x remaining life
Bracket - 8.0	= 74.2018 x qty of assets x remaining life
Bracket - C4	= 105.3401 x qty of assets x remaining life
Bracket - NIL	N/A
Bracket - PRIVATE	N/A
Bracket - SMARTPOLE DOUBLE	N/A
Bracket - SMARTPOLE SINGLE LONG	N/A
Bracket - SMARTPOLE SINGLE SHORT	N/A
Bracket - SUSPENDED	= 19.8755 x qty of assets x remaining life
Bracket - T1	= 26.9147 x qty of assets x remaining life
Bracket - T2	= 46.7074 x qty of assets x remaining life
Bracket - T2A	= 46.7074 x qty of assets x remaining life
Bracket - T3	= 47.7012 x qty of assets x remaining life
Bracket - T3A	= 47.7012 x qty of assets x remaining life
Bracket - T4	= 44.7198 x qty of assets x remaining life
Bracket - T5	= 44.7198 x qty of assets x remaining life
Bracket - T6	= 74.2018 x qty of assets x remaining life
Bracket - T7	= 65.7547 x qty of assets x remaining life
Connection - EMPTY	N/A
Connection - O/U	= 15.7745 x qty of assets x remaining life
Connection - OH	N/A
Connection - OH2	N/A
Connection - OHS	N/A
Connection - UG2	N/A
Connection - UGORDA	N/A
Connection - UGR1	= 21.8912 x qty of assets x remaining life

Residual Value ($ real FY09) "N/A" denotes that these assets have no residual value	
Connection - UGR2	= 15.7745 x qty of assets x remaining life
Connection - UGS	= 15.7745 x qty of assets x remaining life
Connection - UG-SP	N/A
Luminaire - 1000W MBF	= 40.0292 x qty of assets x remaining life
Luminaire - 1000W SON	= 224.6816 x qty of assets x remaining life
Luminaire - 1000W SON FLOODLIGHT	= 116.2252 x qty of assets x remaining life
Luminaire - 1000W/1500W MBI FLOODLIG	= 169.9486 x qty of assets x remaining life
Luminaire - 100W MBI	= 34.2355 x qty of assets x remaining life
Luminaire - 100W MBI FLOODLIGHT	= 40.0292 x qty of assets x remaining life
Luminaire - 100W SON	= 29.1507 x qty of assets x remaining life
Luminaire - 100W SON - PARKVILLE	= 166.4373 x qty of assets x remaining life
Luminaire - 100W SON FLOODLIGHT	= 73.5625 x qty of assets x remaining life
Luminaire - 100W SON -PLAIN	= 29.1507 x qty of assets x remaining life
Luminaire - 125W MBF	= 14.0785 x qty of assets x remaining life
Luminaire - 125W MBF - BOURKE HILL	= 113.065 x qty of assets x remaining life
Luminaire - 125W MBF - HYDE PARK	= 79.005 x qty of assets x remaining life
Luminaire - 125W MBF - NOSTALGIA	= 115.9403 x qty of assets x remaining life
Luminaire - 125W MBF - PARKVILLE	= 149.0661 x qty of assets x remaining life
Luminaire - 125W MBF BOLLARD	= 66.2516 x qty of assets x remaining life
Luminaire - 125W MBF -PLAIN	= 14.0785 x qty of assets x remaining life
Luminaire - 125W/250W MBF FLOODLIGHT	= 36.158 x qty of assets x remaining life
Luminaire - 135W SOX	= 43.8917 x qty of assets x remaining life
Luminaire - 150W SON	= 28.1404 x qty of assets x remaining life
Luminaire - 150W SON - HYDE PARK	= 79.005 x qty of assets x remaining life
Luminaire - 150W SON - PARKVILLE	= 166.4373 x qty of assets x remaining life
Luminaire - 150W SON - PARKWAY 1	= 53.8294 x qty of assets x remaining life
Luminaire - 150W SON FLOODLIGHT	= 73.5625 x qty of assets x remaining life
Luminaire - 150W SON GEC 'BOSTON 3'	= 149.0661 x qty of assets x remaining life
Luminaire - 150W/250W MBI FLOODLIGHT	N/A
Luminaire - 180W SOX	= 52.67 x qty of assets x remaining life
Luminaire - 1x40W TF	= 14.0102 x qty of assets x remaining life
Luminaire - 1x80W TF	= 10.8764 x qty of assets x remaining life
Luminaire - 250W MBF	= 26.8319 x qty of assets x remaining life
Luminaire - 250W MBF - PARKVILLE	= 153.7965 x qty of assets x remaining life
Luminaire - 250W MBF - PARKWAY 1	= 53.8294 x qty of assets x remaining life
Luminaire - 250W MBI - SMARTPOLE	N/A
Luminaire - 250W SON	= 26.2091 x qty of assets x remaining life
Luminaire - 250W SON - PARKVILLE	= 182.5894 x qty of assets x remaining life
Luminaire - 250W SON - PARKWAY 1	= 53.8294 x qty of assets x remaining life
Luminaire - 250W SON FLOODLIGHT	= 65.1833 x qty of assets x remaining life
Luminaire - 250W SON GEC 'BOSTON 3'	= 152.5675 x qty of assets x remaining life
Luminaire - 2X14W TF - T5 PIERLIGHT	= 22.5113 x qty of assets x remaining life
Luminaire - 2x14W TF - T5 PIERLITE M	= 34.6993 x qty of assets x remaining life
Luminaire - 2x175W MBF - PARKWAY 2	= 188.9098 x qty of assets x remaining life

Residual Value ($ real FY09) "N/A" denotes that these assets have no residual value	
Luminaire - 2x20W TF	= 13.8814 x qty of assets x remaining life
Luminaire - 2x20W TF - WAVERLEY	= 13.8814 x qty of assets x remaining life
Luminaire - 2x250W SON FLOODLIGHT	= 87.7834 x qty of assets x remaining life
Luminaire - 2x26W TF MACQUARIE DEC.	= 151.6897 x qty of assets x remaining life
Luminaire - 2x400W MBF - PARKWAY 2	= 188.9098 x qty of assets x remaining life
Luminaire - 2x400W MBI FLOODLIGHT	= 192.2456 x qty of assets x remaining life
Luminaire - 2x400W SON FLOODLIGHT	= 210.1534 x qty of assets x remaining life
Luminaire - 2x40W TF	= 35.1134 x qty of assets x remaining life
Luminaire - 2x70W SON - BOURKE HILL	N/A
Luminaire - 2x80W MBF - BOURKE HILL	= 95.2367 x qty of assets x remaining life
Luminaire - 3x400W MBF - PARKWAY 3	= 188.9098 x qty of assets x remaining life
Luminaire - 400W MBF	= 37.8032 x qty of assets x remaining life
Luminaire - 400W MBF - PARKWAY 1	= 87.7834 x qty of assets x remaining life
Luminaire - 400W MBF FLOODLIGHT	= 100.0731 x qty of assets x remaining life
Luminaire - 400W MBI - SMARTPOLE	N/A
Luminaire - 400W MBI FLOODLIGHT	= 66.7154 x qty of assets x remaining life
Luminaire - 400W SON	= 37.881 x qty of assets x remaining life
Luminaire - 400W SON - PARKWAY 1	= 53.8294 x qty of assets x remaining life
Luminaire - 400W SON FLOODLIGHT	= 79.9574 x qty of assets x remaining life
Luminaire - 40W SOX	= 14.0102 x qty of assets x remaining life
Luminaire - 42W MBF SYLVANIA SUB ECO	= 28.571 x qty of assets x remaining life
Luminaire - 4x1000W MBF	N/A
Luminaire - 4x20W TF	= 70.0863 x qty of assets x remaining life
Luminaire - 4x20W TF - WAVERLEY	= 70.0863 x qty of assets x remaining life
Luminaire - 4x250W SON	= 103.2333 x qty of assets x remaining life
Luminaire - 4x40W TF	= 87.7834 x qty of assets x remaining life
Luminaire - 4x40W TF - WAVERLEY	= 79.7705 x qty of assets x remaining life
Luminaire - 4x600W SON	= 175.5668 x qty of assets x remaining life
Luminaire - 500W MBI FLOODLIGHT	= 94.1038 x qty of assets x remaining life
Luminaire - 50W MBF	= 14.0785 x qty of assets x remaining life
Luminaire - 50W MBF - BOURKE HILL	= 14.0785 x qty of assets x remaining life
Luminaire - 50W MBF - NOSTALGIA	= 95.2367 x qty of assets x remaining life
Luminaire - 50W MBF - PLAIN	= 93.226 x qty of assets x remaining life
Luminaire - 50W MBF BOLLARD	= 50.9144 x qty of assets x remaining life
Luminaire - 50W SON	= 13.5816 x qty of assets x remaining life
Luminaire - 50W SON - BOURKE HILL	N/A
Luminaire - 50W SON - NOSTALGIA	= 35.6102 x qty of assets x remaining life
Luminaire - 60W SOX	N/A
Luminaire - 700W MBF	= 43.5604 x qty of assets x remaining life
Luminaire - 70W MBI	= 25.106 x qty of assets x remaining life
Luminaire - 70W MBI - MACQUARIE DEC.	= 170.8265 x qty of assets x remaining life
Luminaire - 70W SON	= 13.7472 x qty of assets x remaining life
Luminaire - 70W SON - BOURKE HILL	= 109.5537 x qty of assets x remaining life
Luminaire - 70W SON - GEC BOSTON 2	= 132.5032 x qty of assets x remaining life

Residual Value ($ real FY09) "N/A" denotes that these assets have no residual value	
Luminaire - 70W SON - NOSTALGIA	= 100.4242 x qty of assets x remaining life
Luminaire - 70W SON - PARKVILLE	= 132.5032 x qty of assets x remaining life
Luminaire - 70W SON - REGAL/FLINDERS	= 197.5126 x qty of assets x remaining life
Luminaire - 70W SON BOLLARD	= 70.5778 x qty of assets x remaining life
Luminaire - 70W SON FLOODLIGHT	= 28.0643 x qty of assets x remaining life
Luminaire - 70W SON -PLAIN	= 13.7472 x qty of assets x remaining life
Luminaire - 750W MBI FLOODLIGHT	= 94.1038 x qty of assets x remaining life
Luminaire - 80W MBF	= 13.0184 x qty of assets x remaining life
Luminaire - 80W MBF - BEGA+CURVE BRA	= 171.8799 x qty of assets x remaining life
Luminaire - 80W MBF - BOURKE HILL	= 66.8909 x qty of assets x remaining life
Luminaire - 80W MBF - GEC BOSTON 2	= 132.5032 x qty of assets x remaining life
Luminaire - 80W MBF - NOSTALGIA	= 93.226 x qty of assets x remaining life
Luminaire - 80W MBF - PLAIN	= 13.0184 x qty of assets x remaining life
Luminaire - 80W MBF - REGAL/FLINDERS	= 189.6121 x qty of assets x remaining life
Luminaire - 80W MBF - SYLVANIA SUBUR	= 13.2553 x qty of assets x remaining life
Luminaire - 80W MBF BOLLARD	= 50.9144 x qty of assets x remaining life
Luminaire - 80W MBF TOORAK	= 82.8145 x qty of assets x remaining life
Luminaire - 90W SOX	= 70.2267 x qty of assets x remaining life
Luminaire - EMPTY	N/A
Luminaire - INCANDESCENT	= 5.267 x qty of assets x remaining life
Luminaire - PRIVATE	N/A
Luminaire - TH FLOODLIGHT	= 185.7496 x qty of assets x remaining life
Support - 2ND LIGHT NON-TRL	N/A
Support - 2ND LIGHT TRL	N/A
Support - BOLLARD	= 41.1328 x qty of assets x remaining life
Support - COLUMN 10.5M-13.5M	= 88.0673 x qty of assets x remaining life
Support - COLUMN 14M-15M	= 70.2267 x qty of assets x remaining life
Support - COLUMN 2.5M-3.5M	N/A
Support - COLUMN 4-6.5M ORION WATE	= 60.1943 x qty of assets x remaining life
Support - COLUMN 4M-6.5M	= 84.6128 x qty of assets x remaining life
Support - COLUMN 7M-10M	= 78.6028 x qty of assets x remaining life
Support - DECORATIVE COLUMN	= 100.3239 x qty of assets x remaining life
Support - DEDICATED SUPPORT & COND	= 55.8406 x qty of assets x remaining life
Support - EMPTY	N/A
Support - HYDE PARK STANDARD	= 157.3003 x qty of assets x remaining life
Support - MACQUARIE STANDARD	= 49.0262 x qty of assets x remaining life
Support - MAST 15.5M-30M	= 80.2591 x qty of assets x remaining life
Support - MAST 23M	= 80.2591 x qty of assets x remaining life
Support - MAST 25M	= 80.2591 x qty of assets x remaining life
Support - ORION DOUBLE ARM	= 33.2933 x qty of assets x remaining life
Support - POLO 10.5M DECORATIVE 2M	= 66.2516 x qty of assets x remaining life
Support - POLO 4.5M DECORATIVE 1.2	= 66.2516 x qty of assets x remaining life
Support - PRIVATE	N/A
Support - ROCKS STANDARD	= 68.7285 x qty of assets x remaining life

Residual Value ($ real FY09) "N/A" denotes that these assets have no residual value	
Support - SMARTPOLE A	N/A
Support - SMARTPOLE AB	N/A
Support - SMARTPOLE B	N/A
Support - SMARTPOLE C	N/A
Support - SUSPENDED	N/A
Support - UNKNOWN	N/A
Support - WALL	N/A
Support - WOOD POLE NON-TRL	N/A
Support - WOOD POLE TRL	N/A

Schedule 3: Revised: Capital prices for assets constructed after June 2009

Capital prices ($ real FY10)	FY10	FY11	FY12	FY13	FY14
Bracket - 0.5	$ 21.76	$ 22.48	$ 23.46	$ 24.66	$ 25.99
Bracket - 0.6	$ 21.76	$ 22.48	$ 23.46	$ 24.66	$ 25.99
Bracket - 1.0	$ 20.98	$ 21.68	$ 22.62	$ 23.78	$ 25.05
Bracket - 1.2	$ 20.98	$ 21.68	$ 22.62	$ 23.78	$ 25.05
Bracket - 1.5	$ 70.07	$ 72.39	$ 75.55	$ 79.40	$ 83.66
Bracket - 2.0	$ 25.89	$ 26.75	$ 27.91	$ 29.34	$ 30.91
Bracket - 2.5	$ 33.37	$ 34.48	$ 35.98	$ 37.81	$ 39.84
Bracket - 3.0	$ 48.10	$ 49.69	$ 51.86	$ 54.50	$ 57.43
Bracket - 3.5	$ 50.33	$ 52.00	$ 54.26	$ 57.03	$ 60.09
Bracket - 4.0	$ 50.33	$ 52.00	$ 54.26	$ 57.03	$ 60.09
Bracket - 4.5	$ 56.57	$ 58.45	$ 61.00	$ 64.11	$ 67.55
Bracket - 5.0	$ 54.57	$ 56.38	$ 58.83	$ 61.83	$ 65.15
Bracket - 6.0	$ 72.41	$ 74.82	$ 78.08	$ 82.06	$ 86.47
Bracket - 6.5	$ 72.41	$ 74.82	$ 78.08	$ 82.06	$ 86.47
Bracket - 7.0	$ 72.41	$ 74.82	$ 78.08	$ 82.06	$ 86.47
Bracket - 8.0	$ 72.41	$ 74.82	$ 78.08	$ 82.06	$ 86.47
Bracket - C4	$ 93.39	$ 96.48	$ 100.69	$ 105.83	$ 111.51
Bracket - NIL	$ -	$ -	$ -	$ -	$ -
Bracket - PRIVATE	$ 14.96	$ 15.45	$ 16.13	$ 16.95	$ 17.86
Bracket - SMARTPOLE DOUBLE	$ 14.96	$ 15.45	$ 16.13	$ 16.95	$ 17.86
Bracket - SMARTPOLE SINGLE LONG	$ 14.96	$ 15.45	$ 16.13	$ 16.95	$ 17.86
Bracket - SMARTPOLE SINGLE SHORT	$ 14.96	$ 15.45	$ 16.13	$ 16.95	$ 17.86
Bracket - SUSPENDED	$ 57.64	$ 59.55	$ 62.14	$ 65.32	$ 68.82
Bracket - T1	$ 33.09	$ 34.18	$ 35.67	$ 37.49	$ 39.51
Bracket - T2	$ 53.90	$ 55.68	$ 58.11	$ 61.08	$ 64.35
Bracket - T2A	$ 53.90	$ 55.68	$ 58.11	$ 61.08	$ 64.35
Bracket - T3	$ 54.57	$ 56.38	$ 58.83	$ 61.83	$ 65.15
Bracket - T3A	$ 54.57	$ 56.38	$ 58.83	$ 61.83	$ 65.15
Bracket - T4	$ 52.56	$ 54.30	$ 56.67	$ 59.56	$ 62.76
Bracket - T5	$ 52.56	$ 54.30	$ 56.67	$ 59.56	$ 62.76
Bracket - T6	$ 72.41	$ 74.82	$ 78.08	$ 82.06	$ 86.47
Bracket - T7	$ 66.73	$ 68.94	$ 71.94	$ 75.61	$ 79.67
Connection - EMPTY	$ -	$ -	$ -	$ -	$ -
Connection - O/U	$ 10.47	$ 10.82	$ 11.29	$ 11.87	$ 12.51
Connection - OH	$ -	$ -	$ -	$ -	$ -
Connection - OH2	$ -	$ -	$ -	$ -	$ -
Connection - OHS	$ -	$ -	$ -	$ -	$ -
Connection - UG2	$ -	$ -	$ -	$ -	$ -
Connection - UGORDA	$ 10.47	$ 10.82	$ 11.29	$ 11.87	$ 12.51
Connection - UGR1	$ 14.53	$ 15.02	$ 15.67	$ 16.47	$ 17.35
Connection - UGR2	$ 10.47	$ 10.82	$ 11.29	$ 11.87	$ 12.51

Capital prices ($ real FY10)	FY10	FY11	FY12	FY13	FY14
Connection - UGS	$ 10.47	$ 10.82	$ 11.29	$ 11.87	$ 12.51
Luminaire - 1000W MBF	$ 34.84	$ 36.00	$ 37.57	$ 39.48	$ 41.60
Luminaire - 1000W SON	$ 181.96	$ 188.00	$ 196.19	$ 206.20	$ 217.27
Luminaire - 1000W SON FLOODLIGHT	$ 95.55	$ 98.72	$ 103.02	$ 108.28	$ 114.09
Luminaire - 1000W/1500W MBI FLOODLIG	$ 138.35	$ 142.94	$ 149.17	$ 156.78	$ 165.20
Luminaire - 100W MBI	$ 30.23	$ 31.23	$ 32.59	$ 34.25	$ 36.09
Luminaire - 100W MBI FLOODLIGHT	$ 34.84	$ 36.00	$ 37.57	$ 39.48	$ 41.60
Luminaire - 100W SON	$ 26.17	$ 27.04	$ 28.22	$ 29.66	$ 31.25
Luminaire - 100W SON - PARKVILLE	$ 135.56	$ 140.05	$ 146.15	$ 153.61	$ 161.86
Luminaire - 100W SON FLOODLIGHT	$ 61.56	$ 63.60	$ 66.37	$ 69.76	$ 73.50
Luminaire - 100W SON -PLAIN	$ 26.17	$ 27.04	$ 28.22	$ 29.66	$ 31.25
Luminaire - 125W MBF	$ 14.17	$ 14.64	$ 15.27	$ 16.05	$ 16.91
Luminaire - 125W MBF - BOURKE HILL	$ 93.03	$ 96.12	$ 100.31	$ 105.42	$ 111.08
Luminaire - 125W MBF - HYDE PARK	$ 65.90	$ 68.08	$ 71.05	$ 74.67	$ 78.68
Luminaire - 125W MBF - NOSTALGIA	$ 95.32	$ 98.48	$ 102.78	$ 108.02	$ 113.82
Luminaire - 125W MBF - PARKVILLE	$ 121.72	$ 125.75	$ 131.23	$ 137.93	$ 145.33
Luminaire - 125W MBF BOLLARD	$ 55.73	$ 57.58	$ 60.09	$ 63.16	$ 66.55
Luminaire - 125W MBF -PLAIN	$ 14.17	$ 14.64	$ 15.27	$ 16.05	$ 16.91
Luminaire - 125W/250W MBF FLOODLIGHT	$ 31.76	$ 32.81	$ 34.24	$ 35.99	$ 37.92
Luminaire - 135W SOX	$ 37.92	$ 39.18	$ 40.88	$ 42.97	$ 45.28
Luminaire - 150W SON	$ 25.37	$ 26.21	$ 27.35	$ 28.75	$ 30.29
Luminaire - 150W SON - HYDE PARK	$ 65.90	$ 68.08	$ 71.05	$ 74.67	$ 78.68
Luminaire - 150W SON - PARKVILLE	$ 135.56	$ 140.05	$ 146.15	$ 153.61	$ 161.86
Luminaire - 150W SON - PARKWAY 1	$ 45.84	$ 47.36	$ 49.42	$ 51.94	$ 54.73
Luminaire - 150W SON FLOODLIGHT	$ 2.95	$ 3.05	$ 3.18	$ 3.34	$ 3.52
Luminaire - 150W SON GEC 'BOSTON 3'	$ 121.72	$ 125.75	$ 131.23	$ 137.93	$ 145.33
Luminaire - 150W/250W MBI FLOODLIGHT	$ 81.84	$ 84.56	$ 88.24	$ 92.74	$ 97.72
Luminaire - 180W SOX	$ 44.91	$ 46.40	$ 48.42	$ 50.90	$ 53.63
Luminaire - 1x40W TF	$ 13.13	$ 13.56	$ 14.15	$ 14.88	$ 15.68
Luminaire - 1x80W TF	$ 10.63	$ 10.98	$ 11.46	$ 12.05	$ 12.69
Luminaire - 250W MBF	$ 24.33	$ 25.13	$ 26.23	$ 27.57	$ 29.05
Luminaire - 250W MBF - PARKVILLE	$ 125.48	$ 129.65	$ 135.30	$ 142.20	$ 149.83
Luminaire - 250W MBF - PARKWAY 1	$ 45.84	$ 47.36	$ 49.42	$ 51.94	$ 54.73
Luminaire - 250W MBI - SMARTPOLE	$ 2.95	$ 3.05	$ 3.18	$ 3.34	$ 3.52
Luminaire - 250W SON	$ 23.83	$ 24.62	$ 25.69	$ 27.01	$ 28.45
Luminaire - 250W SON - PARKVILLE	$ 148.42	$ 153.35	$ 160.03	$ 168.20	$ 177.22
Luminaire - 250W SON - PARKWAY 1	$ 45.84	$ 47.36	$ 49.42	$ 51.94	$ 54.73
Luminaire - 250W SON FLOODLIGHT	$ 54.88	$ 56.70	$ 59.17	$ 62.19	$ 65.53
Luminaire - 250W SON GEC 'BOSTON 3'	$ 124.51	$ 128.63	$ 134.24	$ 141.09	$ 148.66
Luminaire - 2X14W TF - T5 PIERLIGHT	$ 19.90	$ 20.56	$ 21.46	$ 22.55	$ 23.76
Luminaire - 2x14W TF - T5 PIERLITE M	$ 29.61	$ 30.59	$ 31.93	$ 33.56	$ 35.36
Luminaire - 2x175W MBF - PARKWAY 2	$ 153.46	$ 158.55	$ 165.46	$ 173.90	$ 183.24
Luminaire - 2x20W TF	$ 13.03	$ 13.46	$ 14.04	$ 14.76	$ 15.55
Luminaire - 2x20W TF - WAVERLEY	$ 13.03	$ 13.46	$ 14.04	$ 14.76	$ 15.55

Capital prices ($ real FY10)	FY10	FY11	FY12	FY13	FY14
Luminaire - 2x250W SON FLOODLIGHT	$ 72.89	$ 75.31	$ 78.59	$ 82.60	$ 87.03
Luminaire - 2x26W TF MACQUARIE DEC.	$ 122.82	$ 126.90	$ 132.43	$ 139.18	$ 146.65
Luminaire - 2x400W MBF - PARKWAY 2	$ 153.46	$ 158.55	$ 165.46	$ 173.90	$ 183.24
Luminaire - 2x400W MBI FLOODLIGHT	$ 156.12	$ 161.30	$ 168.32	$ 176.91	$ 186.41
Luminaire - 2x400W SON FLOODLIGHT	$ 170.39	$ 176.04	$ 183.71	$ 193.08	$ 203.45
Luminaire - 2x40W TF	$ 29.94	$ 30.94	$ 32.28	$ 33.93	$ 35.75
Luminaire - 2x70W SON - BOURKE HILL	$ 173.52	$ 179.27	$ 187.08	$ 196.63	$ 207.19
Luminaire - 2x80W MBF - BOURKE HILL	$ 77.84	$ 80.43	$ 83.93	$ 88.21	$ 92.95
Luminaire - 3x400W MBF - PARKWAY 3	$ 153.46	$ 158.55	$ 165.46	$ 173.90	$ 183.24
Luminaire - 400W MBF	$ 33.07	$ 34.16	$ 35.65	$ 37.47	$ 39.48
Luminaire - 400W MBF - PARKWAY 1	$ 72.89	$ 75.31	$ 78.59	$ 82.60	$ 87.03
Luminaire - 400W MBF FLOODLIGHT	$ 82.68	$ 85.42	$ 89.15	$ 93.69	$ 98.72
Luminaire - 400W MBI - SMARTPOLE	$ 2.95	$ 3.05	$ 3.18	$ 3.34	$ 3.52
Luminaire - 400W MBI FLOODLIGHT	$ 56.10	$ 57.96	$ 60.49	$ 63.58	$ 66.99
Luminaire - 400W SON	$ 33.13	$ 34.23	$ 35.72	$ 37.54	$ 39.56
Luminaire - 400W SON - PARKWAY 1	$ 45.84	$ 47.36	$ 49.42	$ 51.94	$ 54.73
Luminaire - 400W SON FLOODLIGHT	$ 66.65	$ 68.86	$ 71.87	$ 75.53	$ 79.59
Luminaire - 40W SOX	$ 13.13	$ 13.56	$ 14.15	$ 14.88	$ 15.68
Luminaire - 42W MBF SYLVANIA SUB ECO	$ 24.73	$ 25.55	$ 26.66	$ 28.02	$ 29.53
Luminaire - 4x1000W MBF	$ 130.52	$ 134.85	$ 140.73	$ 147.91	$ 155.85
Luminaire - 4x20W TF	$ 57.81	$ 59.72	$ 62.33	$ 65.51	$ 69.02
Luminaire - 4x20W TF - WAVERLEY	$ 57.81	$ 59.72	$ 62.33	$ 65.51	$ 69.02
Luminaire - 4x250W SON	$ 85.20	$ 88.02	$ 91.86	$ 96.55	$ 101.73
Luminaire - 4x40W TF	$ 71.91	$ 74.29	$ 77.53	$ 81.48	$ 85.86
Luminaire - 4x40W TF - WAVERLEY	$ 65.52	$ 67.70	$ 70.65	$ 74.25	$ 78.24
Luminaire - 4x600W SON	$ 142.83	$ 147.57	$ 154.00	$ 161.86	$ 170.54
Luminaire - 500W MBI FLOODLIGHT	$ 77.92	$ 80.51	$ 84.02	$ 88.31	$ 93.05
Luminaire - 50W MBF	$ 13.18	$ 13.62	$ 14.21	$ 14.94	$ 15.74
Luminaire - 50W MBF - BOURKE HILL	$ 13.18	$ 13.62	$ 14.21	$ 14.94	$ 15.74
Luminaire - 50W MBF - NOSTALGIA	$ 77.84	$ 80.43	$ 83.93	$ 88.21	$ 92.95
Luminaire - 50W MBF - PLAIN	$ 76.24	$ 78.77	$ 82.20	$ 86.40	$ 91.04
Luminaire - 50W MBF BOLLARD	$ 42.53	$ 43.94	$ 45.86	$ 48.20	$ 50.78
Luminaire - 50W SON	$ 12.79	$ 13.21	$ 13.79	$ 14.49	$ 15.27
Luminaire - 50W SON - BOURKE HILL	$ 89.25	$ 92.21	$ 96.23	$ 101.14	$ 106.57
Luminaire - 50W SON - NOSTALGIA	$ 30.34	$ 31.34	$ 32.71	$ 34.38	$ 36.22
Luminaire - 60W SOX	$ 13.13	$ 13.56	$ 14.15	$ 14.88	$ 15.68
Luminaire - 700W MBF	$ 37.66	$ 38.90	$ 40.60	$ 42.67	$ 44.96
Luminaire - 70W MBI	$ 21.97	$ 22.70	$ 23.69	$ 24.90	$ 26.23
Luminaire - 70W MBI - MACQUARIE DEC.	$ 139.05	$ 143.66	$ 149.93	$ 157.58	$ 166.03
Luminaire - 70W SON	$ 12.92	$ 13.35	$ 13.93	$ 14.64	$ 15.43
Luminaire - 70W SON - BOURKE HILL	$ 89.25	$ 92.21	$ 96.23	$ 101.14	$ 106.57
Luminaire - 70W SON - GEC BOSTON 2	$ 107.54	$ 111.10	$ 115.94	$ 121.86	$ 128.40
Luminaire - 70W SON - NOSTALGIA	$ 81.98	$ 84.70	$ 88.39	$ 92.90	$ 97.88
Luminaire - 70W SON - PARKVILLE	$ 107.54	$ 111.10	$ 115.94	$ 121.86	$ 128.40

Capital prices ($ real FY10)	FY10	FY11	FY12	FY13	FY14
Luminaire - 70W SON - REGAL/FLINDERS	$ 159.33	$ 164.62	$ 171.79	$ 180.56	$ 190.25
Luminaire - 70W SON BOLLARD	$ 58.20	$ 60.13	$ 62.75	$ 65.95	$ 69.49
Luminaire - 70W SON FLOODLIGHT	$ 24.33	$ 25.13	$ 26.23	$ 27.57	$ 29.05
Luminaire - 70W SON -PLAIN	$ 12.92	$ 13.35	$ 13.93	$ 14.64	$ 15.43
Luminaire - 750W MBI FLOODLIGHT	$ 77.92	$ 80.51	$ 84.02	$ 88.31	$ 93.05
Luminaire - 80W MBF	$ 12.34	$ 12.75	$ 13.30	$ 13.98	$ 14.73
Luminaire - 80W MBF - BEGA+CURVE BRA	$ 138.91	$ 143.52	$ 149.77	$ 157.41	$ 165.86
Luminaire - 80W MBF - BOURKE HILL	$ 55.26	$ 57.09	$ 59.58	$ 62.62	$ 65.98
Luminaire - 80W MBF - GEC BOSTON 2	$ 107.54	$ 111.10	$ 115.94	$ 121.86	$ 128.40
Luminaire - 80W MBF - NOSTALGIA	$ 76.24	$ 78.77	$ 82.20	$ 86.40	$ 91.04
Luminaire - 80W MBF - PLAIN	$ 12.34	$ 12.75	$ 13.30	$ 13.98	$ 14.73
Luminaire - 80W MBF - REGAL/FLINDERS	$ 153.04	$ 158.11	$ 165.00	$ 173.42	$ 182.73
Luminaire - 80W MBF - SYLVANIA SUBUR	$ 12.53	$ 12.94	$ 13.51	$ 14.20	$ 14.96
Luminaire - 80W MBF BOLLARD	$ 42.53	$ 43.94	$ 45.86	$ 48.20	$ 50.78
Luminaire - 80W MBF TOORAK	$ 67.95	$ 70.20	$ 73.26	$ 77.00	$ 81.13
Luminaire - 90W SOX	$ 58.90	$ 60.85	$ 63.51	$ 66.75	$ 70.33
Luminaire - EMPTY	$ 1.97	$ 2.03	$ 2.12	$ 2.23	$ 2.35
Luminaire - INCANDESCENT	$ 6.16	$ 6.37	$ 6.64	$ 6.98	$ 7.36
Luminaire - PRIVATE	$ 1.97	$ 2.03	$ 2.12	$ 2.23	$ 2.35
Luminaire - TH FLOODLIGHT	$ 150.94	$ 155.95	$ 162.74	$ 171.05	$ 180.23
Support - 2ND LIGHT NON-TRL	$ -	$ -	$ -	$ -	$ -
Support - 2ND LIGHT TRL	$ -	$ -	$ -	$ -	$ -
Support - BOLLARD	$ 133.37	$ 137.79	$ 143.79	$ 151.13	$ 159.25
Support - COLUMN 10.5M-13.5M	$ 260.16	$ 268.79	$ 280.50	$ 294.81	$ 310.64
Support - COLUMN 14M-15M	$ 239.13	$ 247.06	$ 257.83	$ 270.98	$ 285.53
Support - COLUMN 2.5M-3.5M	$ 209.46	$ 216.40	$ 225.83	$ 237.36	$ 250.10
Support - COLUMN 4-6.5M ORION WATE	$ 227.31	$ 234.84	$ 245.08	$ 257.58	$ 271.41
Support - COLUMN 4M-6.5M	$ 256.09	$ 264.58	$ 276.11	$ 290.20	$ 305.78
Support - COLUMN 7M-10M	$ 249.00	$ 257.26	$ 268.47	$ 282.17	$ 297.32
Support - DECORATIVE COLUMN	$ 274.61	$ 283.71	$ 296.08	$ 311.18	$ 327.89
Support - DEDICATED SUPPORT & COND	$ 222.17	$ 229.54	$ 239.54	$ 251.77	$ 265.28
Support - EMPTY	$ -	$ -	$ -	$ -	$ -
Support - HYDE PARK STANDARD	$ 341.76	$ 353.10	$ 368.48	$ 387.29	$ 408.08
Support - MACQUARIE STANDARD	$ 57.79	$ 59.70	$ 62.31	$ 65.48	$ 69.00
Support - MAST 15.5M-30M	$ 250.96	$ 259.28	$ 270.58	$ 284.38	$ 299.65
Support - MAST 23M	$ 250.96	$ 259.28	$ 270.58	$ 284.38	$ 299.65
Support - MAST 25M	$ 250.96	$ 259.28	$ 270.58	$ 284.38	$ 299.65
Support - ORION DOUBLE ARM	$ 39.24	$ 40.54	$ 42.31	$ 44.47	$ 46.86
Support - POLO 10.5M DECORATIVE 2M	$ 78.09	$ 80.68	$ 84.20	$ 88.49	$ 93.24
Support - POLO 4.5M DECORATIVE 1.2	$ 78.09	$ 80.68	$ 84.20	$ 88.49	$ 93.24
Support - PRIVATE	$ -	$ -	$ -	$ -	$ -
Support - ROCKS STANDARD	$ 199.47	$ 206.08	$ 215.06	$ 226.04	$ 238.17
Support - SMARTPOLE A	$ -	$ -	$ -	$ -	$ -
Support - SMARTPOLE AB	$ -	$ -	$ -	$ -	$ -

Capital prices ($ real FY10)	FY10	FY11	FY12	FY13	FY14
Support - SMARTPOLE B	$ -	$ -	$ -	$ -	$ -
Support - SMARTPOLE C	$ -	$ -	$ -	$ -	$ -
Support - SUSPENDED	$ -	$ -	$ -	$ -	$ -
Support - UNKNOWN	$ -	$ -	$ -	$ -	$ -
Support - WALL	$ -	$ -	$ -	$ -	$ -
Support - WOOD POLE NON-TRL	$ -	$ -	$ -	$ -	$ -
Support - WOOD POLE TRL	$ -	$ -	$ -	$ -	$ -

Schedule 4: Revised: Maintenance prices for all assets

Maintenance prices ($ nominal)	FY10	FY11	FY12	FY13	FY14
Connection - EMPTY	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - OU	$80.20	$82.18	$84.22	$86.30	$88.44
Connection - OH	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - OH2	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - OHS	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - UG2	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - UGORDA	$40.10	$41.09	$42.11	$43.15	$44.22
Connection - UGR1	$73.52	$75.34	$77.20	$79.11	$81.07
Connection - UGR2	$26.73	$27.39	$28.07	$28.77	$29.48
Connection - UGS	$0.00	$0.00	$0.00	$0.00	$0.00
Connection - UGSP	$0.00	$0.00	$0.00	$0.00	$0.00
Lamp - EMPTY	$41.06	$41.56	$42.01	$43.16	$44.26
Lamp - INC1x100	$270.15	$281.57	$291.68	$301.76	$310.28
Lamp - INC1x1000	$483.15	$502.52	$519.97	$537.14	$552.01
Lamp - INC1x1440	$268.83	$280.16	$290.19	$300.24	$308.72
Lamp - INC1x150	$274.27	$285.75	$295.91	$306.10	$314.73
Lamp - INC1x200	$276.03	$287.54	$297.75	$307.99	$316.66
Lamp - INC1x300	$296.07	$308.08	$318.80	$329.55	$338.76
Lamp - INC1x40	$270.23	$281.66	$291.77	$301.85	$310.38
Lamp - INC1x500	$327.20	$339.98	$351.49	$363.06	$373.09
Lamp - INC1x60	$270.15	$281.57	$291.68	$301.76	$310.28
Lamp - INC1x75	$270.15	$281.57	$291.68	$301.76	$310.28
Lamp - INC3x100	$276.76	$288.34	$298.62	$308.88	$317.58
Lamp - MBF1x1000	$113.36	$116.30	$119.05	$122.47	$125.67
Lamp - MBF1x125	$67.45	$69.15	$70.68	$72.82	$74.76
Lamp - MBF1x160	$45.34	$45.90	$46.41	$47.66	$48.87
Lamp - MBF1x250	$70.67	$72.40	$73.96	$76.18	$78.21
Lamp - MBF1x400	$71.16	$72.91	$74.48	$76.71	$78.75
Lamp - MBF1x42	$54.73	$55.82	$56.81	$58.45	$59.98
Lamp - MBF1x50	$55.48	$56.63	$57.67	$59.36	$60.93
Lamp - MBF1x500	$138.11	$142.15	$145.89	$150.22	$154.21
Lamp - MBF1x700	$119.35	$122.93	$126.19	$130.04	$133.52
Lamp - MBF1x80	$46.56	$47.30	$47.96	$49.31	$50.58
Lamp - MBF1x800	$138.11	$142.15	$145.89	$150.22	$154.21
Lamp - MBF2x125	$70.15	$71.92	$73.52	$75.73	$77.74
Lamp - MBF2x160	$66.74	$68.37	$69.83	$71.95	$73.87
Lamp - MBF2x175	$121.91	$124.91	$127.77	$131.32	$134.71
Lamp - MBF2x400	$75.59	$77.44	$79.13	$81.48	$83.64
Lamp - MBF2x80	$56.66	$57.85	$58.92	$60.64	$62.24
Lamp - MBF3x160	$66.74	$68.37	$69.83	$71.95	$73.87
Lamp - MBF3x250	$78.53	$80.46	$82.22	$84.64	$86.88

Maintenance prices ($ nominal)	FY10	FY11	FY12	FY13	FY14
Lamp - MBF3x400	$80.02	$81.98	$83.77	$86.24	$88.52
Lamp - MBF3x80	$57.95	$59.17	$60.28	$62.03	$63.66
Lamp - MBF4x1000	$356.70	$365.66	$374.58	$384.32	$394.01
Lamp - MBF4x80	$59.24	$60.49	$61.63	$63.41	$65.08
Lamp - MBF6x125	$82.95	$84.99	$86.86	$89.40	$91.75
Lamp - MBF6x160	$66.74	$68.37	$69.83	$71.95	$73.87
Lamp - MBF9x160	$66.74	$68.37	$69.83	$71.95	$73.87
Lamp - MBI1x100	$117.36	$121.06	$124.41	$128.27	$131.74
Lamp - MBI1x1000	$182.23	$187.49	$192.43	$197.98	$203.17
Lamp - MBI1x150	$159.34	$164.03	$168.39	$173.35	$177.93
Lamp - MBI1x1500	$155.22	$159.80	$164.06	$168.91	$173.38
Lamp - MBI1x250	$117.43	$121.08	$124.38	$128.25	$131.71
Lamp - MBI1x3745	$99.30	$102.50	$105.34	$108.73	$111.72
Lamp - MBI1x400	$104.07	$107.08	$109.82	$113.17	$116.20
Lamp - MBI1x500	$139.98	$144.18	$148.05	$152.51	$156.57
Lamp - MBI1x70	$85.31	$87.51	$89.53	$92.17	$94.60
Lamp - MBI2x400	$121.87	$125.32	$128.51	$132.32	$135.83
Lamp - MBI4x150	$306.97	$315.01	$322.89	$331.51	$339.95
Lamp - SON1x100	$89.08	$91.49	$93.68	$96.51	$99.09
Lamp - SON1x1000	$112.61	$115.53	$118.26	$121.66	$124.84
Lamp - SON1x120	$92.34	$95.11	$97.60	$100.65	$103.37
Lamp - SON1x150	$71.31	$72.99	$74.50	$76.70	$78.73
Lamp - SON1x220	$106.72	$109.80	$112.61	$116.03	$119.13
Lamp - SON1x250	$70.18	$71.83	$73.32	$75.48	$77.48
Lamp - SON1x310	$105.54	$108.59	$111.37	$114.76	$117.83
Lamp - SON1x360	$86.27	$88.85	$91.13	$94.02	$96.58
Lamp - SON1x400	$70.67	$72.32	$73.83	$76.01	$78.02
Lamp - SON1x50	$75.17	$77.11	$78.88	$81.25	$83.42
Lamp - SON1x70	$69.25	$70.90	$72.40	$74.54	$76.51
Lamp - SON2x250	$76.88	$78.69	$80.35	$82.69	$84.87
Lamp - SON2x400	$77.86	$79.69	$81.38	$83.74	$85.94
Lamp - SON2x70	$77.90	$79.77	$81.49	$83.85	$86.05
Lamp - SON3x70	$86.56	$88.63	$90.58	$93.16	$95.59
Lamp - SON4x250	$90.29	$92.43	$94.43	$97.12	$99.65
Lamp - SON4x600	$195.92	$201.39	$206.59	$212.43	$217.95
Lamp - SON4x70	$95.21	$97.50	$99.66	$102.47	$105.13
Lamp - SON8x70	$129.82	$132.96	$136.00	$139.71	$143.29
Lamp - SOX1x135	$108.97	$112.28	$115.28	$118.86	$122.07
Lamp - SOX1x150	$108.97	$112.28	$115.28	$118.86	$122.07
Lamp - SOX1x180	$191.48	$196.84	$201.93	$207.65	$213.06
Lamp - SOX1x90	$91.00	$93.54	$95.86	$98.76	$101.39
Lamp - TF1x16	$119.21	$123.47	$127.23	$131.44	$135.08
Lamp - TF1x176	$164.43	$170.75	$176.35	$182.30	$187.40
Lamp - TF1x20	$120.01	$124.28	$128.07	$132.30	$135.96

Maintenance prices ($ nominal)	FY10	FY11	FY12	FY13	FY14
Lamp - TF1x236	$164.43	$170.75	$176.35	$182.30	$187.40
Lamp - TF1x26	$120.09	$124.36	$128.15	$132.38	$136.05
Lamp - TF1x40	$120.16	$124.43	$128.23	$132.46	$136.12
Lamp - TF1x60	$120.92	$125.21	$129.02	$133.28	$136.96
Lamp - TF1x80	$120.92	$125.21	$129.02	$133.28	$136.96
Lamp - TF2x14 T5	$49.18	$49.98	$50.72	$52.13	$53.47
Lamp - TF2x20	$65.96	$67.63	$69.12	$71.23	$73.14
Lamp - TF2x26	$120.96	$125.25	$129.06	$133.31	$137.00
Lamp - TF2x40	$121.11	$125.40	$129.22	$133.47	$137.17
Lamp - TF2x58	$119.21	$123.47	$127.23	$131.44	$135.08
Lamp - TF2x80	$122.63	$126.96	$130.81	$135.11	$138.84
Lamp - TF3x20	$121.61	$125.92	$129.74	$134.01	$137.72
Lamp - TF3x40	$122.05	$126.37	$130.21	$134.49	$138.21
Lamp - TF3x80	$124.33	$128.71	$132.61	$136.95	$140.72
Lamp - TF4x20	$122.40	$126.73	$130.58	$134.87	$138.60
Lamp - TF4x40	$123.00	$127.34	$131.20	$135.51	$139.25
Lamp - TF4x80	$126.04	$130.45	$134.40	$138.78	$142.60
Lamp - TF5x58	$119.21	$123.47	$127.23	$131.44	$135.08
Lamp - TF5x65	$119.21	$123.47	$127.23	$131.44	$135.08
Lamp - TF5x80	$127.74	$132.20	$136.19	$140.62	$144.48
Lamp - TF6x20	$124.00	$128.37	$132.25	$136.59	$140.36
Lamp - TF6x36	$124.89	$129.28	$133.19	$137.54	$141.34
Lamp - TF6x80	$129.45	$133.95	$137.98	$142.45	$146.36
Lamp - TH1x1000	$94.71	$97.43	$99.89	$102.96	$105.73
Lamp - TH1x1500	$92.47	$95.14	$97.54	$100.55	$103.26
Lamp - TH1x400	$100.70	$103.57	$106.18	$109.41	$112.34
Lamp - TH1x500	$88.40	$90.97	$93.26	$96.17	$98.77
Lamp - TH1x750	$95.50	$98.24	$100.72	$103.81	$106.60

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