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Hugo Klingenberg  
Senior Manager Network Development  
Electranet Pty Ltd  
[consultation@electranet.com.au](mailto:consultation@electranet.com.au)

Ashley Lloyd  
Senior Manager Victorian Planning  
Australian Energy Market Operator  
[planning@aemo.com.au](mailto:planning@aemo.com.au)

Dear Messrs Klingenberg and Lloyd

#### SOUTH AUSTRALIA – VICTORIA (HEYWOOD) INTERCONNECTOR UPGRADE

The National Generators Forum appreciates the opportunity to comment on the ElectraNet and AEMO *Regulatory Investment Test - Transmission, Project Assessment Draft Report (PADR) for the proposed upgrade of the South Australian – Victoria (Heywood) Interconnector*, published in September 2012.

The NGF supports interconnector upgrades where it is economically efficient to do so. As the proposal to upgrade the Heywood interconnector is the first proposal to be assessed under the revised RIT-T Rules and application guidelines, the NGF considers it is particularly important that the analysis by AEMO and ElectraNet is rigorous and robust, and sufficiently transparent to facilitate detailed scrutiny by third parties.

The NGF has concerns with the PADR in a number of key areas:

- the timeframe for the analysis and reliance of distant benefits;
- the use of outdated and inaccurate demand forecasts in the majority of scenarios;
- the lack of detail on a number of key assumptions and sensitivities;
- the inclusion of operating cost benefits associated with new generation investment without accounting for the additional network costs associated with supporting output from these sources.

#### Analysis period

The proponents have chosen to apply a modelling period going out 45 years to 2045/55. The last 15 years of the analysis assumes that benefits realised are the same as the average of the last five years of its marketing modelling results (from 2035/36 to 2039/40). The proponents apply a 10% discount rate to the modelled costs and benefits.

The RIT-T application guidelines do not specify a fixed time frame for the investment test, other than noting that it is important to consider the scale and cost of the credible option when determining the modelling timeframe. The guidelines suggest that it may be necessary to consider 20 years or more for larger projects.

Given the ever changing nature of the NEM, the NGF finds it difficult to envisage that it is possible to accurately model market benefits in a timeframe beyond 20 years for a project of the scale proposed. The PADR shows that Option 1b, under the Revised Central Scenario (Figure 6-3), delivers cumulative market benefits, *in real terms*, that are greater in the last 20 or so years of the analysis than the first 20 years of the modelling period.

If the RIT-T relies on such large distant benefits to justify a particular option, we would prefer that inherent uncertainty of such benefits be reflected in a higher discount rate for the analysis. To that end, we note that the discount rate sensitivity reduces the total market benefits of Option 1b from \$270 million (10% base case) to \$122 million (13% sensitivity).

#### Reasonable demand scenarios

Inaccurate forecasting can lead to poor investment decisions, particularly given the long lead times for the approval and construction of transmission and distribution networks. The approval of regulated network investment programs to meet overly optimistic demand forecasts has resulted in a major expansion of regulated network assets which for some, in hindsight, were unnecessary, too early or too large. End use customers bear the full cost of these decisions through user charges, not planners or service providers.

The NGF notes that the majority of modelling scenarios do not use the latest AEMO published demand forecasts. Three out of four scenarios apply 2009-10 load profiles adjusted upwards using the 2010 NTNDP and 2011 ESOO forecasts.

Peak and aggregate demand patterns have changed dramatically in recent years. Attachment 1 shows these trends by presenting actual monthly peak and average demand over the last 15 years for both Victoria and South Australia. There is a clear structural change in aggregate demand levels around 2007/08. Despite a common misconception amongst market observers that peak demand continues to grow in each region, this is not supported by the data. Attachment 1 shows that peak demand and the frequency of peaks periods have fallen in South Australia and Victoria in the past two years.

In 2012 AEMO released its first NEM-wide National Electricity Forecasting Report (NEFR), applying a revised methodology and incorporating independent modelling assumptions. The NEFR revealed a substantial step change revision downwards of both peak demand and energy forecasts across all regions.

At this stage the NGF considers that the 2012 NEFR forecasts are overly optimistic and expects AEMO to issue a further step change reduction in the 2013 NEFR. Our concern is reinforced by actual demand falling well below forecasts in the first four months of 2012/13.

AEMO has a history of constantly revising its ESOO peak demand forecasts downwards. We have shown this in Attachment 2. Forecasts included in the early ESOOs created significant expectations regarding the level of network and generation investment that would be required to meet peak demand expectations for the summer of 2011/12. In the intervening years as actual results were observed, AEMO consistently revised its forecasts downwards.

As further evidence, we note that the NEM has experienced actual peak demand outcomes that have been less than the NEMMCO/AEMO 90% POE forecasts on numerous occasions. This has occurred in 6 out of the last 12 South Australia summer forecasts and 5 out of last 12 summer forecasts in Victoria.

The proponents have used 50% POE and 10% POE peak demand forecasts and applied weights of 69.6% and 30.4% respectively. Based on past forecasting performance, the NGF is of the view that this choice of forecasts gives undue weight to the higher demand scenarios, and consequently is likely to overstate the benefits of the interconnector upgrade.

### Carbon price path

The NGF observes that three of the four scenarios incorporate Federal Treasury modelling estimates of forward carbon prices – either the “core” or “high” carbon price paths. The Treasury modelling was completed more than 12 months ago and relied upon an assumption of widespread global action to implement trading schemes in major emitting countries by 2015. The core price scenario has permits trading around \$30 in 2016, rising to around \$50 per permit by 2030 (real terms). The high price scenario has prices starting around \$50 in 2016, rising to \$100 per permit in 2030 (real terms).

The NGF anticipates that the domestic price of Australian emission units will follow the price of imported European Unit Allowances, currently trading in European exchanges for around AU\$12 for delivery in 2015-16. We do not believe that the Treasury modelling estimates are in any way realistic or reliable, particularly for the period to 2020.

The NGF does not have a problem with the carbon price scenario adopted by the proponents in their Revised Central Scenario - \$15 per permit in 2015-16, rising by 4% real thereafter. The NGF considers that the dramatic changes in the global outlook for carbon prices should be reflected in all scenarios, particularly as the carbon price has a significant impact on the likely take up of renewables and in determining the economic lives of existing coal-fired plant in Victoria.

The NGF would appreciate the inclusion of a zero carbon price scenario from 2015-16 onwards in further modelling work undertaken as part of this RIT-T analysis. We believe this is important for two reasons:

- as a sensitivity to show how important the carbon price assumption is to the overall market benefits;
- the abolition of the current carbon pricing scheme from 2015-16 is a reasonable scenario given recent public debate in Australia.

### LRET Target

The Climate Change Authority is currently undertaking a study of the Renewable Energy Target scheme, and will finalise recommendations to the Commonwealth Government by the end of 2012.

The Issues Paper for the review canvasses a range of matters relevant to this RIT-T assessment. This includes consideration of whether the LRET target should be set as adjusted through time to deliver a percentage of actual demand in 2020 or whether the existing fixed target of 41 TWh of new renewable generation should remain. There is also the question of whether the small scale and large scale schemes should be merged.

There is much public and industry debate about the design and impact of the RET program. Given the dramatic fall in actual demand and the revision of longer term forecasts, the Authority will have to give serious consideration to resetting the scheme parameters.

Given that the LRET target value is set as an input assumption that *must be met* by the model, the NGF believes that the addition of an additional sensitivity case based on achieving 20% of the revised energy forecast as opposed to the fixed targets contained in the PADR is appropriate. Given that the Authority will report shortly and the Government is obliged to respond to the Authority's recommendations early in 2013, it may be possibly that a shift in the policy framework for RET scheme may have a bearing on the merits of individual options in this study.

#### Assumptions on committed new generation entry and forced closures

The NGF does not support continued inclusion of the following input assumptions as part of the market modelling, as neither can be supported by current Government or company announcements:

1. Alinta has not committed to convert the Playford Power Station to a 258 MW open-cycle gas turbine in 2012/13, or any time in the future;
2. Given that the Commonwealth Government has abandoned its Contract for Close program, it is no longer reasonable to assume a schedule of forced unit retirements at Hazelwood Power Station.

#### Changes in involuntary load shedding

The PADR contains the statement that *the differences in USE have been calculated across the NEM as a whole*. The report as issued does not contain details of either the baseline or revised USE outcomes in either MWh or % terms.

The NGF requests that the proponents provide details of both the baseline and revised USE outcomes to allow analysis by third parties.

#### Data on the drivers of the operating cost saving

Analysis of Appendix E indicates that the single biggest benefit claimed in the PADR is associated with a reduction in operating costs, comprising fuel and carbon costs. As detailed in the PADR, this occurs due to the *increase in the output of new gas fired generation in Victoria, increases in these sources of generation displaces higher fuel generation from new and existing gas fired generation in South Australia*. This is graphically demonstrated in the series of figures included in section 6.3 of the PADR.

These fuel cost differences are based on data to be used for the 2012 NTNDP provided by ACIL Tasman. This report contains multiple sub-regions for both South Australia and Victoria. The choice of sub-region for construction of new gas fired generation is critical as the differential in gas prices between these sub-regions changes based on the two sub-regions selected. As the PADR only contains new generation build details at a regional structure, rather than a sub-regional structure, it is not possible for third parties to accurately back calculate and validate the modelling results.

Given the importance of operating cost differences in producing overall benefits as part of the study, the NGF requests that the proponents provide the revised generation build and dispatch data results at a sub-regional basis.

#### Capability of the proposed upgrade to support the revised generation construction scenarios

The two preferred upgrades as proposed by the proponents increase the nominal transfer capability on the Heywood interconnector as follows

Option	Sa to Vic	Vic to SA
1a or 2a	90 MW	90MW
1b or 2b	190 MW	190 MW

Analysis of data contained in Appendix E indicates substitution of generation between regions based on an increase in CCGT construction in Victoria exceeding 450 MW with a corresponding decrease in CCGT construction in SA also exceeding 450 MW. With regard to wind farms in South Australia an increase of 192 MW with a subsequent decrease in non South Australian wind generation of 183 MW, a one for one substitution.

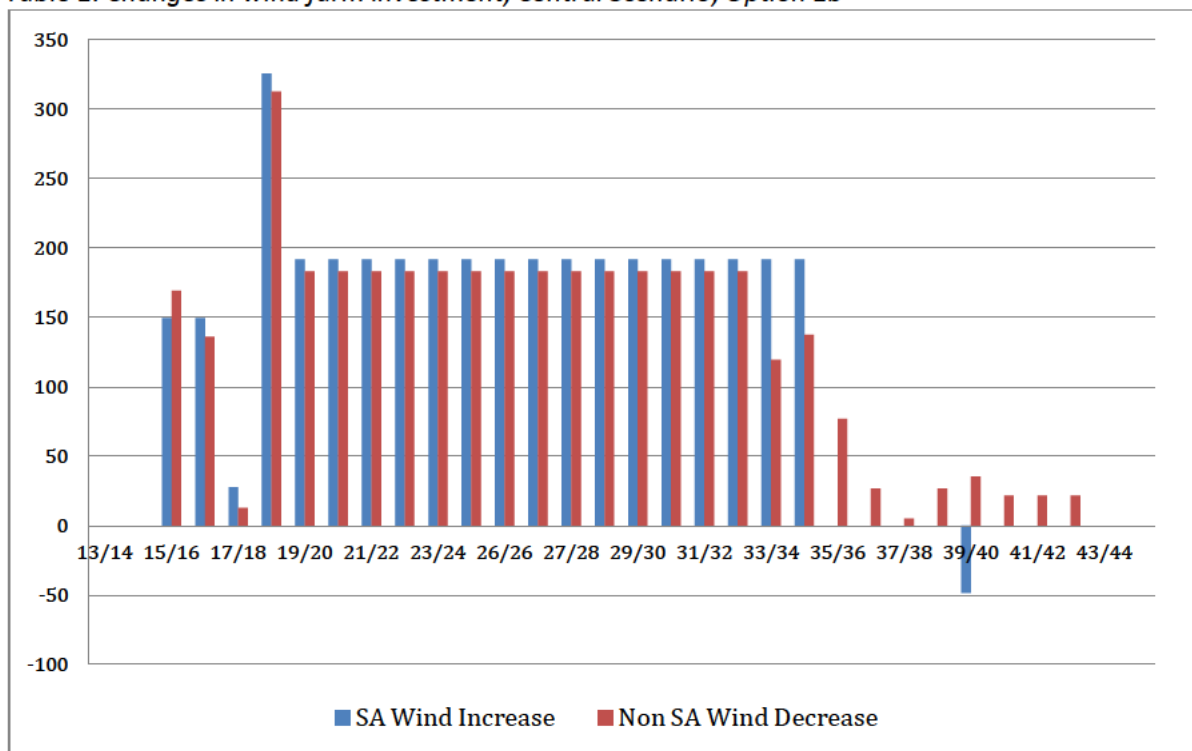
The nominal increases on the Heywood interconnector are significantly less than the generation substitution between regions as detailed by the proponents in Appendix E of the PADR.

The NGF seeks clarification from the proponents as to how the proposed upgrade supports the level of generation substitution between the regions contained in the modelling results.

Utilisation of wind farms in South Australia

Analysis of data contained in Appendix E of the PADR, indicates relatively minor changes in the construction of wind farms in non-South Australian regions when combined with the modelled investment in new wind farms in South Australia. The PADR shows a near one for one substitution of wind farm versus the other regions. There is no material market benefit from capital deferral.

*Table 1: Changes in wind farm investment, Central Scenario, Option 1b*



### Selection of years to reflect load diversity between regions

The NGF notes that the load diversity scenario used in the PADR between the regions of South Australia and Victoria is based on the half-hourly load traces for FY2009/10 which are then simply scaled to meet the forecast for the modelled year. In addition, sensitivity cases were conducted using FY 2005/06 and 2007/08 load traces.

The PADR does not provide any results to show the impact of the load diversity traces selected or historical data to compare movements in load diversity ratings between years.

The NGF requests that the proponents provide the load diversity ratings for each year over the past decade, the results of the sensitivity tests, and supporting reasons for their selection of the years contained in the PADR.

### Credible options should include all relevant capital costs

The PADR relies overwhelmingly on market benefits from dispatching new gas plant with lower operating (fuel and carbon) costs in Victoria. That is, the model shows new Victorian gas plant purchasing relatively lower cost gas, displacing the need for higher operating cost gas plant in South Australia.

Appendix D of the PADR states that the modelling assumes “new Moorabool-Mortlake/Heywood 500 kV line when new generation along line exceeds 2500 MW”.

The NGF is concerned to ensure that all relevant costs are included in the PADR. Given the modelling of the market benefits relies heavily on a change to the pattern of generation investment in Victoria and South Australia, the full costs of all associated network investment to support inter-regional flows should be included in the PADR.

The proponents claim that the upgrade to the Moorabool to Heywood 500 kV network will occur when the total generation connected exceeds 2,500 MW. However, the additional generation in Victoria can only connect and substitute for generation in South Australia if *both* the Moorabool to Heywood 500 kV augmentation and Heywood interconnector upgrade proceed. This Moorabool to Heywood 500 kV upgrade allows the construction of the lower fuel cost generation in Victoria that displaces the higher cost gas fired generation in South Australia. This then justifies the upgrade of the Heywood interconnector based on relative differences in operating costs.

However, without the upgrade of *both* the Heywood interconnector and Moorabool to Heywood 500 KV circuits, the new generation is located in South Australia and the Heywood interconnector upgrade may not be viable. Similarly, without the new Moorabool to Heywood 500 KV circuits the new generation is unable to locate within Victoria to displace the generation in South Australia.

These projects are in fact co-dependent. Neither the Heywood interconnector upgrade nor the Moorabool to Heywood 500 KV circuit augmentation can pass the RIT-T without the other as the benefit of either only fully accrues if both are constructed. Without either development the market benefits claimed by the proponents fall substantially.

The NGF submits that the cost of the Heywood interconnector upgrade must also include the cost of the augmentation to the Moorabool to Heywood 500 KV circuits as the new generation cannot connect in Victoria to displace new generation in South Australia without that network investment.

Whilst not clearly set out in the PADR, if the displaced generation in South Australia was located at the Adelaide sub-region, additional 275 KV network elements may also be required to allow the benefits as stated in this PADR to accrue. The NGF requests that the proponents verify the level of additional network upgrades required within South Australia to allow transfer of the output of Victorian generation to supply load to the west of the South East switchyard in South Australia. The cost of these network elements should also be included as a cost in this PADR.

### Regional reference price forecasts

The NGF notes that the proponents have not released modelling outcomes for the RRP in the NEM. Non release of this data prevents third parties from determining the financial viability of the proposed new generation included in the PADR. This new generation will only arrive if RRP outcomes support their construction. RRP outcomes also provide a transparent and necessary *sensibility* test for the model outcomes to allow third parties to quickly assess the reasonableness of the modelling outcomes. The NGF requests that the proponents release the modelled RRP outcomes.

### Summary

As with all regulated network investments, customers will pay network charges to recover all project expenditures if the investment proceeds. On the other side of the ledger, when and to the extent the modelled market benefits are realised is much less certain.

The NGF has concerns with a 45 year assessment period. We do not believe that it is possible to rely on large market benefits decades into the future from a project of this scale. There is too much uncertainty associated with carbon policy, renewable subsidies, demand forecasts, future gas prices and generation investment decisions to confidently rely on long-dated modelling results. The NGF considers that the PADR should be limited to no more than 20 years or the discount rate applied to benefits should be set at a higher level to reflect the policy and market uncertainty.

On the demand side, the NGF considers that the scenarios for forecast demand are too optimistic. AEMO and the TNSPs have a history of over-stating demand, from the short to the longer term. The NGF is of the view that the RIT-T results should be based on the most recent National Electricity Forecasting Report 2012. The demand forecasts and profiles should rely on the medium growth, 50% POE scenario exclusively, given that actual demands have frequently fallen below the 50% POE forecast, not above. The NGF also recommends that the proponents give consideration to temporarily suspending the RIT-T process for this application pending the release of the 2103 NEFR which the NGF expects will include another significant downward revision in peak demand and energy forecasts, these expected revisions would have a significant negative impact on the benefits claimed in this PADR. A brief delay until better information becomes available would have only a small deferral of modelled benefits.

The NGF considers that the proponents have created a circular argument to justify the new 500 kV network requirements to support the increased flow of generation between Victoria and South Australia. We are of the view that the cost of the upgrade should include all of the costs of related augmentation necessary for South Australian customers to enjoy the projected benefits of new lower operating cost generation in Victoria. This would include the cost of a new line between Moorabool and Heywood. Without inclusion of the cost of the Moorabool to Heywood 500 KV augmentation, the proponents are understating the true cost of the interconnector upgrade required to deliver the benefits claimed in the PADR.

The level of investment in transmission networks in the NEM is currently under close scrutiny as network expenditure results in a direct and irreversible cost for consumers. It is important that only those network investments that are likely to deliver substantial net benefits to consumers proceed to the construction stage.

The NGF thanks AEMO and Electranet for their efforts in preparing the PADR. We have focused on what we see as the shortfalls of the analysis, not the considered and detailed effort that has gone into analysis. Nevertheless, we believe the issues raised in this submission are important and we would hope the proponents take these matters into account in the next stage of the assessment.

Yours sincerely

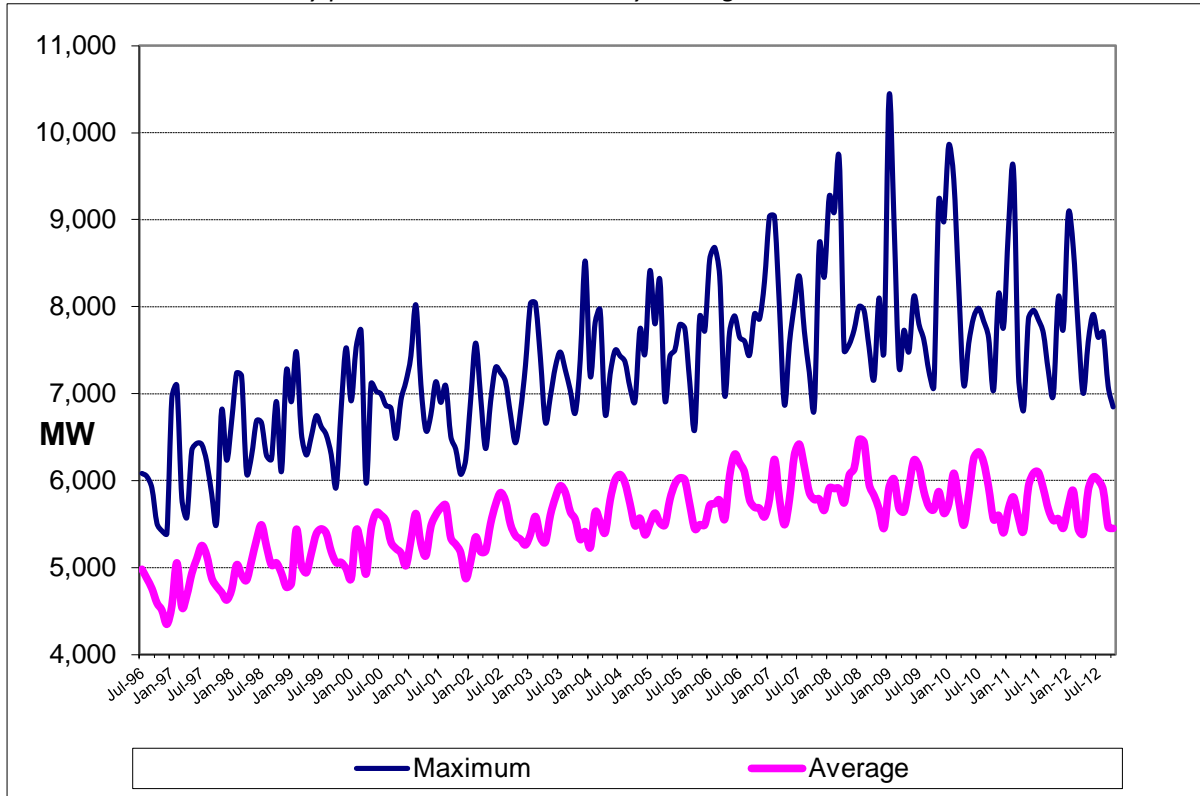
A handwritten signature in black ink, appearing to read 'TR', with a long horizontal flourish extending to the right.

Tim Reardon  
Executive Director

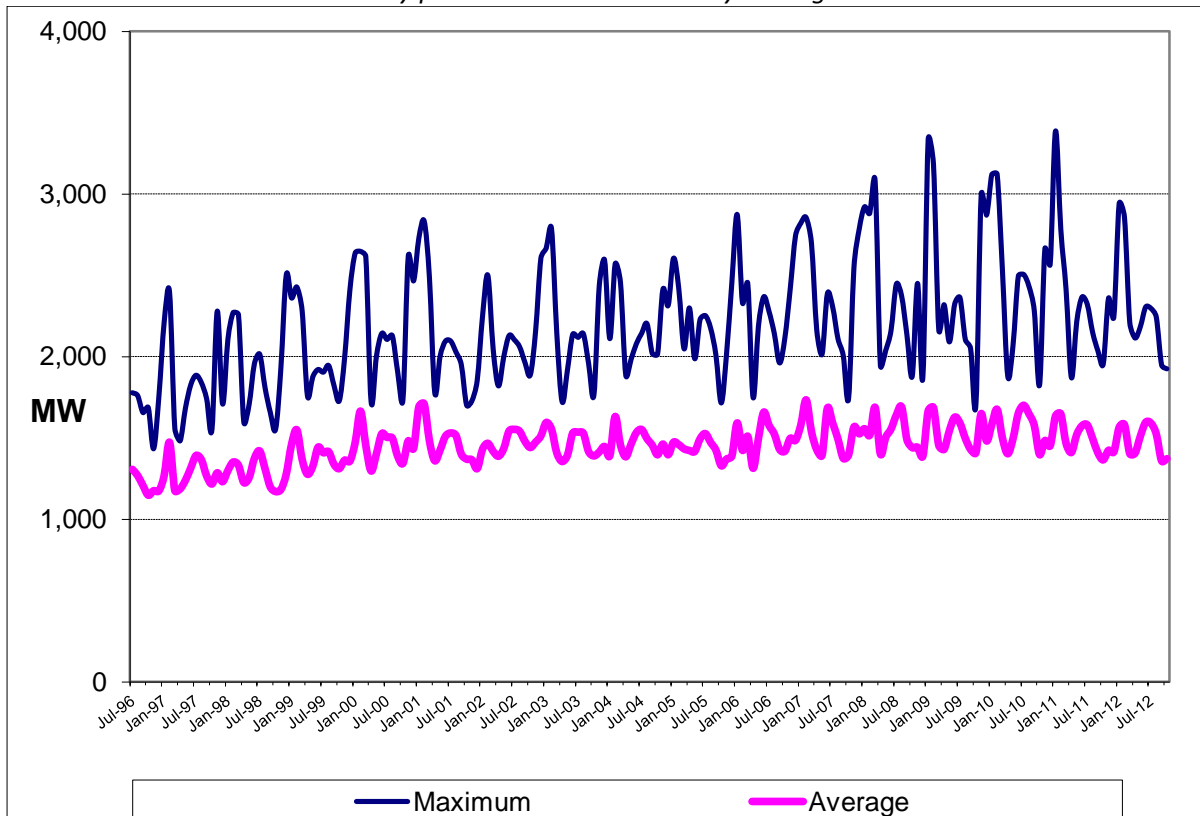


**Attachment 1: Historical monthly peak demand and monthly demand, 1996 to 2012**

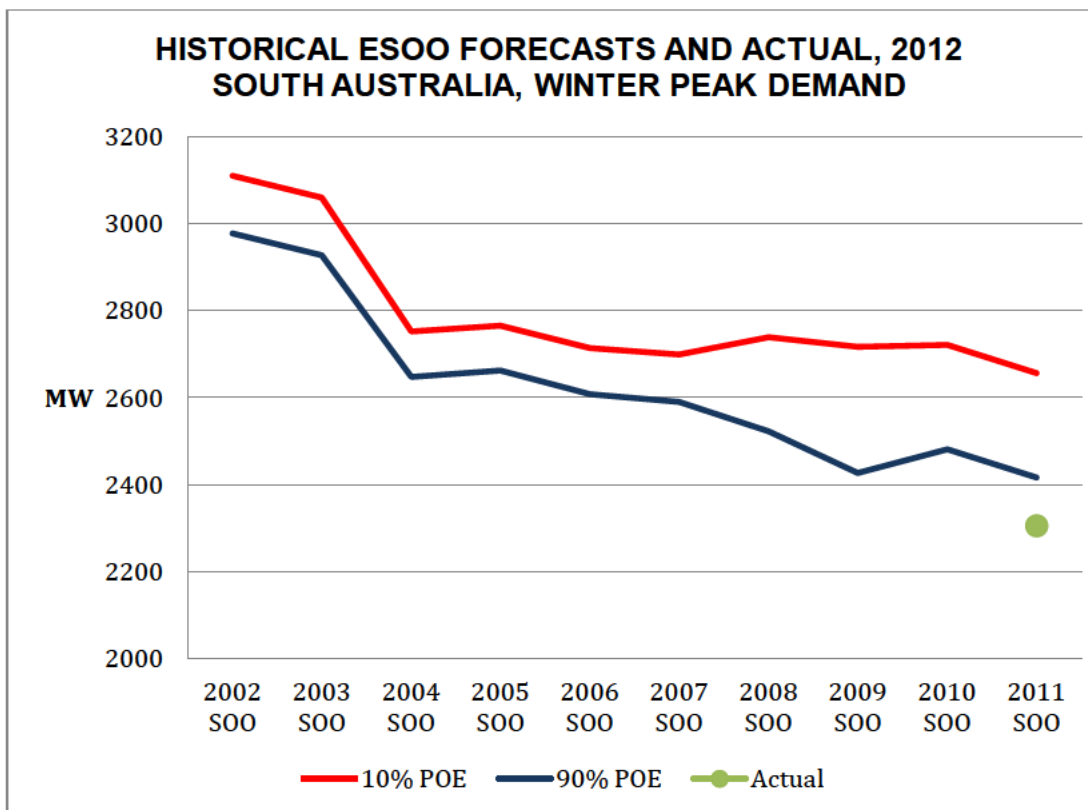
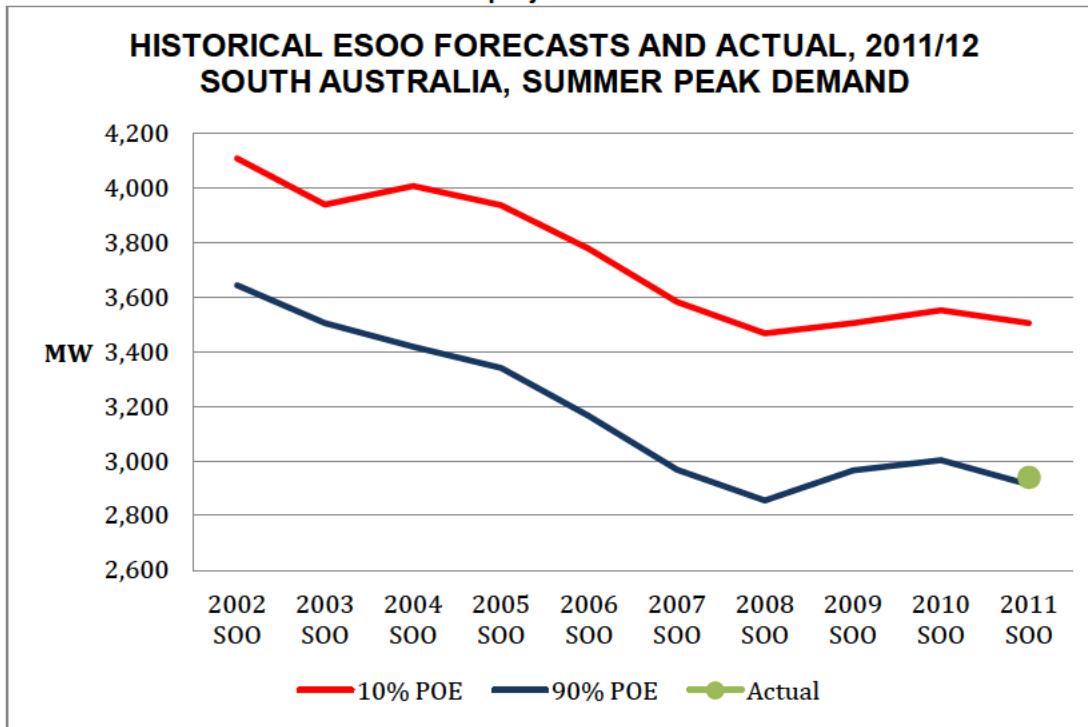
*Table 1: Victorian monthly peak demand and monthly average demand*



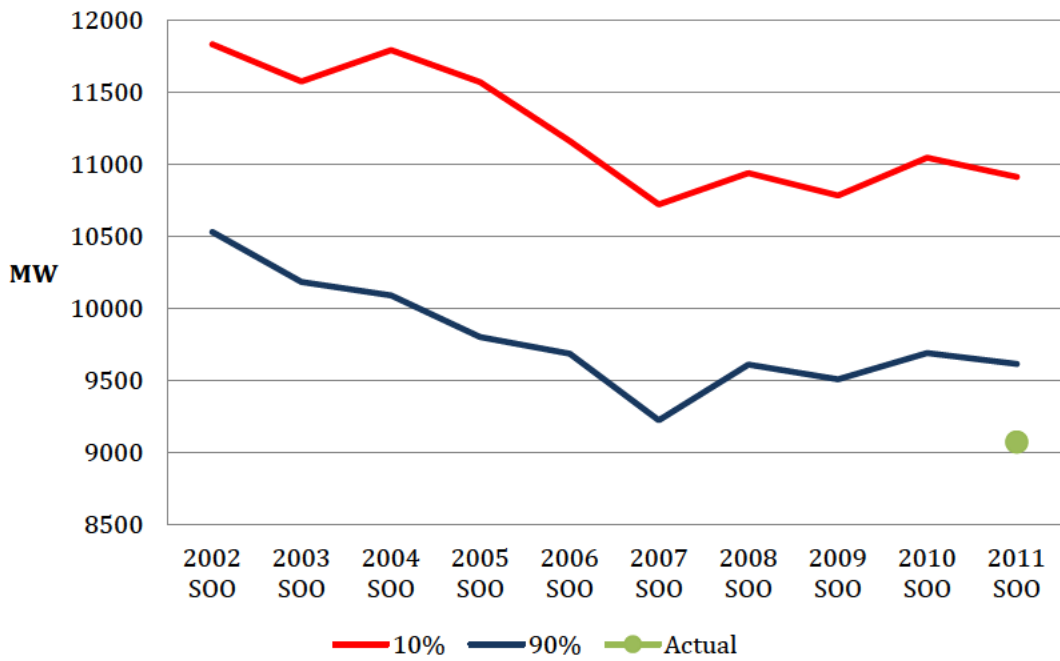
*Table 2: South Australian monthly peak demand and monthly average demand*



Attachment 2: Historical ESOO demand projections



### HISTORICAL SOO FORECASTS FOR 2011/12 VICTORIAN SUMMER PEAK DEMAND



### HISTORICAL SOO FORECASTS FOR 2011 VICTORIAN WINTER PEAK DEMAND

