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Ms M Sewell
Energy White Paper Taskforce
Department of Industry
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VIA EMAIL EWP@industry.gov.au

Dear Margaret

**ENERGY WHITE PAPER: ISSUES PAPER**

As per our letter dated 7 February 2014, in which we noted we would be providing a supplementary submission to the EWP Taskforce, please find the below.

## 1. Introduction

The 2014 Energy White Paper provides an important opportunity to refocus Australia's energy policy framework on the fundamental objectives of delivering secure, adequate, reliable and competitively priced energy to Australian businesses and households.

There is an inherent tension between these traditional energy policy objectives and climate objectives, as acknowledged in the Issues Paper:

> *Policy that encourages low-emissions sources in a manner that does not lead to increased price pressures, risks surety of supply or reduces investment certainty for long-return investments will be challenging*[1].

In recent times, energy policy development in Australia has been dominated by measures aimed at achieving climate objectives, and this has been a contributing factor in rising electricity prices and investment uncertainty. While the need to reduce energy sector emissions remains, it will be essential that the EWP comprehensively explores – and ultimately seeks to rebalance – this priority against our broader energy security goals. The removal of the carbon tax and review of the Renewable Energy Target (RET) will be a key part of this process.

The EWP must also acknowledge the long-standing contribution of coal in providing secure, reliable and affordable fuel for more than two-thirds of Australia's electricity. This contribution is set to continue for the long-term, particularly with the emergence of high efficiency low emission technologies and carbon capture and storage. Projected growth in global demand for coal will further ensure that the Australian economy continues to benefit from the investment and jobs associated with coal exports, provided that the inefficiency and duplication in project approvals are addressed.

A summary of the key points raised in this submission follows.

**Energy Security & Australia's Energy Future**

- The 2014 Energy White Paper should prioritise energy security objectives in light of the challenges currently facing the energy sector. Many of these challenges arise from, or are exacerbated by, inefficient green schemes and a regulatory framework which impede investment. These must be addressed as part of the White Paper process.

[1] Australian Government, *Energy White Paper Issues Paper*, December 2013 p35

**Coal and Australia's Energy Security**

- The 2014 Energy White Paper must acknowledge the important and enduring contribution of coal to Australia's energy security.

- Low emission fossil fuel technologies such as HELE and CCS will enable Australia to continue to utilise its abundant coal resources with significantly lower emissions. Policies to support the development and demonstration of low emission technologies must be implemented on a technology and fuel neutral basis to allow these technologies to compete alongside renewable energy options.

**Coal and Australia's Economic Prosperity**

- The enormous contribution of coal to Australia's economy is poised to continue with strong potential for growth in exports. Policy settings which facilitate investment and address current inefficiencies in project approvals will be important to maintaining Australia's international competitiveness.

**Informing Energy Policy Development**

- The 2014 Energy White Paper should adopt a 2035 outlook with five-yearly reviews. Energy sector scenario modelling should be conducted in close consultation with industry, using the Treasury model of 2011 and with a focus on updating input assumptions, particularly those associated with fuel costs (particularly gas prices) and emerging technologies. The chosen model should adequately recognise the contribution (or otherwise) of generation technology choices to grid stability. The results of modelling sufficient scenarios and sensitivities to gain an understanding of potential future outcomes must be interpreted with caution in the final EWP.

## 2. Energy Security & Australia's Energy Future

Energy security must be at the heart of national energy policy. Indeed, it was a cornerstone of the 2004 Energy White Paper *Securing Australia's Energy Future* and the key themes of this paper – prosperity, security and sustainability – remain just as relevant and appropriate a decade on.

*Delivering Energy Security*

The Australian *National Energy Security Assessment 2011* defines energy security as "the *adequate*, *reliable* and *competitive* supply of energy to support the functioning of the economy and social development" *[emphasis added]*[2].

The successful delivery of these objectives will involve:

- the promotion of efficient and competitive energy markets;
- the removal of distortive and costly policy initiatives (including green schemes); and
- the adoption of a technology and fuel neutral approach to the development of Australia's future energy options.

*Australia's Energy Security Challenge*

It is somewhat incongruous that a country as well endowed with natural resources as Australia should be faced with significant energy security challenges, including around the adequacy, reliability and price competitiveness of our electricity. However, as the Issues Paper acknowledges, household electricity prices have risen 59 per cent over the past four years[3] primarily due to due to the replacement of ageing infrastructure as well as upgrading systems to higher, legislated reliability standards and the need to meet extreme peak demand, as experienced most recently in the January heat waves, as well as the introduction of green energy schemes such as the RET.

Meanwhile, development of Australia's east coast gas resources is being hampered by planning impediments and inefficient regulatory frameworks, resulting in tight supply for domestic use (a shortage on peak demand winter days) despite abundant resources. Many energy commentators and stakeholder are forecasting the prospect of a gas supply shortage in NSW by 2018 with increasing overseas demand

[2] Australian Government, *National Energy Security Assessment 2011*, pV
[3] Op Cit 1, p11

taking domestic supplies offshore and the inability of NSW suppliers to expand production as quickly as the market demands. The combination of higher production costs and a market shift to international netback pricing associated with the advent of LNG exports of CSG are key factors.

Meanwhile, a range of issues have been driving up prices for residential and business customers (and are still doing so in Queensland). The main driver is network charge increases — especially to meet large investment in coping with extreme peak demand, which is experienced for only a few days a year but must, by law, be met -- followed by the combined cost of the carbon tax and other "green schemes" such as the RET. Between them, these factors account for three-quarters of east coast power bill increases since 2009.

While so much of the debate about the RET focusses on its cost (both in actual terms and as a very high carbon price per unit of abatement), another critical issue is the influence of variable (intermittent) generation on the wholesale market, destabilising the day-to-day trading operations and undermining the commercial health of base load power stations — far too little attention is being devoted to the long-term security and reliability of the NEM in an environment where policy is forcing unneeded capacity on to the grid. The "competitive market" is becoming skewed by political intervention without a holistic evaluation of the impacts.

This 'crowding out' of conventional, dispatchable generation capacity outside of peak periods impacts on the profitability of these generators and may have implications for system reliability where this capacity is ultimately withdrawn. Perversely, this situation coupled with rising gas prices has recently seen Stanwell announce that it will mothball its largest gas-fired power station and resurrect a coal facility built in the 1980s.[4]

Greater penetration of intermittent supply (wind and large-scale solar) together with more variable demand (driven by the take up of solar PV) also creates challenges for grid and network balancing and a requirement for additional dispatchable generation capable of rapid response. While the Australian Energy Market Operator is currently managing this risk[5], threats to reliability may still occur in the future.

*International Lessons*

Australia is not alone in facing some of these energy security challenges. In developing the EWP, it is prudent to take heed of the lessons emerging from energy policy development and implementation in overseas jurisdictions. In particular, it is increasingly apparent that European policies which have encouraged intermittent renewables have proved economically unsustainable and delivered substantially higher electricity prices.

- European Union

In December 2008, EU leaders approved a climate change package with three targets for 2020: cut greenhouse gas emissions by 20 per cent, produce 20 per cent of EU energy from renewable resources and improve energy efficiency by 20 per cent.

Five years later, renewables have grown dramatically. At the end of 2012, the share of renewable energy as a proportion of final energy consumed was 13 per cent[6]. However this has come at substantial cost. According to the International Energy Agency, the European Union provided almost $50 billion in renewable subsidies in 2011 alone[7].

A recent study by the French Government has concluded that "the continent needs to rethink its subsidies for renewable energy". With its intermittent nature, zero marginal costs and priority grid access, renewable energy has wreaked havoc on the performance demands and profitability of utilities' traditional power plants. According to the report's author, Oxford University's Dieter Helm, the overall

[4] The Australian "Gas price force coal switch" Thursday 6 February 2014
[5] Australian Government, *Energy White Paper 2012: Australia's energy transformation*, 2012 p103
[6] European Commission, "Energy prices and costs in Europe" 2014, http://ec.europa.eu/energy/2030_en.htm
[7] International Energy Agency, *World Energy Outlook 2012*, p235

impact has been "to render investments in almost anything other than government-subsidised power generation technologies uneconomic".[8]

- Germany

Germany has an ambitious renewable energy target of 35 per cent by 2020 and in 2013 the surcharge for renewable energy rose 47 per cent to 5.3 cents per kilowatt hour, adding more than $US206 billion to consumer costs per year.[9] Even before this increase, German consumers paid more than double for their electricity than Australians.

These costs are increasingly impacting on the Germany economy, with Germany's new economy minister Sigmar Gabriel recently acknowledging that Germany risks undermining its industrial base if it fails to undertake radical reform of incentives for the country's renewable energy sector:

> *We have reached the limit of what we can ask of our economy. The energy transformation has the potential to be an economic success, but it can also cause a dramatic de-industrialization of our country.*[10]

- Spain

Traditionally seen as a world-leader in renewable energy deployment, Spain is now rapidly scaling back subsidies from overly ambitious green programs which have cost Spanish taxpayers 50 billion euros in the past decade[11]. Subsidies for solar energy rose 18-fold in six years and, since the government was unwilling to pass the full costs to consumers, the cumulative taxpayer debt has reached 26 billion euros, hitting eight billions euros (or one per cent of Spanish GDP) in 2012[12].

The retroactive scaling back of subsidies has reportedly seen the solar PV sector in Spain shed 50,000 of the 60,000 jobs created since 2008 and the wind turbine manufacturing sector is reported to have lost a further 20,000 jobs[13].

This is an important reminder for Australia that "good intentions are not enough – if the policies are wrong, the benefits are wasted, the jobs disappear (but) the costs remain (and) business investors bear the brunt".[14]

The 2014 Energy White Paper should prioritise energy security objectives in light of the challenges currently facing the energy sector. Many of these challenges arise from, or are exacerbated by, inefficient green schemes and a regulatory framework which impede investment. These must be addressed as part of the White Paper process.

In drafting the Energy White Paper, the government would be wise to take in to account the European experience in pursuing aggressive and increasingly unsustainable energy policies, which are now notoriously impacting on EU's industrial strength.

## 3. Coal and Australia's Energy Security

Australia has abundant coal reserves and the development of these resources has underpinned Australia's economic growth and energy security for many decades. Coal provides a reliable and affordable fuel for 69 per cent of Australia's electricity generation and 35 per cent of our primary energy[15].

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[8] http://www.newsdaily.com/environment/32fe503e5c0db545ed0fb404e8ba0d9d/eu-electricity-liberalization-jars-with-green-targets-study
[9] Reuters, German Green Power Charge to Rise 47 percent in 2013
[10] http://www.reuters.com/article/2014/01/21/us-germany-energy-gabriel-idUSBREA0K0KW20140121
[11] http://www.smh.com.au/business/carbon-economy/spain-prepares-curbs-for-renewable-energy-subsidies-20140204-31xy8.html
[12] Orchison, Keith "This is Power: The Pain in Spain" August 2013 http://www.coolibahconsulting.com.au/TiP/2013/08/24/the-pain-in-spain/
[13] Ibid
[14] Ibid. Original quotation from http://www.economist.com/news/business/21582018-sustainable-energy-meets-unsustainable-costs-cost-del-sol
[15] BREE 2013, *Energy in Australia 2013*, Canberra, May
http://www.bree.gov.au/documents/publications/energy-in-aust/BREE-EnergyInAustralia-2013.pdf

Importantly, the baseload power provided by coal typically operates at a 70 per cent annual capacity factor, compared to peaking plant that operates at annual capacity factors of between 1 and 10 per cent[16]. So even though black and brown coal account for around 55 per cent of registered generation capacity in Australia, this baseload plant supplies almost 70 per cent of output. There is no other fuel – fossil or renewable – that can perform this vital role in Australia's power generation mix.

Yet the contribution of coal to meeting Australia's energy security objectives is often overlooked. Indeed it is telling that the discussion of energy security in the EWP Issues Paper does not mention coal once, despite its abundance and relative affordability.

| The 2014 Energy White Paper must acknowledge the important and enduring contribution of coal to Australia's energy security. |
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***Future Contribution: Emerging Technologies***

Coal is set to continue to play a major role in meeting Australia's energy security objectives for the foreseeable future. As the Issues Paper acknowledges, new and emerging technologies including High Efficiency Low Emission (HELE) coal combustion technologies "offer great potential to make significant emissions reduction gains in the electricity generation sector"[17]. Carbon Capture and Storage (CCS) will also be a key to making deep cuts in emissions associated with the continued use of fossil fuels.

*High Efficiency Low Emissions (HELE) Technologies*

HELE technologies such as Ultra Super Critical (USC), Integrated Gasification Combined Cycle (IGCC) and Direct Injection Carbon Engine (DICE) not only deliver thermal efficiencies much higher than traditional coal technologies, they have the potential to operate alongside intermittent renewable technologies as a dispatchable load capable of responding to peak and increasingly variable demand. For example, in 2012 RWE in Germany commissioned the most advanced and flexible lignite-fired power station in the world. Each unit of the 2,200MW plant is capable of modifying its output by 500MW in just 15 minutes – a speed that rivals the very latest gas-fired power plants[18]. For RWE, while this new Super Critical (SC) power plant has proven itself in the market, experience with its operation has highlighted the additional value that rapid on/off capability would offer to further assist with grid stability in operating alongside intermittent renewable technologies, an attribute inherent with DICE technology.

In Australia, the modular DICE is being developed to have the capability to match the flexible performance of gas turbine technology while using low cost coal as fuel. The technology offers a 30-40 per cent cost advantage for subsequent retrofit of carbon capture (on a $\$/TCO_{2e}$ abated basis) when compared to other fossil fuel power generation technologies. DICE has particular applicability to the Australian context given future high gas prices and where rapid on/off and rapid ramping capability will be required for dispatchable generation technology to underpin the growth in intermittent renewable power generation. DICE will also be developed to be able to use renewable solid carbon (such as biochar) to further tailor the emissions intensity of power generated.

*Carbon Capture and Storage (CCS)*

While deployment of HELE technologies is an important near-term step towards reducing emissions, CCS is the only technology able to significantly reduce – by as much as 90 per cent – the emissions associated with the use of fossil fuels. The International Energy Agency (IEA) projects that CCS could contribute 17 per cent of the emissions reductions needed by 2050, and has warned that any delay in deploying CCS will increase the cost of reducing global emissions by an extra $1 trillion[19].

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[16] AGL Energy Ltd., *Submission to the NSW Parliament's Public Accounts Committee Inquiry into the Economics of Energy Generation*, 2012, p. 2.
[17] Op Cit 1, p37
[18] http://www.rwe.com/web/cms/en/2320/rwe-power-ag/press-releases/press-release/?pmid=4008220
[19] International Energy Agency, *World Energy Outlook Special Report 2013: Redrawing the Energy Climate Map*, 2013

The potential of CCS has been demonstrated both here and internationally, with twenty large-scale integrated projects in operation or under construction around the world, including Australia's Gorgon $CO_2$ Injection Project[20]. Australia also has a credible program of smaller demonstrations, such as the Callide OxyFuel Project in Queensland, and the CO2CRC Otway Storage Project in Victoria. A significant pre-competitive exploration program has been underway to identify and characterise Australia's most prospective $CO_2$ storage sites.

As the world's largest exporter of coal and soon to be major exporter of gas, Australia has a unique strategic interest in the global deployment of CCS technologies. We should continue to play our part in global efforts to demonstrate this technology while ensuring $CO_2$ storage sites are identified and available to support future CCS deployment domestically across both power generation and industrial applications.

*Support for Emerging Technologies*

The deployment of HELE and CCS technologies will ensure that coal can continue to make a major contribution to meeting Australia's energy security objectives with reduced climate impact. However, the commercialisation of these technologies will not occur in the absence of government policy and financial support.

In the past, CCS and related low-emission technologies have been excluded from support schemes such as the $10 billion Clean Energy Finance Corporation and the RET. As discussed above, the focus on intermittent renewable generation technologies at the expense of other low emission technologies has created market distortions and increased electricity prices. It is therefore essential that any future initiatives designed to encourage low emission technology development and deployment are technology and fuel neutral.

Low emission fossil fuel technologies such as HELE and CCS will enable Australia to continue to utilise its abundant coal resources with significantly lower emissions. Policies to support the development and demonstration of low emission technologies must be implemented on a technology and fuel neutral basis to allow these technologies to compete alongside renewable energy options.

## 4. Coal and Australia's Economic Prosperity

Australia's abundant coal resources have long been a key source of our economic prosperity, both directly and as a foundation for Australia's historical competitive advantage in low-cost electricity.

Coal is deeply embedded in the Australian economy as the second largest export earner, adding $38.6 billion to the national income in 2012-13. In 2011-12, the 'coal economy' represented 3.1 per cent of GDP or around $43 billion, rising by 18.25 per cent since 2006-07. The 'broader coal economy' (including spending of wages earned) represented 4.2 per cent of GDP or almost $60 billion, with over $20 billion paid to local suppliers, contractors and communities.

The coal industry employs around 48,000 people directly[21] and 130,000 indirectly, mainly in rural and provincial Australia, paying wages and salaries worth over $5 billion per annum[22] – all with potential growth as the industry has an investment pipeline of more than $111 billion of committed projects as of October2013 as well as up to a further $55 billion at the feasibility stage[23].

Despite recent market volatility, the global outlook for coal remains strong. According to the IEA, coal will come close to surpassing oil as the world's top energy source by 2017. The IEA's Medium-Term Coal Market report forecasts that by 2017, the world will use around 1.2 billion more tonnes of coal each year compared to today – equivalent to the current coal consumption of Russia and the United States combined.[24] Longer term, the IEA's New Policies Scenario suggests that global [thermal] coal use will continue to grow by 0.8 per cent a year to 2035

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[20] Global CCS Institute, *Global Status of CCS 2013* http://www.globalccsinstitute.com/publications/global-status-ccs-2013
[21] BREE, *Resources and Energy Quarterly, December 2013*, Table 6.
[22] Australian Bureau of Statistics (ABS), *Australian Industry 2010-11*, Catalogue no. 8155.0, 26 June 2012.
[23] BREE *Resources and Energy Major Projects October 2013*
[24] International Energy Agency, "Coal's share of global energy mix to continue rising"
http://www.iea.org/newsroomandevents/pressreleases/2012/december/name,34441,en.html

and it will remain "the backbone of electricity generation"[25]. This conclusion is supported by the fact that 1,199 new coal-fired plants with a total installed capacity of more than 1.4 million MW have been proposed.[26]

Australia must seize the opportunities presented by this growth in coal demand. Given much of the demand is occurring in China, India and throughout the ASEAN region, Australia is ideally positioned to capture this rapidly expanding market. However, our success is by no means assured and will ultimately depend on how quickly and effectively impediments to investment can be addressed. In particular, the complexity and duplication of our national environmental laws are acting as a major barrier to investment and the industry welcomes the Government's commitment to streamlining project approvals.

The enormous contribution of coal to Australia's economy is poised to continue with strong potential for growth in exports. Policy settings which facilitate investment and address current inefficiencies in project approvals will be important to maintaining Australia's international competitiveness.

## 5. Informing Energy Policy Development

In light of Australia's serious energy security challenges and following years of policy uncertainty and instability, it is essential that the 2014 EWP provide an enduring, consistent and national framework for energy policy in Australia. The development of this framework must necessarily be well-informed, and we welcome the Government's strong commitment to consultation. We also note support for the additional processes which will inform and shape the EWP, including the BREE Energy and Technology Assessments (AETA), Geoscience Australia's Resources Assessments and the National Energy Security Assessment.

In addition to these processes, we suggest the EWP adopt a policy outlook to 2035 complemented by five year reviews which would monitor progress, identify emerging trends and support refinement of policy as required. COAG endorsement and commitment to this process will be important in ensuring a truly national energy policy framework.

*Electricity Sector Modelling*

Scenario modelling of the electricity sector is an important and well-used tool for investment planning and to inform energy policy development. We welcome updated modelling to support the 2014 EWP process.

The outcomes of any modelling exercise are necessarily a product of the assumptions used, including fuel price and availability, technology learning curves, future energy demand, new technology developments etc. Most, if not all, of these are merely 'best guesses' and cannot be accurately projected over a 30+ year outlook. Accordingly, the results of the scenarios included in the final EWP must be interpreted with extreme caution and should not be seen as projections of the future.

The Treasury modelling undertaken for the Clean Energy Future initiative in 2011 and the 2012 BREE update of this modelling provides a valuable starting point for the 2014 EWP. However, key assumptions and inputs need to be re-examined and updated, particularly around technology costs (consistent with a further revision to the BREE AETA 2013 refresh, where, for example, some technologies are overly optimistic such as solar thermal cost reductions while coal based emerging technologies such as DICE are not adequately represented), technology learning curves, gas fuel costs and the range of technologies which are included. Generation technology choices in modelling should reflect the true costs of technologies required to be modelled including costs such as those associated with backup capacity required for intermittent sources and the associated additional grid and network costs (system costs). The Department should ensure that the model chosen adequately recognises the contribution (or otherwise) of generation technology choices to grid stability and also consider running a broader set of scenarios with greater sensitivity analysis of each chosen scenario.

The scenario assumptions should be developed in consultation with industry and must be transparent.

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[25] International Energy Agency, *World Energy Outlook 2012*, p155

[26] World Resources Institute, *Global Coal Risk Assessment: Data Analysis and Market Research*, November 2012, p1

The 2014 Energy White Paper should adopt a 2035 outlook with five-yearly reviews. Energy sector scenario modelling should be conducted in close consultation with industry, using the Treasury model of 2011 and with a focus on updating input assumptions, particularly those associated with fuel costs (particularly gas prices) and emerging technologies. The chosen model should adequately recognise the contribution (or otherwise) of generation technology choices to grid stability. The results of modelling sufficient scenarios and sensitivities to gain an understanding of potential future outcomes must be interpreted with caution in the final EWP.

Yours sincerely

**David Moult**
Managing Director & CEO