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Garnaut Climate Change Review – Update 2011
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Garnaut Climate Change Review – Update 2011, Paper 8: *Transforming the Electricity Sector*

The Energy Supply Association of Australia (esaa) welcomes the opportunity to make a submission to the Garnaut Climate Change Review – Update 2011 (the Update) in response to Paper 8 – *Transforming the Electricity Sector*.

esaa is the peak industry body for the stationary energy sector in Australia and represents the policy positions of the Chief Executives of over 40 electricity and downstream natural gas businesses. These businesses own and operate some \$120 billion in assets, employ over 52,000 people and contribute \$16 billion directly to the nation's Gross Domestic Product each year.

As Australia's largest source of emissions, the energy industry has engaged keenly in the national conversation on greenhouse policy, including providing detailed submissions to the original Garnaut Climate Change Review (the Review) outlining its views on appropriate policy to transition the sector to carbon pricing.

As the authors of the Update would be aware, the industry rejected the original Review recommendations in relation to the electricity generation sector as being unrealistic and not properly comprehending the commercial market or the physical realities and features of the electricity industry. Nonetheless, despite the limitations of the original Review findings, the Update presented as an opportunity to make a useful contribution to the discussion on effective policy to transform the Australian energy sector.

Update Paper 8 makes a number of sensible and appropriate observations and recommendations, for example, removing subsidy programs for renewable energy sources when a carbon price is fully implemented. However, in the main part it suffers from similar failings as the original Review in not understanding the real challenges facing the energy sector in responding to carbon pricing.

In addition, and somewhat surprisingly, the Update has also widened its commentary to include criticisms of the economic regulatory arrangements governing the investments and returns for the monopoly electricity network sector, which the industry also strongly rejects. This inclusion in the Update has absolutely nothing to do with greenhouse gas abatement policy and distracts from what should be the main focus of the Update.

As such, the Association is building on its initial submissions to the Review by providing this response to Update Paper 8. This submission aims to contribute to a more informed and focussed discussion of the energy sector in the final report to the Government and the Association would be pleased to discuss any of the following matters with the Update team.

The importance of the energy industry to Australia and the necessary but difficult task of transformation

Australia's economy and society depends on energy. The Australian community today rightfully demands a first-class supply of energy from the industry and its tolerance to interruptions is very low.

To meet these high expectations, businesses in Australia's energy industry invest in, operate and maintain a world-class energy supply chain. Australia's energy users today enjoy a supply of energy that is exceptionally safe, secure, reliable and efficient, and as noted by the Update, prices that are low by world standards - in spite of a customer load density that is lower than most of the developed world. The energy industry is proud to underpin Australia's economy and way of life.

Australia has benefited immensely from its energy industry over the last century, but because of its historical development and Australia's low-cost, readily accessible coal reserves, Australia's energy supply today is relatively emissions intensive. As the energy sector is Australia's largest source of emissions, energy supply must transform to a lower carbon intensity if Australia is to achieve domestically deep emissions reductions in the long term.

To assist the businesses that will power Australia into the future to respond to the new expectations of the community, it is essential that the right policy settings are in place to make a smooth transition. In contrast, failure to achieve the right settings will increase the risk of a disorderly transition and undermine energy security. While these issues should in time be remedied, the result will be a more costly energy system than necessary, for which consumers will ultimately have to pay.

The Update does not appreciate the genuine adjustment challenges facing the sector

The task of transforming Australia's energy supply should not be underestimated; even abatement targets belittled by some commentators as insufficient will be difficult to achieve¹. The commercial, financial and technological challenges for the sector to reorient five decades of investments based on fossil fuel to low emissions alternatives are significant.

In this context, it is somewhat reassuring that the Update changes the original Review finding and accepts there is potential for financial dislocation and energy security risk arising from the application of a carbon price. Disappointingly, however, despite this acknowledgement, the Update continues to advocate for policies that will not provide for an orderly transition for the energy sector to carbon pricing.

¹ This is clear from the Government's own Energy White Paper modelling.

The Update's view that one can dismiss the negative side effects of immediately imposing the full emissions liability on generators is misguided. It appears to reflect a failure to fully comprehend the physical and commercial realities of the energy industry and the challenges of responding to carbon pricing. It also reflects a reliance on the theoretical ability of markets to smoothly transition the sector, despite the significant new cost imposed from emissions liabilities, the long life and lead times of energy assets, and the large scale of the required investments to realise a lower emissions energy sector.

Without appropriate transitional arrangements, carbon pricing will impair existing assets and may place a number of coal-fired power stations into financial administration. If existing investments are destroyed without appropriate compensation, then the assumption of a smooth transition to carbon pricing cannot be credibly argued.

The Update side-steps this major problem with the analysis by relying on an overly simplistic view of how the energy market works. The suggestion in the Update that existing electricity generators will seamlessly be phased out of the market – such as by a baseload plant running as peaking plant² – and replacements being concomitantly phased in without any consideration of commercial feasibility is thus misleading. Claims made in the paper do not properly reflect SKM's analysis, glossing over the complexities identified by SKM in terms of staffing and fuel supplies. Thermal power plants are operated and maintained by uniquely skilled and qualified staff, whose replacement requires lead times of years. Retention of staff during long periods of no operation is extremely problematic both in terms of cost and the psychological health of underutilised employees. A regime of seasonal lay off is unlikely to provide generation companies with certainty that it could retain sufficient key staff cover to operate its generators in the electricity market. Intermittent operation presents high risk and high cost for thermal plant without tied coal supplies. Seasonal operation opens exposure to intermittent and spot fuel purchasing lacking the price or volume certainty necessary to properly manage dispatch.

Although it may be technically feasible to operate a plant with seasonal intermittency these issues lead to excessive cost and are extremely difficult to manage with any confidence, which is why it is practically unheard of for large base load plant to be operated with seasonal intermittency in the Australian electricity market.

In reality, the energy sector is comprised not just of theoretical economic units but of businesses that operate in the commercial world. These businesses must: raise and service capital – both equity and debt; deal with complex financial constraints such as debt covenants, auditing and accounting conventions, impairment tests, legal obligations and fiduciary responsibilities; and trade in inter-connected physical and financial markets for energy and in due course, emissions permits.

In this context, a policy that leads to asset value destruction in the order of \$10 billion, as demonstrated in two out of three sets of Treasury modelling, will have consequences for the operational and investment environment. To assume these

² The Association trusts that Sinclair Knight Merz's correction of the Update's assertion that the technical analysis of the feasibility of this transformation did not imply that it would in any way be *commercially* viable will be fully acknowledged and taken account of in the final paper.

away through the theoretical workings of a seamless market reflects a lack of quality, evidence-based analysis and adds little to constructive policy development.

Energy markets will keep being efficient; but only if transitional policy is right

The Association is not, however, disparaging Australia's energy markets. They have served Australia well as an efficient mechanism to process information and allocate energy resources, and will continue to do so even under carbon pricing if the adjustment is properly constructed and implemented.

The essential point, and the one that the Update overlooks, is that the imposition of emissions pricing is a step change; it adds a multi-billion dollar new cost to the sector and strips billions of dollars of asset value from energy businesses. It is unrealistic to expect markets to seamlessly digest such a 'game changing' new cost without increasing risks to energy security.

However, this risk could be avoided through appropriate mechanisms to deal with impairment and manage the transition. Not only would this be consistent with Australia's history of structural adjustment reform in other industries³, it would be in step with global approaches to emissions pricing. No other existing international carbon trading scheme has been implemented where a material carbon price has been applied to the energy sector and generators have had to bear the cost of every single ton of carbon from day one of the scheme. This is because the other jurisdictions have recognised the value to their communities of maintaining confidence in the electricity sector through a less abrupt transition than that proposed by the Review and its Update⁴.

Market participants must have confidence in the operations of the market; therefore ex-post bureaucratic solutions are not the answer

Despite the real and legitimate challenges to the energy industry, the Update rigidly adheres to the Review's view that the adjustment to full carbon pricing should be immediate. However, while it dismisses risks to energy security as low, if not negligible, it also introduces new concepts to address the generator financial distress and energy security problem.

These include an Energy Security Council and the provision of government loan guarantees for distressed assets. These initiatives would inevitably require extra bureaucratic structures and processes that amount to unwarranted interventions in an otherwise efficient market structure and as they are ex post, by the time any guarantee is provided, the damage will already have been done.

³ Rather than seek to immediately introduce reforms overnight, the philosophy underpinning other structural reform of industries in Australia has been gradual transitions to allow the industry time to adjust. For instance, the withdrawal of tariffs for the automotive and textile, clothing and footwear industries was phased over decades and accompanied with supporting structural adjustment packages to facilitate an orderly integration into world markets.

⁴ Using tools such as: an administrative allocation of most or all permits during a transitional period (e.g. EU ETS, Korea's proposed ETS) partial liability for a period (e.g. NZ ETS), or setting parameters that result in a very low carbon price (e.g. REGGI).

The mechanisms proposed would also increase risk in the electricity market as the actions of the Energy Security Council simply add to the potential for undisciplined interventions. They also distort investment decisions and competitive neutrality mechanisms by providing the highest possible credit support to a limited few in an otherwise competitive market.

The energy-only National Electricity Market relies on wholesale prices to effectively signal the need for new capacity. New investment also depends on the extent to which participants are able to make clear judgements regarding the entry and exit of competitors. The Update's proposals would cloud the picture in a number of ways.

Firstly, highly-emissive generators that find themselves facing immediate financial distress on legislation of a carbon price (due to the need to consider impairment charges to their assets more or less immediately) cannot be relied on to exit the market in an orderly and predictable manner.

Secondly, if such a generator's lenders were to avail themselves of a Federal Government loan guarantee scheme, and the generator's financial distress led them to call on the Government to honour its guarantee, the Federal Government would find itself the major provider of capital to one or more large highly-emissive power stations. It would likely have effective control over the operations of these generators, with the concomitant risk (from the perspective of other participants in the market) that it might behave less in line with expected rational commercial decisions and more in line with political expediency. This could inhibit new private investment from responding to price signals on a timely basis. As the generation assets will continue to devalue as the carbon price rises, there is little prospect of the Federal Government ever recovering any of its loan guarantee, a cost that will therefore be borne by the taxpayer.

Thirdly, the creation of a new bureaucratic agency to "manage" energy security would bring a new and uncertain element into the market dynamic, which would further undermine the likelihood of a timely response to price signals. Specifically, it will take some time, several years at a minimum, for market participants to be confident in their understanding of how and under what circumstances an Energy Security Council will use the levers at its disposal. Together these features work against the objective of improving investor confidence for constructing new capacity, and a belief in markets as the central mechanism for efficient outcomes.

In such circumstances price signals may need to be stronger than otherwise to elicit new investment, and the resultant investment may be in plant that holds less risk for the individual participant (such as an open cycle gas turbine) but which may not be the most efficient new plant from the perspective of the power system as a whole. Both of these factors will ultimately increase the cost of electricity to consumers.

Both equity and debt matter

In proposing the Energy Security Loan Guarantee – which addresses debt – it appears that the Update is indifferent to the impact of carbon pricing on the other source of capital – equity. It suggests that the destruction of equity (as opposed to manageable changes in profitability) is an acceptable outcome of policy change and a normal risk of conducting a business. This policy change is not a normal part of

doing business; it arises from a profound change of law and hence warrants appropriate transitional arrangements to deal with impairment.

The Association also rejects any implications that the industry's calls for appropriate transitional arrangements are tantamount to excessive compensation, rent seeking, or 'payments to polluters'. Given the multi-billion dollar extent of impairment to assets from carbon pricing, any transitional arrangements are just a reduction in this damage.

Further, the Association rejects the implication that the industry is trying to short change the community or that consumers and industry are adversaries in the changeover to carbon pricing. The generation assets under threat were built at a time when there was no cost on greenhouse gas emissions and no clear prospect of when or how such a cost might be introduced. The direct beneficiaries of these investments were households, businesses and large industrial producers who paid considerably less for their energy use than if either a carbon price had been in place or less-emissive technologies had been chosen instead.

With respect to the granting of unconditional free permits to generators, esaa agrees in part with the Update's assessment that it will not affect the marginal profitability of producing electricity and hence the decision of whether established plants continue to produce power. This is because unconditional free permits will have an opportunity cost – the realisable value of that permit if it was traded – which will be factored into generators' electricity market bids. For this reason, it is incorrect to argue, as some have, that unconditional free permits are 'payments to keep on polluting.' The commercial reality is that a generator will retire and sell its permits if it is more economical to do so.

However, what the Update appears to overlook is that while unconditional free permits do not affect marginal profitability, they do affect balance sheets by providing a business with an asset. In the context of the present value destruction of \$10 billion of assets as modelled by Treasury, any balance sheet relief is germane to the continued financial viability of businesses operating. This accounting reality should be noted in the final Update report.

Destroying equity is self defeating

In focusing on measures to alleviate risk to debt, but not equity, the Update fails to recognise that there is a link between the treatment of investors in the current electricity sector and the transition to a future, lower emissions electricity sector.

The electricity industry is one of the most capital intensive in the world. In Australia the massive re-build and re-investment required to modernise infrastructure and reduce carbon emissions presents the sector with an unprecedented capital raising challenge. The Federal Government's modelling suggests the investment task could be as large as \$120 billion over the next 20 years, almost three times the size of the National Broadband Network, and the equivalent of the current capital value of the Australian electricity industry.

Investment of this magnitude will not happen by itself; it will require the energy industry to have the confidence to commit to very large investments that can

generate returns over the lifetime of the assets (which may run to several decades). Importantly, these investments will be made in the context of a price on carbon, which it must be recognised, is a price that exists purely through government decree. As such, the future investment environment for the industry will be under the shadow of government policy change.

Australia will need to attract overseas debt and equity as well as domestic investment if it is to find the capital to meet this investment task; the sector is internationally exposed in this regard. Given the ubiquitous regulatory risk of investing under carbon policy, Australia consequently must take steps to ensure it presents as an attractive destination if it is to raise this capital in the volumes required and at the lowest possible cost. In direct contrast to this imperative, destroying equity investments through a disorderly transition will send a profound and damaging signal to the international investor community about Australia's sovereign risk and raise the risks of doing business in its energy sector. This will have consequences in higher equity risk premiums, which will add to the cost of energy supplied to the community. Ultimately, it will be the Australian community that bears the costs of poorly conceived policies for the energy sector, as demonstrated by Simshauser & Nelson (2011) in their paper "*Carbon taxes, toxic debt and second-round effects of zero compensation: the power generation meltdown scenario*". The paper states that:

"if zero compensation results in the financial distress of coal power stations, funding costs rise for all plant including new gas and renewables, leading to unnecessary increases in electricity prices. Accordingly, an unambiguous case for providing structural adjustment assistance to coal generators exists on the grounds of economic efficiency."

Simshauser & Nelson (2011) estimate the efficiency losses at "\$1.63 billion per annum in 2020 and \$8.6 billion in aggregate over the period 2015-2020".

A curious foray into network regulation

esaa observes that the content of Chapter 5 of the Update paper – a brief look at the regulatory framework for electricity networks service providers (NSPs) – does not directly relate to the issues of emissions reductions and carbon pricing. The rationale for including the network regulatory framework within the ambit of the review appears to be concern about the extent to which network charges are contributing to overall price rises. It is well understood that network charges, particularly in some states, have had to rise (and will continue to rise) at a significant rate in order to undertake necessary expenditure on replacement, upgrade and augmentation of both the transmission and distribution networks. It is perhaps less well understood how the level of charges that NSPs can levy are governed.

The majority of Australia's NSPs have their maximum revenues determined by the Australian Energy Regulator (AER), operating under a set of rules set out in the National Electricity Rules, which are administered by the Australian Energy Market Commission (AEMC). These rules are broadly similar to those used in many other countries to cap the revenue of natural monopoly utilities such as electricity networks. The rules and their application are recognised to be:

- Transparent: the rules are published, along with the AER's consultations and decisions, as well as stakeholders' submissions to the process (except in a few cases where they contain commercially confidential information)
- Objective and evidence-based, with significant resources committed by both the regulator and the NSPs to determining reasonable estimates of costs for each five year review period
- Allowing opportunities for different stakeholders (not just the NSPs themselves) to appeal decisions with which they do not agree
- Providing incentives for the NSPs to meet their obligations to customers efficiently, which in turn allows the regulator the opportunity to set future allowances at a level that sees customers get a share of those efficiency savings.

Accordingly any claim that customers are paying more than necessary for their network services needs to be backed up by robust evidence to be credible. The Update paper does not provide robust evidence, and also contains a number of misapprehensions, which only serve to undermine the limited analysis that is presented.

Regulatory methodologies – each has their own set of risks

The Update seeks to draw a very high-level contrast between rate-of-return and price cap methods of regulation. As it acknowledges, the current approach by the AER, operating under the National Electricity Rules, is something of a hybrid. According to the Update the rate-of-return elements of the approach create incentives for over-investment. There are two elements to this argument.

Firstly, the rules allow each NSP the opportunity to present a case to the AER for the amount of investment it considers will be necessary to undertake over the five year price control period. But the AER has every opportunity to challenge this case, to subject it to scrutiny, to commission independent consultants, and to require the NSP to provide evidence to support its case. So there are plenty of checks and balances in the system to protect against the NSP being allowed to include more investment in its case than is appropriate.

The second potential risk is that after the price control has been set, the NSP spends more on investment than assumed by the regulator in setting the price control. The National Electricity Rules ensure that an NSP does not recover any such over-investment in full and as such is financially disincentivised from overinvestment. The only way it could benefit is if the regulated cost of capital over the lifetime of the asset was substantially in excess of its true cost of capital. There is no evidence that this is the case, despite the Update's claims of over-rewarding investment, which are examined below.

This is further borne out by the historic performance of both gas and electricity networks. For example, the gas networks have typically marginally underspent their allowances over the last decade of regulation. But they too have had to invest heavily to meet peak demand, resulting in consumer price increases.

It could be argued that the asymmetry of information is always in the NSP's favour and that the risks of over-rewarding them can never fully be mitigated by the regulator. But this is not a problem specific to rate-of-return regulation; it is the case under any form of oversight of a natural monopoly business.

The only exception is to remove the asymmetry by *disregarding* the NSP's own view of how much investment, operating and financing expenditure it needs. This is the philosophy behind a pure price cap approach. But this in turn has risks of its own, specifically that the amount of revenue allowed under the price cap will prove entirely insufficient for the NSP – even if run efficiently - to meet the needs of the community regarding safety, reliability and customer service. This risk is particularly acute when the network is not in a “steady state”, and where there are new underlying cost drivers or an upturn in the investment cycle.

Australian networks are generally not in a steady state. They are responding to a significant increase in peak demand, driven by factors such as a rapid increase in household air-conditioning penetration. A demand for high reliability means that demand peaks *must* be met, and this entails adding new capacity to the networks.

At present, many consumers, in particular households, receive no price signals that tell them when the network is at or near its capacity, and so they have no incentive to do what they can to shift demand away from these peaks. Several distribution businesses have trialled pricing systems that seek to address this, but political and community opposition inhibit more widespread application⁵. Other potential methods, including ways to (with customers' permission) directly control their demand levels at peak times without reducing overall amenity are also being trialled, but both pricing and direct control approaches require investment in new technologies. These technologies along with other tools to more effectively manage the distribution system are collectively termed the “smart network”, and the Update rightly notes the potential value of this suite of technologies.

But as these technologies are new, their successful application requires innovation and risk-taking of a kind that may not be effectively incentivised under either a price-cap or a rate-of-return style regulation. Any review of network regulation in Australia therefore needs to ensure that it fosters the conditions that will both allow and drive NSPs to deliver the electricity networks that the community needs over the coming decades. However, in doing so, it must retain investor confidence in the overall stability of the regulatory framework.

⁵ For example, Victoria has declared a moratorium on such time-of-use pricing, despite committing to the rollout of Advanced Metering Infrastructure to facilitate such pricing, among other benefits.

Allowed returns – NSPs have material risks to manage, and these risks do not diminish through public ownership

The Update correctly notes that compared to many other businesses, NSPs have a good deal of certainty regarding revenue. The risk instead lies in the requirement to manage costs over a five-year period whilst meeting a set of strict service standards and customer obligations. These risks are appropriately taken into account within the regulatory framework in setting the allowed return for NSPs.

The Update makes a very brief comparison of one element of the allowed return with a recent United Kingdom regulatory decision on the same element. It is not possible to draw any firm conclusions from such a comparison, given that there are relevant differences in the characteristics of the capital markets and the regulatory framework in each case.

In addition to its general allegations regarding the allowed return, the Update further claims that publicly-owned NSPs have a much lower actual cost of capital because their shareholders can typically raise debt capital more cheaply than a private sector company.

State-owned NSPs are expected to target a commercial rate of return and are incentivised to do so by their state treasuries who charge both a debt cost for loans from the state, in line with the costs a comparable private sector firm faces, and a tax equivalent payment based on what an equivalent private sector firm would pay in income tax. So the incentives and challenges that a state-owned NSP face should be no different from that of a privately-owned firm – in keeping with the competitive neutrality principles agreed to by the Council of Australian Governments.

It is true that from the perspective of a government shareholder, greater cashflows may be available due to the fact that it is the recipient of the tax-equivalent payment as well as dividends and interest payments. Additionally, there is the illusion of arbitrage profits if the interest it receives from a state-owned firm that reflects, say, that firm's BBB+ rating is in excess of the interest it pays on its own borrowings (assuming it has a sovereign-level credit rating, such as AAA). But this is an illusion because it ignores the riskiness of those cashflows. Further, the key difference between a state shareholder and a private shareholder is that the former is ultimately answerable to its electorate, who are of course substantially the same people as the NSP's customers. The democratic process therefore provides a clear guard against any attempt to extract excess returns from an NSP that it owns. In any case the cashflow implications are not favourable – investment must be funded upfront, but only pays returns over the lifetime of the asset, which may be in excess of 40 years in the case of some network assets.

Transmission policy to respond to emissions pricing

Regarding the examination of electricity infrastructure to support the transition to low emissions, the Association notes that the Update canvasses a broad range of issues, diagnoses a number of problems and proposes a raft of solutions.

Transmission policy is one of the most enduring and difficult questions facing Australia's energy markets. While some of the issues involved are decades old, carbon pricing poses a new set of challenges for the national grid.

Australia's energy markets have institutional structures and processes in place for deep consideration of transmission policy questions, and these draw on experts from industry, government, regulators, market operators and rule makers. It also has regulatory frameworks that allow the industry to plan, build and fund extensions to the grid efficiently. Getting this framework right is a constant challenge for the sector and, as with any difficult policy area, there are a range of views. esaa welcomes the Update's contribution to this ongoing debate on these important questions.

Conclusion

For Australia to continue to enjoy a reliable, competitive electricity supply while also reducing its greenhouse gas emissions as a society, it must be very careful in its policy choices.

As stated in the Association's earlier submissions to the Review, the Association has been calling for a well-designed emissions trading scheme (ETS) for some time and the features of such an ETS are enumerated in those submissions. The key is to strike a balance between introducing incentives to transition the sector towards lower emissions generation and maintaining an orderly transition.

In producing its final report to the Government, the Association encourages the Update review team to reconsider its recommendations of the energy sector by reflecting the physical and commercial realities of the industry and appreciate the real and legitimate challenges facing the energy sector in responding to carbon pricing. It also encourages them to realistically circumscribe the extent to which it ventures into more general energy policy matters such as the network price control regulatory framework, given the complexity of the issues therein⁶.

The challenges facing Australia's energy sector to transform to a lower emissions footing are immense and should not be underestimated. Despite the magnitude of the task, the energy industry can start the transformation to a lower-emissions intensity if the policy settings are sensible and the impairment of assets is appropriately addressed. Given how deeply embedded the energy industry is into modern Australia, every Australian household and business has a stake in getting it right.

⁶ To this end, esaa notes that the AER has announced a review of the way it carries out network regulation. Any changes it proposes to the framework will be referred to the AEMC who will (as with any rule change) consult stakeholders to elicit views on the proposals. At this point, constructive criticism from the authors of the Update will undoubtedly be welcomed.

Any questions about our submission should be addressed to Kieran Donoghue, by email to kieran.donoghue@esaa.com.au or by telephone on (03) 9670 0188.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Brad Page', with a stylized flourish at the end.

Brad Page
Chief Executive Officer