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ACIL Tasman

Economics Policy Strategy

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ABN 68 102 652 148
Incorporated in Victoria

7 April 2011

Ref: JN 33166

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Dear David

Review of ACIL Tasman Report on the market benefits of Mid West Energy Project (Southern Section)

Western Power has requested ACIL Tasman to review the policy framework assumptions used in preparation of its report of June 2010 entitled "Market net benefits of Mid West transmission link" (the Report)..

Changes to key energy market policy settings and assumptions since the preparation of the Report have been identified and evaluated for their likely impact on the market net benefits as published in the Report. These include:

- Western Australian wholesale electricity market (WEM) rules
- Commonwealth Government's renewable energy schemes
- Generation costs
- WEM load forecast

The key assumptions and data inputs which most affect net market benefits are those that have potential to change the generation mix which is facilitated by the Mid West transmission project. This being the connection of additional wind farms which reduce the generation operating costs and provide additional revenue to the WA generation fleet in the form of LGCs (previously REC). However, the capital cost of generation is higher because of the higher cost of installing wind turbine capacity compared with gas and coal fired plant.

The overall conclusion is that the changes since the Report have not materially affected the market net benefit estimates published in the Report. Some changes have tended to marginally reduce market net benefits of the Mid West Energy Project (Southern Section) while others have tended to increase these benefits.

Western Australian wholesale electricity market (WEM) rules

There are a number of rule changes either in process or already in place which have continued since preparation of the Report. None would have a material effect on the Report's findings.

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The two key potential changes most likely to affect the net market benefit estimates through their possible effect on wind farms are.

- Calculation of the capacity value of intermittent generation
- Load following ancillary services charge for intermittent generators

These rule changes have potential to increase the costs and reduce the revenues of wind farms. The proposed changes have already been anticipated in the Report. Furthermore, ACIL Tasman analysis suggests that even with both these proposed WEM rule changes, the Western Australian wind farm proposals are still the most prospective in Australia and would be among the first to be developed assuming the availability of adequate transmission capacity. This finding is due to the fact that the potentially higher capital costs are more than offset because:

- Western Australian wind farms generally have a noticeably higher expected capacity factor than most in the national electricity market in eastern Australia (NEM).
- the electricity price (sometimes called the black energy price) in Western Australia is noticeably higher than in the NEM mainly due to higher fuel costs
- Western Australian wind farms receive capacity payment not available to those in the NEM.

This means that the program of wind farm development presented in the report is still valid. We have not attempted to identify further potential wind farm developments in Western Australia as the wind farm capacity used in the modelling presented in the report has been kept a level which can realistically be accommodated by the SWIS electricity system and this has not changed.

Commonwealth Government's renewable energy schemes

Since the completion of the Report the Commonwealth Government has replaced its enhanced renewable energy target (ERET) with a small-scale technologies scheme (SRES) which include domestic photovoltaic and solar hot water and a large-scale renewable energy target (LRET) which involves wind farms and the like. The new schemes commenced on 1 January 2011.

The price for certificates (referred to as STCs) under SRES is set at \$40 nominal. The quantity of STCs to be surrendered is determined on an annual basis and published by the Office of the Renewable Energy Regulator (ORER). For 2011 the SRES percentage of electricity usage liable for STC (referred to as the small-scale technology percentage or STP) is 14.8% (or 28 million STCs). The STPs for 2012 and 2013 are estimated by ORER at 16.75% (or 31.1 million STCs) and 10.62% (or 20.2 million STCs) respectively. An STC is equivalent to 1.0MWh.

The price certificates (referred to as large scale generation certificates LGCs) under LRET will be determined in the market but is capped at a nominal, tax adjusted rate of \$92.86 per LGC. An LGC is equivalent to 1.0 MWh of renewable energy delivered to the reference node. Renewable energy certificates (RECs) created from 2001 to end 2010 will be classified as LGCs. The LRET commences at 10,400 GWh in 2011, increasing to 41,000 GWh in 2020. The targets remain at 41,000 GWh until 2030. The LRET is generally around 4000GWh lower than the earlier ERET target.

The effect of the change on future LGC (previously REC) prices has been modelled by ACIL Tasman using its *RECMARK* model. This modelling suggests that LGC prices could be a little lower than the previous REC prices quoted in the Report. The difference however is relatively small at between \$2.00 and \$3.00 per LGC.

This has the effect of reducing market net benefits by reducing renewable generator revenues from LGCs by around 6.0%.



Generation costs

The capital and operating costs of new entrant generation used in the modelling presented in the report were based on a 2009 report prepared by ACIL Tasman for the Australian Energy Market Operator (AEMO) in 2009 entitled “Fuel resource, new entry and generation costs in the NEM” which were increased to allow for the additional developments and operating costs in Western Australia.

Generation costs were revised in 2010 for AEMO/DRET and provided in a report of 13 September 2010 entitled “Preparation of Energy Market Modelling Data for the Energy White Paper”. Since that report further report on generation costs prepared by Worley Parsons for AEMO has been released for consultation by AEMO entitled “Cost Data Forecast For the NEM - Review of Cost and Efficiency Curves”.

The capital and operating cost estimates in these reports are somewhat different to those in ACIL Tasman’s 2009 Report to AEMO. In general the capital costs of coal fired plant are higher and the capital cost of gas fired plant is marginally lower. Fixed operating and maintenance (FOM) costs are generally lower in the more recent reports while variable operating and maintenance (VOM) costs are generally lower. The capital cost of wind generation was not quoted in the 2009 AEMO report but the costs in the 2010 AEMO/DRET report were consistent with those used in the analysis for western Power.

While there is no doubt that the wholesale energy price in Western Australia in the medium to long term is likely to be affected by changes in these cost assumptions ACIL Tasman is of the view that change in wholesale energy price is likely to be marginal and would not affect the overall market net benefit of the Mid West transmission development. This assumes that the changes to capital and operating costs will not affect wind farm capacity in the various scenarios.

The difference in capital costs of new entrant plant with and without the new transmission is likely to reduce if revised capital cost estimates were applied. This assumes that there is less new coal fired generation in the case with the new transmission. Thus the negative effect of the higher new entrant cost in the case with the new transmission and hence an increase in the net market benefits compared with those in the Report..

No new information on Western Australian fuel costs has become available and so the fuel cost estimates used in the analysis are still current.

The independent market operator in Western Australia (IMOWA) has also recently released an update of the Maximum Reserve Capacity Price which is higher than the previous estimate. This higher capacity price will increase the cost of electricity but again will not affect the net market benefits as reported in the Report as it provides a benefit to generators but a cost to users so there is no change to the net market benefit.

WEM load forecast

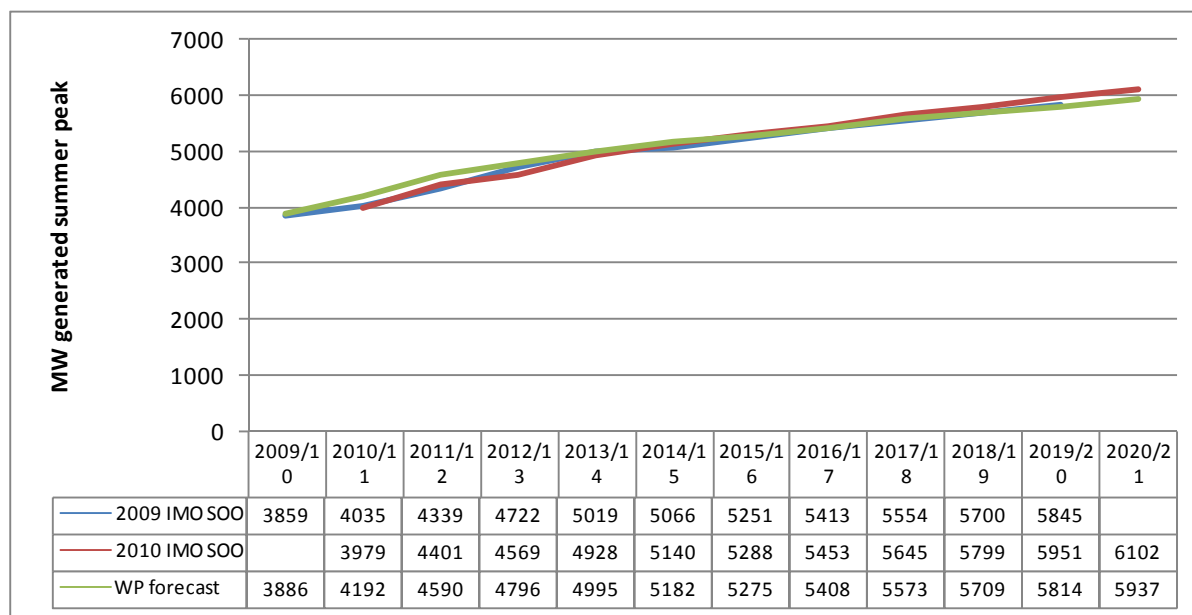
The load forecast and load profile can influence the timing and type of new generation and the operation of existing generation. This has the potential to affect the net market benefits.

The findings in the report were based on regional forecasts supplied by western power. After adjustment for regional diversity and transmission losses, these forecasts are shown in the Report to closely match those published by IMO in its 2009 Statement of Opportunities (SOO). The 2010 SOO has since been released and has been compared to these earlier forecasts. As can be seen in the following graph there is little difference in the 2009SOO and 2010 SOO forecasts. On this basis ACIL Tasman concludes that there would be no change is required to the forecast used in the



analysis and as such the later load forecast has no implications for the estimates of net market benefits shown in the Report.

Summer peak demand forecast for the SWIS (MW generated)



Conclusions

There have been a number of policy settings and cost estimates which have been examined and tested for their likely impact on the estimated net market benefits and while the slightly lower outlook for the LGC price will marginally reduce net market benefits the changes to capital cost estimates is likely to reduce the difference in new entrant development costs and enhance the net market benefits of the Mid West transmission project.

On balance the estimates of net market benefits as shown in the Report are considered robust and are suitable for use in the regulatory test.

Yours faithfully

Marcus Randell

Senior consultant.