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Ms Carolyn McNally
Secretary
Department of Planning and Environment
GPO Box 39
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Dear Ms McNally

Tallawarra B Power Station
Extension of Permit (07_0124)

Introduction

The Project Approval for the Tallawarra B Power Station was approved by the then Minister for Planning, The Hon. Tony Kelly MLC, on the 21st December 2010 following a detailed Environmental Assessment and Public Exhibition. The development was planned and approved as an extension of the Tallawarra A Power Station to provide electrical energy in an environment increasingly concerned about the impact of carbon and potentially to support the increasing need for fast start plant as demand increased and intermittent energy sources became more widespread. The development has not proceeded to its construction phase due to the lack of demonstrated market economics.

Development Rationale

The development of new thermal generating plant typically occurs over an extended period. Energy planners within supply / development companies and regulatory bodies assess the need for additional energy and capacity and report it annually. Their projections which span up to a decade or more aim to ensure a safe reliable supply of energy is available for the various supply and demand side responses which make up the balanced grid.

In light of this sites are assessed, with the optimum selected for future development and Planning Approval sought. Whilst not an immaterial cost, proponents choose to enter the process to shorten the development lead time and secure an option to construct when market fundamentals demonstrate the need for the additional generation.

Tallawarra A, a 400 MW, Combined Cycle Gas Turbine (CCGT), Power Station fuelled with natural gas and using highly efficient F Class Gas Turbine technology had been completed in 2009 – a plant with carbon emissions less than 50% of the National Electricity Market (NEM) average and with intermediate start capabilities. The site allowed for the addition of another stage but more importantly, it had potential to draw on the lake water for cooling and gain economies of scale based around site services and resourcing from Tallawarra A.

With the impending need driven by a growing economy, potential for increased low carbon generation and intermittent generation resources such as wind and solar in planning and development, EnergyAustralia (previously TRUenergy) commenced the planning and proceeded toward development of either a CCGT or an Open Cycle Gas Turbine (OCGT) Power station on the Tallawarra B site.

Additionally, in the period to late 2011, the Tallawarra B site was cleared of its remaining coal fired power station infrastructure. This included the removal of the maintenance workshop and gantry crane, in-ground asbestos conduits and contaminated regolith, remnant electrical cabling, disused foundations and drainage, and finally emplacing compacted fill material to provide a level bench from which construction could safely commence.

What happened next was counter-cyclic, with industrial demand falling in response to a decline in metal and automotive manufacturing, retail demand falling away as households utilised more efficient lighting and appliances and most importantly the rapid uptake of intermittent generation sources including solar PV. This change was reflected in the successive annual forecasts released by AEMO in their *National Electricity Forecasting Reports* (NEFR). The result was a delay to the future development of Tallawarra B.

The Energy Market

The National Electricity Market (NEM) is the wholesale market for electricity supply. Electricity generators and retailers trade electricity in a mandatory gross pool where generators offer their output into the pool at the prices they are willing to sell. Electricity supply and demand are instantaneously matched in real time in the spot market through a centrally coordinated process run by the Australian Energy Market Operator (AEMO). Generators and retailers contract with each other to manage the volatility in demand and price. In the NEM, forecast demand and supply for electricity, and longer-term average wholesale prices are used to develop forward signals which incentivise the investment in new generation.

The price for purchasing energy rose sharply between 2006 and 2009, as drought conditions led to reduced water resources, resulting in supply side reductions with both hydro-electric and thermal generation (the latter due to reduced cooling water). However, based on the availability of estuarine lake cooling water, Tallawarra B, as with Tallawarra A during the previous period, would remain largely insulated from the impacts of drought. The above tightening of supply, combined with increased electricity demand over that period, led to an upswing in generation investment between 2008 and 2010 with over 4,000 MW of new capacity added, comprising mainly gas fired generation in New South Wales (including Tallawarra A Power Station) and Queensland. With early construction preparatory work completed by 2004 and commercial processes completed by mid-2006, the Tallawarra A generator became operational in early 2009.

This period of growth was followed by a sudden plateauing and subsequent fall in electricity demand from 2010 (see Chart 1), driven by large-scale industrial plant closures, energy efficiency measures, and growth in rooftop solar photovoltaics (PV), which together contributed to a large excess of capacity in the NEM through the period 2010-2015 as noted in AEMO's *Electricity Statement of Opportunities* (ESOO). The resultant overall decline in wholesale spot and contract electricity prices led to a situation where the financial projections were challenged and developers were disinclined to continue with their generation projects. Against this background, the Proponent deemed it appropriate to push out the construction timing for the Tallawarra Stage B Gas Turbine Power Station beyond the current approved limit.

Chart 1: Electricity Consumption in the NEM and NSW

Figure 2 NEM operational consumption by key component to 2034-35

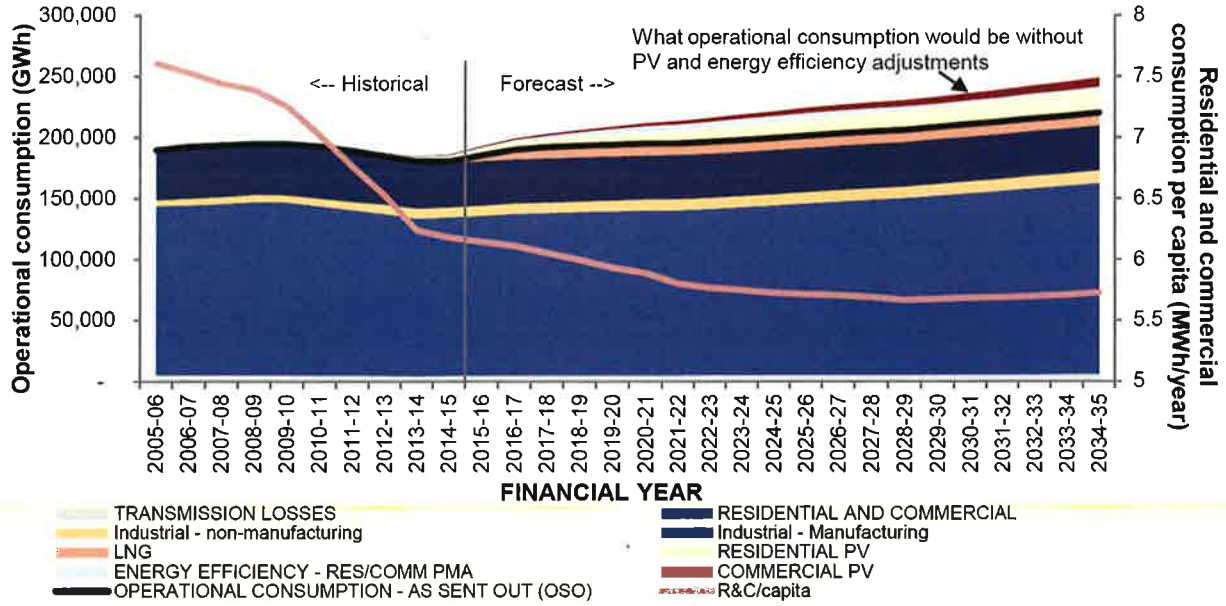
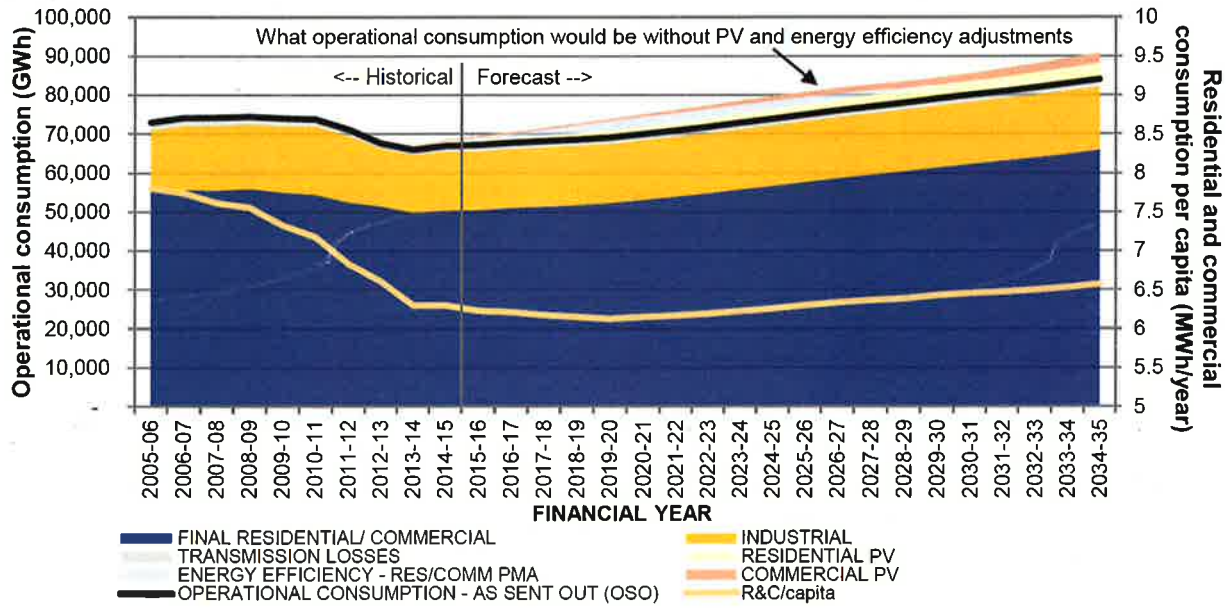


Figure 16 Operational forecasts by key component in New South Wales



Source: AEMO, *National Electricity Forecasting Report - Detailed Summary of 2015 Electricity Forecasts*, June 2015.

Electricity consumption in the NEM is projected to recover by 12% between now and 2020, and 19% by 2025, under the medium scenario, of AEMO's *National Electricity Forecasting Report* (NEFR) published in June 2015. This is illustrated by the top edge of the area in the first panel under Chart 1, which shows electricity consumption is forecast to reach more than 210 GWh per year by 2021-22. This includes both electricity supplied by the NEM (the black line in both panels), as well as electricity generated from residential and commercial rooftop PV.

This expected growth in electricity consumption is due to a pickup in the residential and commercial sector, on the back of population growth, particularly in New South Wales, Victoria and South Australia and demand increases in Queensland based around LNG export businesses and economic growth. AEMO forecast that the outlook for industrial electricity consumption will rise notably in the short term due to the Queensland LNG projects and

remain little changed in the medium to longer term. This growth combined with the scheduled withdrawal of capacity due to economics, age and efficiency is anticipated to lead to the need for additional investment in generation over the next decade. Plants such as Tallawarra B which can provide peaking and intermediate capacity to support the increased intermittency are particularly relevant in this context.

Assuming permits are in place and based on Tallawarra A experience, it will take a further 3.5 - 4 years to complete the tendering, contracting, design, construction and commissioning a combined cycle generator such as Tallawarra B. This is particularly relevant in New South Wales, where announced withdrawals exceed AEMO's projected surplus capacity according to the latest ESOO. AEMO expects these withdrawals may lead to a breach of the Reliability Standard and the Low Reserve Condition (LRC) by 2022, associated with the closure of Liddell. Uncertainties around this forecast mean that the additional generation may be needed earlier and therefore should be available to meet shortfalls within that period.

Renewable Generation

Australia is part of the Paris global agreement on climate change. The Department of Environment estimates that by early next decade up to 20% of Australia's coal fired base load capacity will be withdrawn and in June 2015, the Australian Parliament agreed legislation to amend the renewable energy targets (RET) which included a new target for large-scale generation of 33,000 GWh in 2020. This is equivalent to around 23.5% per cent of Australia's expected electricity generation in 2020. As this transition towards cleaner sources of energy occurs, increased generation is expected to be sourced from renewables to meet demand.

Notwithstanding its environmental benefits, increased generation from renewables comes with risks due to its intermittent supply. This appears to be the case in South Australia, where 70% of all proposed investment over the next decade is forecast to come from wind generation at the same time as a significant amount of base load coal generation is being withdrawn, leaving SA energy supply exposed to interstate supplies via interconnectors. New South Wales is not immune from this and has seen an increasing amount of electricity generated via renewables especially wind and solar over the past five years, making it more reliant on energy supplies from other NEM regions. The intermittent nature of renewable generation (such as solar, wind or run-of-river hydro) increases the reliance on backup generation or interconnectors to meet peak demand.

Gas-fired power stations, such as Tallawarra Stage B Gas Turbine Power Station, are generally viewed as a suitably efficient and low carbon approach to meeting future generation needs, especially for meeting peak & intermediate demand at short notice during very hot summer days, very cold winter nights or emergency situations. Gas has also been regarded as an important 'transition' fuel as it has notable greenhouse advantages compared to coal-fired generation.

It is essential to have sufficient installed capacity in New South Wales to cater for consumption growth and maximum demand, or at least have sufficient lead time to install that extra capacity. Accordingly, the Tallawarra Stage B Gas Turbine development forms part of the critical infrastructure projects and necessary suite of capacity generating portfolio to secure New South Wales' energy supplies in the medium and longer term and to avoid energy shortfalls. This is particularly relevant in the face of the recent sharp fall in projected generation capacity due to either retirement's or weather induced shortfalls over the next decade and the forecast increase in electricity demand.

The proposed location of the Tallawarra Stage B Gas Turbine Power Station adjacent to the existing Tallawarra (A) Power Station avoids the need to duplicate infrastructure, provides economies of scale, reduces cumulative impacts and capitalises on the abundant source of lake water for cooling.

Furthermore, the Sydney / Wollongong / Newcastle areas use 75% of all electricity in New South Wales and about one-third of the total load across the NEM at times of peak demand. The area is currently supplied from, predominantly coal fired power stations, located in the Central Coast, South Coast and Sydney areas over a 500 kV and 330 kV network. The fact that a large proportion of this load is supplied by older coal assets presents a potential risk due to fuel supply and age.

In particular, the 2014 *Transmission Annual Planning Report* by TransGrid noted the limited number of locations where new generation could be connected to the existing transmission network in New South Wales without having to reinforce the network. Connecting generators outside the Sydney / Wollongong / Newcastle areas is constrained by limited transmission capacity.

The Tallawarra Stage B Gas Turbine located adjacent to the Tallawarra Stage A Power Station, means that the electricity generated by this development will be easily and efficiently directed to the major load centres in New South Wales, with relatively less strengthening of existing or investment in new transmission networks.

Site Constraints

The 565 Ha Tallawarra site previously supported a 320 MW coal fired power station with support infrastructure including coal stock pile, conveyors, maintenance buildings, repositories and ash repositories. Following its decommissioning in 1989 and subsequent demolition, the site was permitted for a modern gas fired CCGT in 1999. EnergyAustralia (TXU) purchased the site in early 2003. A modern CCGT requires a much smaller footprint than the older style, conventional coal fired plant, thus allowing for a far larger generating plant and alternate uses for the site to be pursued.

Tallawarra B and the rezoning / reuse of the residual lands, including the Tallawarra Lands Mixed Use development Concept Plan, were pursued by EnergyAustralia under separate processes but with consistent documentation. The result was Tallawarra Lands, a mixed use land development approved in early 2013, which will reside in harmony with both the Tallawarra A and B Power Station developments. Tallawarra Lands have been the subject of an on-market sale campaign and although this transaction awaits finalisation, the cumulative impact of the additional power station is not seen as a problem.

In keeping with development norms the final design of the power station is yet to be decided, however conceptually, consideration of the environmental factors surrounding the development would see potential improvement over time in efficiency, management of noise and emissions. Clearly there are no negative impacts arising and no major departures from those environmental and operational factors that allowed approval in late 2010 based on the extensive Environmental Assessment.

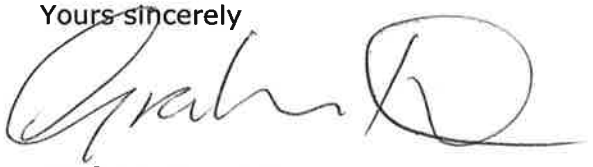
Environment

Notwithstanding its obvious benefit with respect to achieving safe, reliable generation and offsetting some of Australia's carbon footprint, the Tallawarra plant was assessed against a regime of no-harm and a minimised cumulative impact from an emissions perspective, including emissions to air and water, noise, visual amenity and waste. The permit allows for these conditions to be met or improved upon and provides triggers and methodologies to rectify any non-conformances should they occur. This is particularly the case with adjacent or potentially adjacent neighbours. The legislation and policies under which Tallawarra B was permitted remain current and it is hard to see that commencement of construction of this power station within the next 5 years would require any different treatment to that enshrined in the current approval documents. Although appearing to be a lengthy approval, this would align it with permits of a similar age such as EnergyAustralia's Marulan project.

Summary and Recommendation

In summary the Tallawarra B Power Station was conceived against a backdrop of providing safe and reliable energy supply to the NEM, reducing its carbon intensity and supporting the potential increase of intermittent sources of supply. Whilst the market has undergone a period of reduced demand and oversupply, the regulators' predictions point to a need for the power station as we enter the next decade. Because of the current market conditions, actual construction is extremely unlikely prior to the end of this decade. We therefore seek your consideration of an extension to the project approval of 5 years to allow for development and subsequent commercial operation early next decade.

Yours sincerely



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