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Senate Standing Committee on Economics

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Inquiry into exposure draft of the legislation to implement the CPRS

The exposure draft of the legislation to implement the Carbon Pollution Reduction Scheme (CPRS) was released on 10 March 2009. On 11 March the Senate referred the exposure draft of the legislation to the Standing Committee on Economics and requested submissions to the inquiry by 18 March. One week is an inadequate timeframe to analyse the legislation. The Government has announced a period of consultation on the exposure draft of the legislation with submissions due on 14 April and the Energy Supply Association of Australia (esaa) will address any legislative issues in its response to this consultation process.

However, the Association has given detailed consideration to the design of the Carbon Pollution Reduction Scheme and the critical amendments required to ensure Australia has a well designed emissions trading scheme (ETS) that will deliver investor confidence for the energy supply industry and ensure a smooth transition to a low emission economy. esaa therefore welcomes the opportunity to submit comment to the Senate Standing Committee on Economics on the potential impacts of the CPRS on the energy supply industry.

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 more than $120 billion in assets, employ 49,000 people and contribute $14.5 billion directly to the nation's Gross Domestic Product.

Secure, reliable and competitively priced energy is essential to the effective functioning of all aspects of modern economies. The energy supply sector currently produces over 35% of Australia's greenhouse gas emissions and will be significantly impacted by the introduction of the CPRS accounting for 50% of liable emissions under the Scheme. However, esaa considers that the implementation of a well designed national ETS is a critical measure for ensuring investor confidence in the energy sector. A well designed ETS must be efficient, effective and equitable in the long term and, importantly, must ensure a smooth and orderly economic transition in the short-medium term. Failure to ensure an orderly transition could have widespread and potentially long lasting adverse economic impacts.

While esaa is broadly supportive of many aspects of the Government's proposed CPRS design, this submission sets out some of the key challenges for the energy supply system in reducing emissions and increasing the proportion of renewable energy generation. The submission then considers the Government's response to the critical design features for an ETS that were outlined in the joint industry submission to the CPRS Green Paper including adequate structural adjustment assistance to coal-fired generators; sufficient tenure of Scheme caps and gateways; efficient permit auction design and the removal of barriers to full cost pass through to consumers. Finally, the submission raises some outstanding issues in relation to the taxation of permits.

Energy supply system – reducing emissions and increasing renewables

The White Paper announced a national medium-term target range of between 5 and 15 per cent below 2000 level emissions by 2020, depending on the degree of international commitment to emission reductions. In addition, the Federal Government has committed to a 20 per cent renewable energy target in 2020.

Reducing emissions to 5 per cent below 2000 levels at 2020 could be seen as a modest target for Australia. However, some sectors of the community have suggested such a target is "soft" or "easy".

A study undertaken for esaa by ACIL Tasman, *The impact of an ETS on the energy supply industry*, reported that Australia emitted 552mt $CO_{2\text{-}e}$ in 2000. Under a business-as-usual scenario (including existing greenhouse gas abatement policy measures) Australia is forecast to emit 664mt $CO_{2\text{-}e}$ in 2020. A 5% reduction on 2000 level emissions translates to a more than 20% reduction from business-as-usual. The modelling undertaken by the Federal Treasury has a more aggressive reference case and suggests emissions at 2020 would be 774.2 mt $CO_{2\text{-}e}$ in 2020. Under this scenario, a 5% reduction on 2000 level emissions would actually result in a nearly 30% reduction in emissions from business-as-usual.

This is an important consideration. If the economy is to steer towards the target range proposed, the early efforts to shift from the business-as-usual growth will need to be significant.

Currently over 80% of Australia's electricity is generated using black and brown coal, with a further 12% from natural gas while less than 7% comes from renewable sources. In contrast, the European Union has only 30% of electricity generated from coal, with a significant amount coming from zero emission sources such as nuclear (30%) and renewables (15%). Currently, there is no "off-the-shelf" technology to substantially reduce the greenhouse gas emissions from coal. Reducing Australia's emissions at 2020, while also implementing a 20% renewable energy target, will require fundamental change to the entire energy supply system in what is, in infrastructure terms, a very short time-frame.

The Treasury modelling suggests that a 5 per cent reduction on 2000 level emissions at 2020 will result in an emissions permit price of $35 in 2020. It should be noted,

however, that the Treasury only modelled scenarios where there was a comprehensive global agreement.

The Government has committed to a unilateral 5 per cent reduction on 2000 level emissions at 2020. This 5 per cent commitment is more akin to the Garnaut modelled scenario of a "Copenhagen compromise" than to the Treasury CPRS-5 scenario. Under Garnaut's "Copenhagen compromise" the emissions permit price at 2020 is $53. The White Paper does allow unlimited access to international permits but, in the absence of a broad and deep international emission permit market, the modelling would suggest that the permit price in Australia from the Government's unconditional 5 per cent commitment would be somewhere between $35 and $53 in 2020.

The ability of Australian businesses to access a supply of international permits will be a key risk for the Scheme's success.

The ACIL Tasman Study for esaa considered the impact on the energy supply industry of a $42 and $51 emission permit price at 2020 along with a 20 per cent renewable energy target.

Generation infrastructure

The ACIL Tasman Study found that an emission permit price of $42 at 2020 and a 20 per cent renewable energy target resulted in several large power stations closing prior to their business as usual life. ACIL Tasman reported that 6,700MW of mostly coal-fired generation capacity in the National Electricity Market (NEM) would have to be closed, while the value of many other generation facilities would be substantially reduced. These closures would represent about 15% of current generating capacity on the eastern seaboard. Furthermore, the study found that 15,000 MW (including 1,200 MW in the South West Interconnected System (SWIS) of Western Australia) of gas-fired and renewable generation facilities would need to be constructed to replace these closed facilities. This amounts to a third of Australia's existing installed capacity. The level of investment required in electricity generation over the period would therefore need to almost triple from $13 billion to $33 billion in real terms.

Network infrastructure

An altered generation mix and changed energy usage patterns would need to be accommodated by the transmission and distribution networks for both electricity and gas. These are the links between energy producers and final consumers and efficient and effective energy networks will be vital for the facilitation of a low emission energy supply system. This is recognised in the *Garnaut Review Discussion Paper,* which states that "a well integrated national energy network with the capacity to cope with potentially large shifts in energy flows will allow for structural change and the smoothing of shocks following the introduction of the emissions trading scheme". Significant additional investment may be required in gas pipeline infrastructure along with considerable new investment in electricity transmission and distribution to meet the needs of a low emission energy supply system and ensure reliability of supply. The regulatory framework will need to accommodate these significant changes and enable the regulator to consider all costs incurred by network providers along with

non-network options including embedded generation. However, at a time when additional investment in network infrastructure will be critical, the Australian Energy Regulator is proposing to substantially reduce the rate of return on network assets.

Managing the infrastructure transformation

Even in perfect markets there are considerable lead times in the planning, permitting, construction and commissioning of large infrastructure projects. Should there be any imperfections in the supply of capital, labour and inputs, or in the regulation of the industry, then the security of Australia's electricity system could be jeopardised given its efficient system reserve capacity. Australia's system reserve capacity is designed to deliver an optimal energy cost in the current market environment – but is low compared to international comparators. In 2007-08 the NEM-wide system reserve was just 10% compared to the world benchmark of 15%. Based on median load forecasts, planning reserves will fall to 8% by 2010.[1] In the presence of a global financial crisis, sourcing sufficient capital to re-finance existing assets – many with shortened asset lives – and to invest in new capacity may prove particularly challenging. The energy supply industry needs to refinance around $50 billion worth of existing assets within the next five years in addition to the $33 billion of new lower emission generation capacity that will be required over the coming decade.

The most effective way to manage these potential risks is not to delay or abandon the development of an ETS – this would only serve to increase investor uncertainty. A modest national emissions abatement target for 2020 is required as this will provide a smooth transition for the energy supply industry and allow the wider economy greater opportunity to adjust to one of the most fundamental structural adjustments ever applied by fiat.

However, even with a 5 per cent reduction in 2000 level emissions at 2020, a number of power stations will need to close while others will need to substantially reduce their production to meet this target. To ensure a smooth transition to a low emission economy and to secure future investment in a lower emission energy supply sector, those generators that suffer significant value reductions as a result of the introduction of the ETS should receive adequate structural adjustment assistance.

Structural adjustment assistance to coal-fired generators

esaa welcomes the Government's recognition in the White Paper that coal-fired generators will be strongly affected by the advent of the CPRS. As detailed below (and in greater detail in the attached Green Paper submission on pp 4-6 and 23-26), insufficient assistance in the transition to the CPRS could have serious implications for the short-term viability of the electricity markets due to the financial distress of a significant number of generators. Insufficient assistance would also send a poor signal to future investors about the Government's willingness to make substantial policy change and strand electricity sector assets in the process. The White Paper's proposed $3.5 billion of assistance is insufficient and considerably lower than the consensus of modelling results (including two sets of Government modelling results)

[1] Simshauser, Nalder & Rolfe "Survival of "the pack" - on emission permit allocation policy, reliability of supply and incumbent power generators in Australia", June 2008.

which suggest around $10 billion of assistance is required over ten years. It should also be noted that for many coal-fired generators, the loss in asset value extends well beyond the first 10 years of the Scheme. In particular, for some coal-fired generators the most significant asset value loss will occur in the second decade of Scheme but these losses have been completely ignored by this assessment.

Rationale for structural adjustment assistance to coal-fired generators

Insufficient assistance is likely to result in an immediate reduction in generators' credit ratings and/or breaches of financial ratios (due to the immediate loss in asset value). At the very least, a number of generators would be unable to meet the prudential requirements of their Australian Financial Services Licence and would be unable to trade. In addition, for many of those generators it could also trigger a revision by financiers and/or result in the suspension of payment under hedge contracts as the generators would be unlikely to meet any requests for additional credit support (particularly the large working capital impost of the CPRS). This may result in a series of financial defaults throughout the market. These events could significantly undermine investor confidence in energy markets and result in a reduced number of potential investors in the Australian energy sector for future developments, including low emission plants. Higher hurdle rates would apply to any new investments that did occur due to increased risk premiums. This would in turn increase retail energy prices.

Uncertainty has an important effect on investment decisions particularly when these decisions cannot be reversed, or only at great cost. In this context, it is useful to distinguish between uncertainty and risk. Risk can normally be managed through mitigation measures but uncertainty presents a more serious informational problem, because it implies that the distribution of fundamental parameters determining the value of an investment is largely unknown. In the presence of uncertainty, investors worry that their investment could be stranded and will tend to factor in the option of waiting for new information before making investment decisions. While uncertainty is a fact of life for investors, there are particular features of climate change policy that make investment uncertainty a significant problem of significant scale.

The scheme will fundamentally change the risk profile of electricity investments. The financial success of electricity investments will be highly dependent on the form and operation of rules and regulations of the scheme, which will be subject to change over time. In particular, there is likely to be significant and ongoing uncertainty over future targets and abatement pathways.

From an investment perspective, shifts in fundamental scheme parameters imply shifts in the price of carbon, and hence returns across various types of investments. Confidence in the likely direction of the regulatory arrangements is important for industries such as electricity where investment in assets is lumpy, and requires significant lead-time. This means even short periods of uncertainty can have significant effects on investment outcomes.

The provision of structural adjustment assistance can mitigate these effects. It is a demonstration by the government that it recognises that policy changes can cause

shocks to investors and is a commitment to minimising the detrimental effects of uncertainty resulting from policy changes that are outside the control of investors. In providing structural adjustment assistance, the Government effectively imposes a cost on itself when it comes to making significant changes to scheme parameters. This in turn can encourage the Government to make any changes in an orderly way and with sufficient advance notice.

In addition, unless it is assumed that there is a substantial pipeline of new producers and projects that will come on line relatively quickly, the delivery of the abatement objectives is in part contingent on the decisions made by current asset holders. If these asset holders suffer substantial asset stranding, their investment decisions will be affected. Structural adjustment assistance will help to give existing asset holders confidence that their new investments are not likely to be subject to stranding risk. Finally, if existing asset holders are financially distressed, the provision of transitional assistance can help to minimise the impact such distress has on future investment decisions.

The White Paper makes reference to the notion of foreseeable regulatory change and the view that investors should have taken account of carbon price risk in the discount rate applied to new investments.

Many of the existing coal-fired generators currently supplying the bulk of electricity in Australia were built and commissioned more than two decades ago. For more recent investments and acquisitions, investors have had no empirical basis to make an assessment of carbon price risk as there has been no detail or information on the timing, form or level of a carbon impost. It is only in the last two or three years that the industry has seen actual detail on a possible national approach to emissions trading. As the Green Paper recognises, it was not until June 2007 that there was bipartisan support at the national level for a broad-based emissions trading scheme. Importantly, all of the national schemes that have been canvassed in recent years by state and federal governments have accepted the need for offsetting assistance to high emission plant adversely impacted by the introduction of a price on emissions.

Insufficient structural adjustment assistance to coal-fired generators

Under the CPRS, the electricity generation sector will be taxed around $55 billion (real) on its emissions over the first decade of the Scheme.

The White Paper proposes to provide limited ($3.5 billion) direct assistance to coal-fired electricity generators through the Electricity Sector Adjustment Scheme (ESAS) to ameliorate the risk of adversely affecting the investment environment in the sector. In fact, the objects clause at Section 174 of the exposure draft legislation states that the provision of assistance is to contribute to the maintenance of investor confidence in electricity generation. However, the quantum of assistance and allocation methodology are based only on estimated extreme losses in asset value. According to the White Paper, it is the extreme losses, rather than the average loss across the sector that will impact investor risk perceptions.[2] However, the joint industry

[2] Page 13-13

submission on the Green Paper argued that it is both the **scale and sum** of individual asset losses that matter, not just the scale of losses.

Subject to a number of eligibility criteria and submission to a windfall gain review, the White Paper commits to allocate approximately $3.5 billion (130.7 million permits) to eligible generators over five years (despite estimated losses occurring over a much longer timeframe).

To inform the decision on the required quantum of assistance, the Government commissioned three separate models to assess the likely impacts on asset value that the CPRS may have on the sector. Over the first decade of the CPRS, MMA concluded that the asset value loss for coal-fired electricity generators was $2.3 billion, while ROAM Consulting and ACIL Tasman reported losses of $9.4 billion and $10.5 billion respectively.

The latter two estimates of asset value loss are broadly consistent with the ACIL Tasman study for esaa and with a CRA International study undertaken for the National Generators' Forum. Interestingly, MMA's previous modelling for the National Emissions Trading Taskforce had asset value losses much higher than $10 billion and considerably higher than its $2.3 billion estimate for the CPRS.

It is therefore surprising that, in the face of multiple, broadly consistent pieces of quantitative analysis, the Government determined that $3.5 billion would be sufficient assistance to coal-fired generators to mitigate the negative impacts of financially distressed generators and to secure investor confidence in the energy market. A key factor in the Government's decision to only allocate $3.5 billion seems to have been "competing Budget priorities" but ultimately it will be the market that will determine whether this is sufficient and, if it proves to be insufficient, the impact on the energy sector and the broader economy could be extremely costly. The limited assistance provided may not be sufficient to mitigate the risks identified.

Tenure and timing of announcement of Scheme caps and gateways

Tenure of Scheme caps and gateways

With adequate structural adjustment assistance for coal-fired generators, an emissions trading scheme is the best mechanism for pricing greenhouse gas emissions and ensuring investor confidence in the energy sector. However, investor confidence in the energy sector is dependent on the ability to confidently determine a clear view of future greenhouse gas emission prices. To date, this has not been possible, but the introduction of the CPRS is intended to rectify this.

However, the Government's decision to only commit to five years of firm Scheme caps is disappointing. esaa recognises that the setting of Scheme caps and gateways requires a balance between the criteria of economic efficiency and policy flexibility to allow the Government to respond to changes in scientific knowledge and international commitments. However, the proposed timeframes for the Scheme caps and gateways do not appropriately balance certainty and flexibility.

The White Paper and exposure draft legislation propose arrangements that would result in a 15-year window of Scheme caps and gateways, declining to 10 before being extended to 15 once again. This is an inadequate timeframe for planning long-lived, capital intensive investments. esaa considers that at a minimum, annual Scheme caps should be set for a 10-year period that is extended by one year, each year. The proposition of a10-year gateway is supported as it then makes for an effective 20-year view of Scheme caps and gateways. However, rather than allowing the gateway to contract to five years before the next gateway announcement, the gateways should also be extended by one year, each year.

The Government is the only entity that can commit Australia in international negotiations and, therefore, the Government should bear the risk of future Scheme caps and/or gateways being inappropriate. If the Government enters an international agreement that requires it to reduce emissions below the Scheme caps or gateways, it should purchase the required abatement on the international market.

Timing of announcement and tenure of initial Scheme caps and gateways

To enable generators to write future hedge/bilateral contracts, the joint industry response to the Green Paper argued that the Scheme caps and gateway need to be announced as soon as possible and permits made available. Currently, there are very few hedge contracts being offered beyond June 2010 because the cap on greenhouse gas emissions in the CPRS is largely unknown. This uncertainty is also inhibiting the formation of bilateral contracts in the SWIS.

The White Paper and exposure draft legislation propose that in early 2010, prior to the CPRS commencement and after the passage of legislation through parliament, the Government:

- will announce Scheme caps for the first five years or to the end of any new international commitment period if the Government elects to do so; and
- intends to announce up to 10 years (contracting to five before extending to 10 once again) of Scheme gateways beyond the minimum five years of Scheme caps.

This series of announcements does little to address the current uncertainty in the electricity markets and is not a tenable approach for an industry that involves planning and construction of long-lived, capital intensive investments.

As a sentient transitional issue, esaa considers that Scheme caps should be announced as early as possible. Noting the White Paper's statement that the first two years of the Scheme cap will be aimed at meeting Australia's Kyoto commitment,[3] confirmation of these caps should be announced at least one year prior to the Scheme's commencement and permits made immediately available.

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Permit auction design

esaa is supportive of moving towards 100 per cent auctioning of permits after sufficient administrative allocations have been made. As the largest liable sector, an auction design that is efficient in price discovery; manages the significant working capital requirements of liable entities; and assists parties to meet their obligation at least-cost is of considerable importance.

Full auctioning will require generators to purchase and surrender approximately 200 million permits annually. In addition, generators will also need to purchase ahead to support forward contracts. With an indicative national emissions target range of between 5 and 15% below 2000 level emissions at 2020, generators will need to hold permits well in excess of $10 billion. This will significantly increase working capital requirements and exacerbate costs to meet prudential requirements.

The joint industry submission to the Green Paper argued that to manage this, auctions should be held regularly and for a stream of future years. The Government has recognised this issue and the White Paper commits to monthly auctions compared to the quarterly auctions proposed in the Green Paper.

In addition, the joint industry submission asserted that flexible settlement terms should be available to enable better management of reduced cash flows and to reduce the need for additional credit support. The Government has also recognised this concern in the White Paper and has committed to considering deferred settlement arrangements in consultation with industry.

Currently there is a considerable lack of forward contracts being written in the electricity wholesale markets, owing to both the uncertainty over Scheme caps and the lack of availability of permits.

Prior to the EU ETS commencing, forward contracts in the electricity wholesale markets were continuing to be written for periods after the Scheme commenced. Market participants could continue to confidently take positions in the market because the vast majority of their permits were allocated for free. In fact, in the EU only 3-7% of permits will have been sold until 2012 with the rest freely allocated. While in a number of EU countries with a heavy reliance on coal-fired generation, free permits will remain until 2020. In contrast, the Australian market does not have such assurances and the White Paper's commitment to auction the first permits in early 2010 does little to address the current problem. At this stage, it would appear that both the working capital requirements and limited availability of permits will not support the level of forward contracting that has been the practice in the NEM over the last 10 years. This will create increased risks – particularly for retailers and their customers.

Reflecting the importance of an efficient auction design to the industry, esaa, along with the National Generators' Forum, Energy Retailers' Association of Australia and the Australian Financial Markets Association, are considering a number of auction design issues including options for a deferred settlement mechanism for future vintage permits and a transitional mechanism to enable the early auction of permits.

This Auction Design Working Group will continue to work with the Government on an efficient and effective permit auction design.

Retail price regulation

The regulation of retail electricity prices poses a significant threat to the efficient operation of the CPRS and the viability of retailers. For the Scheme to operate efficiently and provide least-cost emission reductions, consumers must be exposed to the cost implications of greenhouse gas emissions. Retail price regulation would prevent retailers from passing on higher wholesale energy costs in a timely manner. Retailers could therefore experience significant losses and be unable to contract forward with the remaining generators, forcing their eventual exit. Systemic failure or financial distress among major retailers would increase volatility and risks in the energy market (which would cascade through to business consumers) and undermine reliability and security of supply.

In fact, the Australian Energy Market Commission in it's 1st Interim Report for the Review of Energy Market Frameworks in Light of Climate Change Policies found that the current retail price regulation arrangements are not sufficiently flexible to be able to cope with the potentially large and rapid changes in retailer costs associated with the introduction of the CPRS.

The Government has acknowledged in the White Paper that ideally there should be no regulatory impediments to the timely pass-through of reasonable costs, to ensure the objectives of the CPRS are not undermined. The White Paper goes on to recognise that competition and consumer choice are the best ways to achieve cost-effective demand response. However, the exposure draft of the legislation does nothing to further these objectives. The White Paper instead concludes that the optimal approach to progressing cost pass-through is to support the work of the Ministerial Council on Energy.

esaa has strong reservations as to the effectiveness of the proposed approach to facilitating appropriate and timely cost pass-through for retailers. The Australian Energy Market Commission's reviews of the effectiveness of competition in the various Australian jurisdictions is insufficient to ensure the removal of retail price regulation as there is no obligation on individual jurisdictions to remove retail price regulation even where the markets are demonstrated to be competitive. In fact, several State Energy Ministers have indicated that they will not remove retail price regulation even if their markets are shown to be competitive.

The Ministerial Council on Energy has agreed to recommend to the Council of Australian Governments that an amendment be made to the Australian Energy Market Agreement. This amendment would commit all jurisdictions to ensuring that CPRS costs can be passed on to customers. However, the industry considers that this approach would be insufficient. There are a number of jurisdictions where retail prices remain below the cost of supply and where there is political intervention into regulatory price setting. In addition, there have already been a number of commitments within the Australian Energy Market Agreement that have not been met

and the industry has no reason to believe that this type of commitment would be effective.

esaa considers that retail price regulation should be removed. However, where Governments are unwilling to commit to this reform, at the very least there should be a consistent, national framework for the regulation of retail prices that enables cost-reflective pricing and the full pass-through of emission costs to consumers. The Australian Energy Market Commission should determine the appropriate methodology for ensuring cost-reflectivity and it should be applied by the Australian Energy Regulator.

Taxation of permits

esaa considers that the tax system should not introduce distortions to the permit market and the Government's focus on simplicity, efficiency and equity in relation to tax in the White Paper is welcome. In particular, esaa endorses the proposal to create discrete provisions in the income tax law to provide uniform income tax treatment of permits for all taxpayers, increase certainty and reduce complexity.

In the joint industry submission to the Green Paper, and in other tax-related forums, esaa has provided feedback on a number of specific areas on permit tax treatment, which have subsequently been considered by the Government in the White Paper and exposure draft legislation. However, esaa considers there are still outstanding issues with regard to taxation and the CPRS, in particular; approaches to treatment of administratively allocated permits; harmonising liability compliance with the tax year, including the challenges of equitable treatment of parties with differing year ends; and GST application.

The White Paper states that permits administratively allocated through ESAS will be assessable income for tax purposes at year end, unless surrendered during the course of the compliance year and prior to tax year end. Conversely, permits administratively allocated as assistance to emissions-intensive, trade-exposed (EITE) industries will be given nil value treatment for the tax year allocated.[4] Such approaches raise two key issues for esaa. Firstly, the esaa is concerned by the different tax treatment of ESAS assistance and EITE industry assistance. Secondly, the proposed tax treatment for ESAS assistance may have implications on the wholesale electricity market, and the abatement achieved by the energy supply sector. By categorising administratively allocated permits held at the end of the financial year as assessable income, the proposed tax treatment could inadvertently provide incentives for the most emissive coal-fired generators to continue operating and surrender the permits rather than closing and realising the income, distorting the efficiency and effectiveness of the CPRS and undermining the intentions of the ESAS.

The CPRS compliance year set out in the White Paper is the same as the Australian tax year, beginning 1 July and concluding 30 June the following year. The alignment of the CPRS compliance period with the existing Australian tax year and the National

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Greenhouse and Energy Reporting Scheme (NGERS) is welcomed by esaa. However, some challenges remain for industry members who have different reporting obligations.

In addition, the Association is concerned by the White Paper and exposure draft legislation's approach to the tax treatment of permits surrendered to acquit a liability post 30 June but applicable to the previous compliance year. The White Paper states that the cost of acquiring a permit will be tax deductable when it is surrendered, regardless of whether the permit is surrendered to meet a liability in the previous tax and CPRS compliance year.[5] esaa considers that deductions for the cost of permits should be deductable in the tax year the CPRS obligation arises rather than the tax year permits are surrendered.

Finally, the White Paper confirms the Government's position that the normal GST rules will apply to permit transactions. As the joint industry submission to the Green Paper stated (and other notable organisations such as the Tax Institute of Australia), esaa considers that permits should be exempt for GST purposes, to avoid a number of potential costs and distortions.

Conclusion

esaa supports the introduction of an emissions trading scheme to provide an efficient price signal for the cost of greenhouse gas emissions and to ensure investor confidence in the energy supply industry. However, to deliver this investor confidence significant changes to the CPRS need to be made including adequate structural adjustment assistance for coal-fired generators to recognise their asset value loss from the introduction of the Scheme. In addition, the Government should commit to 10 years of firm Scheme caps followed by a 10-year rolling gateway to ensure there is sufficient information for investors to commit to long-lived capital assets and deliver a lower emission energy supply system. Ultimately, for the Scheme to be successful and to deliver a lower emission energy supply system, retail price regulation must be removed. Efficient prices are necessary to provide the appropriate signals for new investment and without full cost pass through the viability of retailers and the entire energy supply industry is at risk.

Yours sincerely

Clare Savage
Chief Executive Officer

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SUBMISSION TO CARBON POLLUTION REDUCTION SCHEME - GREEN PAPER

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(delete or strike out that which is not applicable)

10 September 2008

Carbon Pollution Reduction Scheme Green Paper
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Carbon Pollution Reduction Scheme Green Paper

The Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia and the Australian Pipeline Industry Association appreciate the opportunity to provide collaborative comment and feedback to the Department of Climate Change, regarding the Carbon Pollution Reduction Scheme Green Paper (the Green Paper).

Australia's energy supply industry comprises over $120 billion in assets, employs 49,000 people and contributes $14.5 billion directly to the nation's Gross Domestic Product. Secure, reliable and competitively priced energy is essential to the effective functioning of all aspects of modern economies. The Energy Industry currently produces over 35% of Australia's greenhouse gas emissions and will be significantly impacted by the introduction of an emissions trading scheme (ETS). The Energy Industry considers that the implementation of a well designed national ETS is a critical measure for ensuring investor confidence in the energy sector. A well designed ETS must be efficient, effective and equitable in the long term and, importantly, must ensure a smooth and orderly economic transition in the short-medium term. Failure to ensure an orderly transition could have widespread and potentially long lasting adverse economic impacts.

This submission firstly sets out some of the key challenges an ETS presents for the physical and financial aspects of the energy supply system, along with a number of critical ETS design features. In this context, the submission then considers the proposed Carbon Pollution Reduction Scheme and the efficiency and effectiveness of the range of design propositions. For ease of reference, a table of comments is also attached to the submission on each of the Green Paper's preferred positions and areas where the Green Paper requests specific feedback.

Energy supply system and an emissions trading scheme

Energy supply infrastructure

Currently over 80% of Australia's electricity is generated using black and brown coal, with a further 12% from natural gas while less than 7% comes from renewable sources. In contrast, the European Union has only 30% of electricity generated from coal, with a significant amount coming from zero emission sources such as nuclear (30%) and renewables (15%). Stabilising or reducing Australia's emissions at 2020, while also implementing a 20% renewable energy target, will require fundamental change to the entire energy supply system in what is, in infrastructure terms, a very short time-frame. Given Australia's significantly different energy supply system, any 'lessons' from the European emissions trading experience should be applied cautiously.

EU Emissions Trading Scheme

The EU emissions trading scheme began on January 1 2005 and the first phase of the scheme ran from 2005 until 2007. The second phase commenced in 2008 and continues through until 2012, coinciding with the five-year Kyoto commitment period.

The EU ETS currently only covers CO_2 emissions from four broad sectors – iron and steel processing, minerals (eg cement and glass), energy, and pulp and paper. Wider scheme coverage is not planned until 2020 – 15 years after scheme establishment. The EU has consciously allowed itself time for "learning from doing". Installations are currently included in the program if they exceed industry-specific production or capacity thresholds specified in the EU Directive (although there is some discretion for member states to determine the finer details of included facilities). More than **12,000 installations** are included in the program, **covering 46%** of EU CO_2 emissions.

At commencement, electricity generators were allocated emissions permits using a **grandfathering** methodology. That is, permits were allocated on the basis of historical emissions, rather than addressing the impact on forward cash flows or the effect on the investment environment as proposed in the Australian policy debate. Free permits currently represent 94% of the total energy sector emissions. This has served to protect the balance sheet of many of the electricity generators (the presence of windfall gains would suggest they may have been protected more than necessary) and facilitated confident trading in both primary and secondary permit markets. In addition, as generators had sufficient permits to cover their own generation there was no interruption or impairment issues to disrupt the electricity hedge/bilateral markets as generators were covered against future permit price rises.

The EU ETS was set up from 1 January 2005 to 'learn by doing'. Initial key criticisms of the operation of the EU ETS include a lack of investment incentive due to relatively short **trading periods** (scheme phases), the inability to shift permits from Phase I to Phase II of the scheme, and that member countries over allocated permits which eroded the environmental benefits of the scheme. **Over allocation**

and the **inability to transfer permits between phases,** together with **infrequent data publishing,** are the key reasons for the price collapse in May 2006 which saw trading prices fall from about €30/tonne to €10/tonne.

Recent studies separately undertaken for the Energy Supply Association of Australia (esaa) and the National Generators Forum (NGF) found that to reduce emissions by around 10% at 2020 and implement a 20% renewable energy target, several large power stations would have to close prior to their business as usual life. The results of the independent studies were largely consistent. The modeling undertaken for esaa indicated that 6,700MW of mostly coal-fired generation capacity in the National Electricity Market (NEM) would have to be closed, while the value of many other generation facilities would be substantially reduced. These closures would represent about 15% of current generating capacity on the eastern seaboard. 15,000 MW (including 1,200 MW in the South West Interconnected System (SWIS) of Western Australia) of gas-fired and renewable generation facilities would need to be constructed to replace these closed facilities. This amounts to a third of Australia's existing installed capacity. The level of investment required in electricity generation over the period would therefore need to almost triple from $13 billion to $33 billion in real terms.

An altered generation mix and changed energy usage patterns would need to be accommodated by the transmission and distribution networks for both electricity and gas. These are the links between energy producers and final consumers and efficient and effective energy networks will be vital for the facilitation of a low emission energy supply system. This is recognised in the *Garnaut Review Draft Discussion Paper,* which states that "a well integrated national energy network with the capacity to cope with potentially large shifts in energy flows will allow for structural change and the smoothing of shocks following the introduction of the emissions trading scheme". Significant additional investment may be required in gas pipeline infrastructure along with considerable new investment in electricity transmission and distribution to meet the needs of a low emission energy supply system and ensure reliability of supply. The regulatory framework will need to accommodate these significant changes and enable the regulator to consider all costs incurred by network providers along with non-network options including embedded generation. Efficient location of new generation will require the consideration of the costs and benefits of particular locations.

Many forms of renewable energy generation are intermittent in nature and variations in output must be managed using balancing mechanisms and through network ancillary services. These services are typically provided by conventional baseload generators, such as coal-fired generators. Gas turbine plant is not especially efficient at providing such services due to a material deterioration in thermal efficiency when operating below a maximum continuous rating. Consequently, the displacement of baseload coal-fired generators, due to the price of emissions, is likely to result in suboptimal operation of the plant which may limit its ability to contribute as a balancing generator and/or ancillary services provider. This will also have broader reliability implications for the system.

Even in perfect markets there are considerable lead times in the planning, permitting, construction and commissioning of large infrastructure projects. Should there be any imperfections in the supply of capital, labour and inputs, or in the regulation of the industry, then the security of Australia's electricity system could be jeopardised given its efficient system reserve capacity. Australia's system reserve capacity is designed to deliver an optimal energy cost in the current market environment – but is low compared to international comparators. In 2007-08 the NEM-wide system reserve was just 10% compared to the world benchmark of 15%. Based on median load forecasts, planning reserves will fall to 8% by 2010.[1]

The most effective way to manage these potential risks is not to delay or abandon the development of an ETS – this would only serve to increase investor uncertainty. A modest national emissions abatement target for 2020 is required as this would provide a smooth transition for the energy supply industry and allow the wider economy greater opportunity to adjust to one of the most fundamental structural adjustments ever applied by fiat.

A smooth transition could also mitigate some of the immediate negative impacts on coal-fired generators.[2] However, even with a smooth transition, a number of these plants would still need to close while others would need to substantially reduce their production to meet even a modest emissions abatement target. To ensure a smooth transition to a low emission economy and to secure future investment in a lower emission energy supply sector, those generators that suffer significant value reductions as a result of the introduction of the ETS should receive structural adjustment assistance.

Electricity markets

Electricity markets are remarkably complex due to the fact that electricity cannot be economically stored. The NEM is not an organic market but rather a compulsory spot market which is underpinned by a large volume of rules and regulations for its operation. The NEM can be volatile and occasional price spikes are necessary to provide sufficient returns to generators in the long-run and signal the need for new investment. As a consequence, generators and retailers rely heavily on hedge contracts and related financial instruments exogenous to the NEM, to ensure stable and secure revenue and, in turn, stable and secure supply. The SWIS is also a product of government design but it is a net pool capacity market, with a heavy reliance on bilateral contracts.

An emissions trading scheme is artificial in nature and the combination of two government designed markets should not be assumed to be seamless and to naturally follow the principles of market economics. The introduction of the scheme, without an adequate level of assistance will result in the write-down of the accounting value of a large number of existing assets. The substantial write-down of assets could have a significant destabilising effect on each of the electricity markets.

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[1] Simshauser, Nalder & Rolfe "Survival of "the pack" - on emission permit allocation policy, reliability of supply and incumbent power generators in Australia", June 2008.

[2] Full banking of emission permits could challenge the delivery of a 'smooth transition' as discussed later in the submission.

The write-down of generation assets will trigger provisions in financing arrangements and in some cases will result in borrowings becoming re-sized and either immediately repayable or repayable at a much earlier date. Alternatively, the borrower may be given a period of time to convince financiers that the facility ought not be cancelled, failing which, the borrowings would become repayable. This could cause retailers and other counterparties to withhold payment to a generator under a hedge/bilateral contract as detailed below.

In addition, a number of assets have project finance-sourced debt facilities in place (from Australia and international sources) and a number of these [estimated at $3 billion to $4 billion] are expected to need refinancing by the end of 2010. These power plants will slide into financial distress if this is not secured and the lending appetite could be dependent on the treatment of coal-fired generators under an emissions trading scheme.

Most hedge/bilateral trading is done under standard agreements where generators are usually the sellers and retailers the purchasers. The standard agreements under which the hedges are written also typically have "trigger points" that exist during the term of the hedge. The trigger points often include:

- credit rating downgrade;
- creditworthiness or "materially weaker" tests;
- default on payment or provision of credit support;
- administration or liquidation;
- acceleration of the due date for repayment of other indebtedness;
- cross-default with other creditors and hedge counterparties; and
- change of ownership.

The occurrence of a trigger point under a hedge agreement usually gives the other party at least three alternative courses of action: suspension/withholding of payments; request for additional credit support; and early termination of all existing hedge transactions with the affected counterparty.

The right to suspend or withhold payments is one which is often able to be implemented quickly and without further notice. In the electricity sector, it is most common for the hedge counterparties to have a second-ranking or unsecured position, so the ability to manage and withhold payments under the hedge agreements is an important credit management tool.

The suspension of payment to one participant in the NEM or SWIS could quickly cause problems throughout the market, thus leading to a systemic failure.

For example, if a retailer withheld hedge/bilateral payments to a generator due to concerns about the generator’s credit worthiness then this would exacerbate the generator’s credit issues and likely cause other counter-parties to withhold payments.

The generator could then be forced into liquidation which would cause it to default on all its hedge/bilateral contracts. All retailers contracted with this generator would then be unhedged or, in WA, without a contract for supply and an obligation to source new capacity credits for its individual reserve capacity requirement.

This would result in a number of retailers being exposed to the spot market.

If greater exposure to the spot market occurred in either the NEM or the SWIS, at a time when the spot market was already under stress and prices were volatile, these exposed retailers could default on spot market payments. In particular, high spot prices in the NEM are more likely when a generator is unhedged. In this event, the first remedy would be to call upon bank guarantees and letters of credit lodged by the retailers. These are substantial guarantees, typically covering about 45 days of consumption (70 days in the SWIS). If the guarantees and letters of credit were not immediately replaced, NEMMCO (or the IMO) would have the right to suspend the retailers from the NEM (SWIS) and effectively force a transfer of their customers to other retailers in the market (the retailers of last resort). In the NEM, the retailer of last resort would then inherit the unhedged spot market position of the defaulting retailers and would be required to meet the guarantee commitments for its new customers inherited from the defaulting retailers. This would create major issues for the retailer of last resort – with the real potential for cascading default and systemic failure of the electricity market.

Electricity market implications for an ETS

In this context, the introduction of an ETS could present a number of challenges for the electricity market and hence the reliability of electricity supply if not carefully implemented. There are a number of critical design features, however, that would assist the electricity markets and promote a smooth transition to a lower emission energy supply system:

- A modest interim target for 2020. To ensure a smooth transition to a low emission energy supply system, a modest interim target should be set for 2020. This would mitigate some of the immediate negative impacts on coal-fired generators and improve the prospects for security of supply until there is sufficient new investment in lower emission generation.

- Early announcement of the ETS cap and trajectory. To enable generators to write future hedge/bilateral contracts, the emissions cap and trajectory needs to be announced as soon as possible and permits made available. Currently, there are very few hedge contracts being offered beyond June 2010 because the cost of greenhouse gas emissions is unknown. This uncertainty is also inhibiting the formation of bilateral contracts in the SWIS.

- Complementary auction design. Full auctioning (that is, 100% charge on all emissions) will require generators to purchase and surrender approximately 200 million permits annually. In addition, generators will also need to purchase ahead to support forward contracts. Depending on the emissions trajectory, generators may need to hold permits well in excess of $10 billion. This will significantly increase working capital requirements and exacerbate costs to meet prudential

requirements. To manage this, auctions should be held regularly and for a stream of future years. Flexible settlement terms should also be available to enable better management of reduced cash flows and to reduce the need for additional credit support. The increase in wholesale electricity costs, resulting from the scheme, may also create a significant step change to the quantum of capital or guarantees required for meeting the NEM/SWIS prudential requirements for all generators and retailers further exacerbating cash flow issues.

- Adequate direct structural adjustment assistance to coal-fired generators. Insufficient assistance is likely to result in an immediate reduction in generators' credit ratings and/or breaches of financial ratios (due to the immediate loss in asset value). At the very least, a number of generators would be unable to meet the prudential requirements of their Australian Financial Services License and would be unable to trade. In addition, for many of those generators it could also trigger a revision by financiers and/or result in the suspension of payment under hedge contracts as the generators would be unlikely to meet any requests for additional credit support (particularly the large working capital impost of an ETS). This may result in a series of financial defaults throughout the market. These events could significantly undermine investor confidence in energy markets and result in a reduced number of potential investors in the Australian energy sector for future developments, including low emissions plants. Higher hurdle rates would apply to any new investments that did occur due to increased risk premiums. This would in turn increase retail energy prices.

- Removal of retail price regulation. Retail price regulation would prevent retailers from passing on higher wholesale energy costs in a timely manner. Retailers could therefore experience significant losses and be unable to contract forward with the remaining generators, forcing their eventual exit. Systemic failure or financial distress among major retailers would increase volatility and risks in the energy market (which would cascade through to business consumers) and undermine reliability and security of supply.

Preserving Australia's reliable and internationally competitive energy supply, while transitioning to a low emission economy, must be a primary objective for an ETS. Electricity generation will account for approximately 50% of the emissions to be covered by the proposed ETS. The Energy Industry therefore considers that the design of the ETS should pay particular attention to the potential impacts, as detailed above, on the physical and financial electricity markets.

Carbon Pollution Reduction Scheme – Chapter One

The Energy Industry welcomes the Government's Green Paper outlining the design of the proposed Carbon Pollution Reduction Scheme (the scheme). The proposed design appears to contain, at least in-principle, many of the key features of an ETS that would efficiently and effectively reduce emissions and achieve a smooth transition in the short-medium term. However, in some instances, the critical design features highlighted in the previous section could be better implemented within the proposed scheme and our comments are to this effect.

It should be noted though that in the absence of any quantification of the critical scheme parameters – such as targets, trajectories, and transitional measures – it is difficult for the Energy Industry to offer definitive comment. On this note, the Energy Industry is concerned that the delay in the release of the modelling may not allow adequate time for thorough consultation before concluding views for the White Paper. While the industry does not support delaying the scheme, the Government should ensure that there is sufficient meaningful consultation with industry prior to Cabinet consideration of the key elements of the White Paper.

The Energy Industry supports the suggested design criteria, noting that their individual weightings will continually vary dependant on the issue being considered. However, it will not be possible to meet these eight criteria (particularly environmental integrity, economic efficiency, minimisation of implementation risk, maintaining competitiveness and fairness) unless Australia's reliable, secure and competitively priced energy supply is maintained during the transition to a lower emission economy.

An efficient, smooth transition for the energy supply industry is inextricably linked to an efficient, smooth transition for the wider Australian economy. Any system failures or excessive costs and price volatility in the energy supply system will create social and economic pressures that are likely to undermine the long term environmental integrity of the scheme.

Existing state-based schemes represent a patchwork of highly disparate and fragmented policy measures. These arrangements do not lead to least-cost abatement and their inefficiency is ultimately born by energy consumers and the community generally. Such schemes should be transitioned to allow the scheme to operate efficiently. This matter is discussed further below in the sections *Household assistance measures – Chapter Eight* and *Transitional issues – Chapter Twelve*.

Coverage – Chapter Two

An efficient and effective ETS should cover all six greenhouse gases and all significant greenhouse gas emitting sectors, sources and sinks. Sectors should only be excluded where it is clearly demonstrated that the benefits of doing so exceed the costs, economic distortion and inefficiency associated with limiting coverage. To minimise distortion, any excluded sectors should face emissions constraints at least equal to the covered sectors through alternative policies.

The proposed coverage in the Green Paper reflects the need to include all major emitters, where the costs of participation do not outweigh the benefits. On this basis, stationary energy, transport, waste, industrial and fugitive emissions are identified as sectors to be included at scheme-outset.

<u>Agriculture</u>

The Green Paper suggests that agriculture may not be easily included due to the diffuse nature of emissions from this sector. The Green Paper acknowledges that inclusion of agriculture is desirable by 2015, but proposes to defer this decision until 2013. The agriculture sector is a large emitter of greenhouse gases, accounting for

more than 15% of Australia's emissions profile.[3] On this basis, the Energy Industry considers that an incentive to reduce greenhouse gases is of considerable importance for this sector and Australia's emissions reduction task. This incentive would preferably be in the form of scheme coverage. However, if the sector is not covered, it should at least be exposed to a policy setting that provides incentives to create offset credits, recognised under the scheme, to lower the cost of abatement for all emitters.

Transport

The ultimate intention of an ETS is to ensure covered sectors are exposed to a cost for every tonne of CO_2-e emitted and that this cost is internalised in the goods and services provided. The Energy Industry is concerned by any proposition that would result in the inability to competitively pass this cost on, or that would suppress the carbon cost through consumer subsidies.

The proposed excise offset for liquid fuel prices conflicts with the design principles by undermining the economic efficiency of the scheme. Removing the price signal from the scheme will stymie potential emission reductions by this sector. Conceptually, subsidising any covered sector will result in a greater obligation on other covered sectors and increase permit prices.

All transitional assistance measures that are provided to help affected groups adjust to the introduction of the scheme should be structured to minimise distortion and maximise economic efficiency. In contrast to the proposed liquid fuel excise offset, the Energy Industry notes that the general approach proposed for assisting households through increasing income support and energy efficiency (see household assistance measures below) endeavours to retain the emissions price signal while offsetting this increased cost. While this approach may still diminish the impact of an emissions price signal, it remains preferable to a direct cost offset. A similar approach would be preferable for liquid fuel consumers.

SF_6

The Green Paper proposes the scheme will cover synthetic greenhouse gases including sulphur hexafluoride (SF_6) which is a major component of circuit breakers, switchgear, and other electrical equipment, often replacing oil filled circuit breakers that contained harmful PCBs. This equipment is not designed to emit SF_6, but this can occur through leakage.

Bulk importers of synthetic greenhouse gases or equipment containing these gases would be liable for these gases, regardless of the timing of actual emissions. The Energy Industry considers that to require permits to be surrendered for SF_6 gases that have not, and may never be emitted, is an abstraction and a disproportionate direct cost to electricity consumers. Accounting for this gas should be reflective of actual emissions. As such, liable parties should only be required to surrender permits when SF_6 has been emitted during a compliance period.

[3] Department of Climate Change, National Greenhouse Gas Inventory, http://www.climatechange.gov.au/inventory/2006/index.html accessed 14 August 2008.

Carbon market – Chapter Three

Nature of pollution permits

The Green Paper proposes to create, by legislation, a single pollution permit unit known as an Australian Emission Unit (AEU) that would be real personal property and represent 1 tonne of CO_2-e. Permits would be freely tradeable, uniquely identified, vintage stamped representing the first year they could be surrendered, and not subject to expiry. There would be no power to extinguish permits without compensation (unless there had been fraud or misrepresentation).

The Energy Industry is supportive of the proposed nature of the permit, as it creates a well defined, secure property right. The proposition that permits could not be extinguished by government without compensation is also supported. However, the definition of a 'compensatable' taking must include changing scheme caps or gateways. This would add credibility to the scheme by severely limiting the Government's ability to interfere in the market outside the defined flexibility of the gateways. There may be difficulties in valuing the impact on permit holders and liable entities of the Government taking and extinguishing permits as the scarcity value of all other permits, along with the costs faced by liable entities, will be altered.

The preferred position that permits would be classified as a financial product is not supported by the Energy Industry. As a legislatively created instrument, issued by the Government, classification under the *Corporations Act* would not necessarily provide any greater degree of assurance or penalty for misconduct. Many liable entities would need to obtain a licence if permits were a financial product, and other liable entities with an existing licence would need to seek a variation. In addition, the approach of not classifying permits as a financial product would be consistent with existing instruments of a similar nature, including Renewable Energy Certificates and the EU ETS allowance unit.

Information disclosure

The regular and transparent publishing of information by the scheme regulator will play a significant role in contributing to the efficient operation of the permit market. The Energy Industry considers that the scheme regulator should publish:

Scheme parameters:

- Scheme cap for each compliance year.
- Number of free permits.
- Number of permits to be auctioned for each compliance year.

Individual auction parameters:

- Number of permits offered by compliance year.
- Reserve price for each vintage auctioned.

Individual auction results:

- Number of permits cleared.
- Clearing price.

Compliance year outcomes:

- Number of permits surrendered.
- Vintage of permits surrendered, including borrowed permits.
- Overall shortfall, if any.
- Nature and extent of non compliance.

Data and information publication will play a crucial role in allowing liable entities and other scheme participants to form rational views on prevailing demand and supply. It is suggested that this market-relevant information be published in a frequent and timely fashion to assist scheme participants.

Banking and borrowing

To assist liable entities to make least-cost decisions over time, the Energy Industry supports the design feature of permits being bankable. However, allowing banking is likely to result in a permit price that not only reflects current scarcity but also the discounted value of future scarcity. This must be carefully considered when setting scheme caps and gateways, as moderate initial scheme caps would not translate into moderate starting permit prices, if the market is aware that scarcity will increase rapidly with time.

The ability to borrow a limited quantity of forward vintage permits to meet a current liability is supported. This will reduce the risk of inadvertent non-compliance with scheme obligations. The decision on limitations should be made in conjunction with other key elements, including the scheme cap and the limitations on the use of international units. The Energy Industry considers that in the initial years of the scheme, and until liquid secondary markets are available, an increased percentage of borrowing should be allowed to assist in a smooth transition for all covered sectors.

Price cap

The policy intention behind the proposed scheme price cap is quite unclear and further articulation of the government's motivation is required before the Energy Industry can provide meaningful comment.

A price cap can act as a safety valve to ensure that the cost to the economy is not excessive. In its simplest form, this would represent a tax on emissions set at a level potentially unrelated to the emissions trajectory. This type of price cap/tax would not guarantee that the environmental benefits of the scheme would be achieved and may

delay investment in low emission technologies. However, a tax could be applied to all sectors and would be a certain cost to business potentially reducing complexity.

However, a price cap can also be set such that the chosen emissions trajectory is delivered but the cost of abatement to the economy is not excessive through the use of additional international flexibility mechanisms. This type of price cap can be structured as either a shortfall charge set above the expected marginal cost of abatement – where participants pay the shortfall charge rather than purchase permits at high prices – or where the Governments agrees to issue unlimited permits at a price above the expected marginal cost of abatement. In both instances, the Government would use the revenue to purchase the additional abatement from international markets. Under this approach, with full banking, there would be an incentive to bank the permits and pay the shortfall charge so that the permits could be used once the price cap was removed. However, if banking was restricted and the price cap still bound regularly then the Government's expectation of the marginal cost of abatement for a chosen trajectory is either wrong or there is an issue with scheme design.

Alternatively, a price cap can be set so high that it is punitive in nature and operates as a scheme penalty for non-compliance. While the Green Paper proposes a price cap in the initial years (rather than a penalty) it also suggests that the cap would be set so high that the probability of its use would be very low. This would suggest that the price cap would be punitive in nature and, in practice, represent a penalty rather than a price cap.

The Energy Industry would welcome the opportunity to work with the Government in articulating the role and operation of the price cap. In particular, the industry could provide the Government with assistance in determining a methodology for setting the price cap.

The Green Paper seems to suggest that the price cap would not include a make good provision, which the Energy Industry would support, but again this is not clearly articulated.

Existing contracts

The implications of the scheme's introduction on existing physical supply contracts are of particular concern to the Energy Industry. The existence of non-reviewable contracts in the NEM, and the bilateral contracts structure of the SWIS, will pose considerable challenges for adequate cost pass through and recovery. This issue will also apply to gas pipelines as many contracts in the industry predate the fundamental policy shift that will occur with the introduction of the scheme. Consideration of these contracts will contribute to the stability of electricity and gas markets and assist in a smooth transition for market participants.

The National Electricity Law and National Gas Rules, along with individual retail price regulation regimes, will also need to ensure that any prudently incurred scheme related costs are included in pricing determinations.

Emission targets and scheme caps – Chapter Four

The Green Paper depicts in effect a two-tiered system of targets for Australia. Firstly, there is a national target which covers all of Australia's emissions. For the period 2008-2012 this has been determined by the international negotiations under the Kyoto Protocol. Future national targets are also likely to be determined by an international negotiation process. With the introduction of the scheme, there will be a second target – the scheme cap, which in the initial years will be a subset of the national target as not all sources of emissions will be covered by the scheme.

Setting scheme caps and gateways

The Energy Industry recognises that the setting of scheme caps and gateways requires a balance between the criteria of economic efficiency and policy flexibility to allow the Government to respond to changes in scientific knowledge and international commitments.

The Energy Industry supports the approach to setting the national targets and scheme caps, including the use of gateways beyond the scheme caps. However, the proposed timeframes for the scheme caps and gateways do not appropriately balance certainty and flexibility.

The Green Paper proposes arrangements that would result in a 15-year window of scheme caps and gateways, declining to ten before being extended to 15 once again. This is an inadequate timeframe for planning long-lived, capital intensive investments. The Energy Industry considers that as a minimum, annual scheme caps should be set for a 10-year period that is extended by one year, each year. The proposition of 10-year gateways is supported as it then makes for an effective 20-year view of scheme caps and gateways. However rather than allowing the gateway to contract to five years before the next gateway announcement the gateways should also be extended by one year, each year. In addition, the gateways should provide for some flexibility but not be so wide in upper and lower bounds as to render them meaningless.

The Government is the only entity that can commit Australia in international negotiations and, therefore, the Government should bear the risk of future scheme caps and/or trajectories being inappropriate. If the Government enters an international agreement that requires it to reduce emissions below the scheme caps or gateways, it should purchase the required abatement on the international market.

Timing of announcements

Timely establishment of national targets and scheme caps, together with indicative trajectories and scheme gateways, is paramount to achieving the scheme's objectives of reducing emissions in the most flexible and cost effective way. The scheme caps and gateways should be announced as soon as practicable and at least one year before scheme commencement.

Australia's Kyoto commitment period will overlap with the early years of the scheme and the initial scheme caps should be relatively easy to determine. The Energy

Industry considers that the timing of scheme cap announcements should be brought forward and aligned with the end of 2008 announcements regarding the medium-term national target.

Independent setting of scheme caps and gateways

The establishment of national targets and trajectories is entirely a responsibility of government. However, the ongoing scheme caps and gateways should be determined by the scheme regulator using a rules-based, transparent, decision making process. To provide certainty, scheme cap decisions should not be subject to annual ministerial or parliamentary review.

Reporting and compliance – Chapter Five

For the scheme to operate efficiently, market participants will need to have confidence in the accuracy of emissions reported and have timely access to the compliance data. As such, the procedures for reporting emissions and complying with scheme obligations will play an important role in supporting the market.

Emissions measurement

The Green Paper proposes that the majority of reporting requirements for the scheme will be facilitated by the National Greenhouse and Energy Reporting System (NGERS). The Energy Industry is supportive of utilising the NGERS infrastructure as the primary reporting regime, in the interests of reducing the costs associated with reporting and compliance. It is noted, however, that NGERS was developed to meet a range of needs and contains provisions that are not relevant to an emissions trading scheme. Furthermore, the financial implications associated with reporting under the scheme are significantly greater than previously envisaged under NGERS.

Differing expectations across the covered sectors with regard to estimation methodologies may introduce competitive advantages or disadvantages in the scheme market. The Energy Industry considers that sector-wide expectations on emission estimation methodologies should reflect the principle of continuous improvement, as embraced by the Generator Efficiency Standards, and be aimed at harmonisation in the medium term. Furthermore, while it may be acceptable to allow a reporting method to be utilised for up to four years, liable entities should not be allowed to regress in estimation methods once the four year period has concluded.

The Green Paper suggests there is a need to further investigate the extent and reliability of gas composition analysis across Australia as it pertains to pipelines, before higher order methodologies can be imposed. The Energy Industry welcomes the opportunity to contribute to any investigations into gas composition analysis and be involved in the development of a higher order methodology.

In addition, the treatment of fugitive emissions (gas, coal and petroleum) needs to be clarified.

Frequency of reporting

The Energy Industry considers that the scheme regulator should be charged with the responsibility of publishing annual compliance data, as early as practicable, after the 31 October submission deadline. To improve market transparency and improve forecasting of supply and demand for permits, data should be published at the facility level.

The NEM and SWIS provide electricity generation data at half hourly intervals, 365 days a year. Given the emissions intensity of the various electricity generators is well known, assessment of expected permit demand for this half of the permit market will be relatively straightforward. However, for other sectors within the scheme, equivalent market data may only be available once a year and after the end of the compliance period.

To provide greater transparency in both the primary and secondary permit markets, the Energy Industry considers that, in addition to the annual compliance report due 31 October, there should be quarterly reporting of expected emissions by all liable entities. There is clearly a trade-off between greater transparency and increased compliance costs and, as such, the quarterly reports should not be subject to the same assurance processes as the annual report.

The Energy Industry observes that many liable entities under the scheme will not previously have been exposed to such business management issues. Provisions will need to be made to ensure organisations are aware of this aspect of their commercial practices and that appropriate procedures are introduced to eliminate potential for illegal trading based on insider information.

Liable entity

The Green Paper proposes to align the liable entity under the scheme with the liable reporting entity for NGERS. Under NGERS, the entity with operational control is regarded as liable to report annually on greenhouse gas emissions associated with all facilities it operates that exceed the reporting threshold. This operational control approach may be appropriate for environmental reporting but it is not immediately clear that it will be suitable in all circumstances for defining the financial liability to surrender permits for emissions under the scheme.

For many covered facilities, operational control may continue to be the appropriate default point of liability; however for others it may result in unnecessary risks, contractual complexity, and inefficient transfers of permits between owners and operators. One potential approach to improve this would be to allow the owner, or other entity with an appropriate direct commercial interest, to be nominated as the liable entity for a facility that will be liable under the scheme. A nominated change to the liable entity would be subject to the consent of all relevant stakeholders.

The Green Paper also proposes to align with NGERS in aggregating the liability for facilities within controlling corporations. There is no detailed discussion on the justification or risks associated with this proposal. It is appreciated that for the purposes of NGERS, the reporting obligation is justified by the policy intention to

have companies report energy use and emissions from small sites and subsidiaries that do not trigger individual thresholds. However, for the purposes of the scheme where there are real financial implications, and given that Scope 2 emissions are not relevant, there is no prevailing policy intention that requires the aggregation of facility liabilities within controlling corporations under the scheme.

Such an approach will have significant ramifications for project financing and investment structures, and introduces unnecessary new risks for existing investors. The Energy Industry considers that the point of liability should be consistently focussed at the facility level, except where upstream acquittal is required for practical reasons, and does not support cross-subsidy of carbon liabilities across portfolios.

Third party assurance

The Energy Industry notes that both the existing Mandatory Renewable Energy Target (MRET) Scheme and the proposed New Zealand ETS have adopted a model of self assurance. The Energy Industry considers this model to be preferable to minimise the administrative costs of compliance. To ensure accurate reporting, emissions should be subject to periodic audits and third party assurance should only be required on an exception basis, where the scheme regulator has reason to suspect the self assurance approach has failed for an entity.

Powers of the scheme regulator

The scheme regulator will require a range of powers to administer the scheme and ensure compliance. These powers should be clearly stipulated in the governing legislation with appropriate limitations. Where the scheme regulator imposes a compliance audit, the cost of that audit should not be born by the liable entity, unless the audit reveals fraudulent practices. Furthermore, in the interests of industry-stability, there should be statutory limitations regarding the timeframe in which fraudulent reporting can be pursued, similar to the Australian taxation system.

Permit surrender

The Energy Industry supports the acceptance of permits for surrender throughout the year, to assist liable entities with their accounting. At the completion of the compliance and reporting period where it is found that permits have been over-surrendered, they should be reinstated to the liable entity's registry account. Voluntary surrender, that is, surrender of permits by non-liable entities under the scheme, is not supported. Allowing voluntary surrender could result in unintended exposure of the Australian scheme to international markets. It is conceivable that an overseas scheme could rule that Australian permits are an acceptable instrument for compliance purposes, leading to new entrants in the Australian market buying and surrendering permits for other purposes.

Linking the scheme to international markets – Chapter Six

The Green Paper proposes a cautious approach to international linking, suggesting that initially the scheme would feature linking on a one way basis only. Provided Australia is not disadvantaged by its participation, the Energy Industry considers the

scheme should be linked to complementary international schemes that lower the cost of abatement. This will be particularly important to manage the cost of the scheme in the absence of a binding international agreement and if an effective price cap is not instituted.

The principle of supplementarity in the Kyoto Protocol compels Australia to firstly act domestically to reduce emissions and utilise international mechanisms only as a secondary substitute. Any limitations on the use of international mechanisms should be announced early and simultaneously with scheme caps as they will be a critical determinant of the emissions price.

It is acknowledged that the long-term eligibility of Kyoto mechanisms is subject to international negotiations. In the interim, the Energy Industry considers that all units created by the Kyoto Protocol should be acceptable under the scheme, to assist Australia to meet its emissions target at least-cost.

Australia is a leader in the progression of monitoring and measurement of reduced emissions from deforestation and forest degradation (REDD), as evidenced by the March 2008 Forest Carbon Partnership with Papua New Guinea.[4] The Energy Industry considers that REDD could be included at scheme commencement, as an eligible instrument subject to the same quantitative limitations as the Kyoto mechanisms, to assist in achieving the scheme caps at least cost and encourage wider-acceptance of these sinks.

The long-term objective of full international linking within an effective global emission constraint is potentially many years from reality. The Energy Industry is therefore supportive of the Green Paper's measures to limit potential for Australian permits to be exposed to international markets. Any linking to other permit markets should proceed with caution, noting the risk that unintended exposure may place undesirable and unnecessary upward pressure on Australian permit prices. As noted in the *Reporting and compliance* section, allowing voluntary surrender of Australian permits could jeopardise this objective.

Auctioning of Australian carbon pollution permits – Chapter Seven

The Energy Industry is supportive of the long term objective of moving towards 100% auctioning of permits after sufficient allocations have been made. The profile to attain 100% is however important to both strongly affected and emissions-intensive trade-exposed industries.

Given the importance of permit auction design to the Energy Industry, the NGF engaged Frontier Economics (who worked with Professor Jeff Borland (University of Melbourne)) to assist in understanding the implications of the Green Paper proposals. The report considers the dual objectives of market efficiency and participant risk management. However, it provides only a high level assessment of the proposals (due to the short timeframe provided for comment) but identifies areas that require further analysis. A copy of the report is attached.

[4] Prime Minister of Australia media release *Papua New Guinea – Australia – Forest Carbon Partnership* 6 March 2008.

Given the complexity of the auction design issues identified in the Frontier report, the Energy Industry would prefer that the White paper (and the draft legislation) refer to general principles only. Issues of detail (such as frequency and reserve prices) could be developed at a later stage following further analysis and consultation with key stakeholders.

Cash flow management and the role of secondary markets

The Green Paper considers the absorptive capacity of the market and recognises the potential for cash flow management issues for the covered sectors. It goes on to note that the EU ETS secondary markets developed swiftly and that the Garnaut Review has suggested financial services will evolve quickly to assist the Australian permit market. The Energy Industry considers that these conclusions may be dismissive of the importance of the physical primary market.

In the first phase of the EU ETS, liable entities received the vast majority (94%) of their permits for free (that is, in the physical primary market). Not having to raise new and significant funds for permits, liable entities had confidence to commence trading and take positions in forward markets – the “deep and liquid” secondary markets referred to in the Green Paper.

In contrast, liable entities in the Australian scheme could have to buy most of their permits from the primary market at considerable expense. Accessing credit facilities of this dimension will be difficult, if not impossible, given current credit conditions and will be further hampered by potential asset impairments.

The Green Paper suggests that the secondary market should solve many of these cash flow issues by providing a range of products including loans secured against permits held; forward derivatives; and futures contracts.

However, this does not deal with primary market issues, and access to these products for the electricity generation sector will rely on financial intermediaries with significant cash reserves making these products available – thus creating an additional market risk which market participants cannot control. Financial intermediaries may not make these products available in the short-term because:

- Financial intermediaries will be cautious in a new market until price volatility and liquidity are better understood.

- Financial intermediaries are reluctant to offer derivative products to non-investment rated entities. Of the generation participants in the NEM, only six have a public investment grade rating, and there is a real risk of deterioration under proposed arrangements.

- There will be a significant reduction in the creditworthiness of existing coal-fired generation businesses due to the write-down in asset values created by the introduction of the scheme.

- Cash margining on futures creates significant cash flow risks for businesses. This is illustrated by the electricity futures contracts that, despite significant

liquidity, are not used by most NEM generation businesses for hedging purposes.

- All secondary markets take time to develop and liquidity does not occur overnight. In fact, the CEO of NEMMCO recently suggested that a liquid carbon market could take up to ten years to develop.

The electricity generation sector could need to hold over $10 billion worth of permits to maintain current 3-5 year ahead hedge positions. It is unlikely that financial intermediaries will offer credit lines of this scale to a sector with significant asset devaluations.

Relying on financial intermediaries to create the “deep liquid” market that is required is risky. Enabling the full participation of liable entities in the auction process would facilitate the successful commencement of the scheme. In particular, resolving these cash issues would improve liquidity in the secondary market by increasing the number of participants, maintain hedging activities in the electricity sector and reduce the transaction costs imposed by financial intermediaries.

As discussed in the *Energy supply system and an emissions trading scheme* section, complementary auction design is critical for the continued efficient operation of the electricity markets. Flexible settlement terms should be available to enable better management of reduced cash flows and to reduce the need for additional credit support. The Energy Industry observes this flexible settlement system could work in a similar way to current taxation arrangements where corporations pay tax after a period of collection.

Auction design

The Green Paper proposes an auction structure and schedule that is largely adopted from the Evans and Peck study commissioned by the National Emissions Trading Taskforce (NETT). As a pre-eminent investigation into permit auctioning, it highlights that both domestically and internationally experience to date is limited. Indeed the study found there is no international experience of auctioning more than 5% of permits in comparable schemes. Notably, while the Evans and Peck study and the Green Paper both conclude an ascending clock auction is the preferred model, the Regional Greenhouse Gas Initiative in North America is implementing a sealed bid, single round auction model for its cap and trade scheme, following recommendations of a study that featured laboratory style auction simulations.[5]

The market benefits of an ascending-clock auction are recognised, as it presents an open and transparent process for price discovery. However, an ascending clock auction is more complex in design and resource intensive (that is, intra-round bidding) relative to a sealed-bid auction. These costs are not considered in the Green Paper and should be incorporated as part of the assessment process, particularly if auctions are run more frequently (refer to section on auction frequency). To ensure a thorough assessment of the different options, an experimental investigation, and potentially paper trials, should be undertaken.

The Energy Industry considers that the auction model selected should deliver a uniform price for each vintage auctioned. Auctioning should also commence as early as practicable. The Australian Emission Trading Units market is evidence of the industry's appetite to commence trading in permits.[6]

Auction operation

The auction should be facilitated by the scheme regulator, implementing the broad policy design as set out in the legislation. Prior to each auction, the quantum, vintages and reserve prices (if applicable) should be published.

The Energy Industry notes that literature on this matter advocates for a reserve price to be set to reduce the incentives for collusion. While this result flows from the theoretical literature, further investigation is warranted given the proposed level of auction information that will be revealed to the market. If a reserve price is set, a clear methodology for setting the price would need to be established to avoid inefficiency.

Subject to prudential requirements, participation should be universal with settlement and permit delivery flexible. This flexibility would assist in cash flow constraints for entities, as previously identified, and withholding delivery would ensure the scheme regulator did not assume the role of a creditor. Permits foregone could then be re-auctioned. As permits are bankable they should maintain their value.

The Green Paper suggests that some form of financial guarantee would be required to ensure that only genuine bidders participate in the auction process. While the energy industry appreciates this concern, equally important are the cash-flow issues that can arise for participants. Creating such barriers to entry could reduce the number of auction participants and lead to a reduction in competition.

Double-sided auctions could be a low-cost means for selling previously issued free permits. However, participation in double-sided auctions should not come at the expense of a more liquid secondary market.

The proposition of an internet-based auction platform is supported. The platform could support proxy bidding, contain published information such as the quantum of permits available and ideally feature a training module, to allow prospective bidders to learn how to use the interface.

Auction frequency

The Green Paper provides a series of propositions regarding auction frequency and composition. The Energy Industry considers that quarterly auctioning, together with the annual issue of forward vintages, is insufficient for managing the risks of purchasing permits.

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[5] "Auction Design for Selling CO2 Emission Allowances Under the Regional Greenhouse Gas Initiative" www.rggi.org accessed August 2008.

[6] The AETUs market commenced trading in May 2008. Approximately 100,000 units (representing 1tCO_2-e) have now traded, with recent prices firm at $21.50.

If the cash settlement and creditworthiness issues could be resolved and a liquid secondary market was present, then the most efficient auction structure would be to have the bulk of the permits for all future years available as early as possible with only a small number of auctions conducted throughout the compliance year to accommodate “unders and overs”. However, in the absence of effective settlement and credit arrangements and a liquid secondary market, the Green Paper’s proposal for auctioning three-eighths of permits in advance seems a reasonable lower bound. More frequent auctions would be required (potentially monthly or even weekly) to better assist cash flow management. Further analysis on the trade-offs between more frequent auctions and the development of the secondary market is required.

The Energy Industry considers that forward vintage permit auctions should not be contained to three years. Indeed, to reinforce policy certainty and provide strong price signals for long-term investment purposes, forward vintages could be issued for every year in which a scheme gateway has been announced.

Household assistance measures – Chapter Eight

The auctioning of permits will raise considerable funds, depending on the volume of permits auctioned, and the scheme caps imposed. The Energy Industry supports the Green Paper’s commitment that all funds raised will be used to assist Australian households and businesses adjust to the scheme and pursue cleaner energy options through tax, welfare and energy efficiency measures. Identifying and removing the barriers to increased energy efficiency can be an important low-cost source of abatement that also assists consumers in their transition to the scheme.

<u>Emission cost pass-through</u>

For the scheme to operate efficiently and provide least-cost emission reductions, consumers must be exposed to the cost implications of greenhouse gas emissions.

The Energy Industry strongly supports the Green Paper’s proposition that households should not be shielded from increased energy prices, but rather any assistance provided should be through tax and income measures. Ensuring vulnerable customers continue to have access to energy and retailers are not exposed to increased levels of bad debt will require adequate compensation to low-income households through the welfare system. However, for the stability and viability of the energy supply system, and the efficiency of the scheme, it is important that retail energy tariffs rise to fully reflect the costs associated with the scheme.

Cost reflective tariffs are essential to the viability of energy retailers. Energy retailing is a low margin business; there is little or no capacity for retailers to absorb price rises. If retailers are unable to pass through higher wholesale energy costs in a timely manner they will face losses, be unable to contract forward and eventually must exit. Systemic failure or financial distress among major retailers would increase volatility and risks in the energy market and undermine reliability and security of supply and ultimately the longevity of the scheme.

Removal of retail price regulation

Electricity and gas tariffs are optimally set by competitive markets and the Energy Industry strongly believes that retail price regulation should be removed in all competitive markets immediately. Retail price regulation in competitive markets provides no benefits but imposes considerable direct and indirect costs.[7] Where competitive markets are not in place, and where jurisdictions retain inefficient price regulation despite competitive markets, it is vital that regulated tariffs are adjusted in a timely manner to fully allow for increased energy costs under the scheme.

The Green Paper refers to the Australian Energy Market Commission's reviews of the effectiveness of competition in the various Australian jurisdictions. However, this process is insufficient to ensure the removal of retail price regulation as there is no obligation on individual jurisdictions to remove retail price regulation even where the markets are demonstrated to be competitive. In fact, several State Energy Ministers have indicated that they will not remove retail price regulation even if their markets are shown to be competitive.

While the Government could directly subsidise energy retailers to shield consumers from the cost of the scheme, this would directly undermine the efficiency of both the energy markets and the scheme. Consumers can only respond to the emissions price signal to improve their energy efficiency if they are exposed to the real price increases that will flow from the scheme.

The removal of retail price regulation would lead to more flexible tariffs, improved demand side management (including peak summer demand), greater energy efficiency and consequently a lowering in the cost of reducing emissions. Price regulation, with its inherent inefficiencies and cross-subsidies, distorts efficient market outcomes and prevents efficient price signals reaching customers, including the emissions price signal that will be provided by the scheme.

Energy efficiency assistance

Energy efficiency will also play a significant role in assisting household adjustment. Some of the barriers and market failures identified in the Green Paper are likely to remain after the introduction of the scheme, including information asymmetry and split-incentives (the landlord and tenant dilemma). The Energy Industry is supportive of new and innovative policy to improve the dissemination of information, increase the energy efficiency of consumer goods, and educate consumers on energy efficient practices. These measures, coupled with the increased awareness of energy costs, will greatly contribute to households adjusting to the scheme.

However, the Energy Industry is concerned by the plethora of energy efficiency schemes that have been announced in the past twelve months, including the Victorian Energy Efficiency Trading Scheme, the South Australian Residential Energy Efficiency Scheme and the New South Wales Energy Efficiency Trading Scheme. The Energy Industry does not consider that an energy efficiency or "white certificate" trading scheme is the most efficient approach to addressing the barriers to energy

[7] 'The effects of retail price regulation in Australian energy markets' esaa 2007.

efficiency in Australia. Rather than pursuing unilateral measures, the Energy Industry encourages governments to focus on achieving an efficient, national framework of measures to complement an ETS through the Council of Australian Government (COAG) process. The Energy Industry acknowledges the Government's interest in rationalising Commonwealth programs, as evidenced by the commissioning of the Wilkins Review.

Assistance to emissions-intensive trade-exposed industries – Chapter Nine

The Green Paper proposes to provide assistance to emissions-intensive trade-exposed (EITE) industries. This assistance would address some of the impacts on competitiveness and attempt to limit the risk of carbon leakage.

The Energy Industry supports assistance to the sector that minimises the likelihood of distortions to the scheme while balancing the importance of providing some protection to those industries that are energy intensive and trade exposed. Not protecting EITEs would further exacerbate the negative impacts faced by the electricity generation sector by potentially removing a major source of electricity demand. However, this needs to be balanced by the fact that overly assisting a significant sector from the scheme increases the impost on other sectors covered by the scheme. Assistance should be subject to regular reassessment and a phased adjustment period in the event that international circumstances warrant the withdrawal of assistance.

The Green Paper proposes to provide assistance to EITEs to counter the impacts of increased electricity prices associated with scope two emissions (emissions associated with the generation of electricity consumed by the entity). The Energy Industry notes that some large EITE's have long term power purchase agreements with electricity generators that will not allow for the pass through of increased costs associated with the introduction of an ETS. Calculation of assistance for scope two emission costs should consider these direct contractual arrangements. As discussed previously, the scheme design should deal appropriately with non-reviewable contracts.

Strongly affected industries – Chapter Ten

The NGF will make a separate, more detailed submission on the issues effecting strongly affected industries. High level comment is provided in this section.

The Energy Industry includes the owners of large, emissions intensive facilities that have varying degrees of limited capacity to pass on emissions costs due to the price setting methodology used in the NEM. The Energy Industry is therefore supportive of the Green Paper's recognition of electricity generators as a strongly affected industry (SAI).

The proposed Electricity Sector Adjustment Scheme (ESAS) features three core elements:

- Support for development and deployment of carbon capture and storage (CCS) technologies;

- Assistance packages as required for workers, communities and regions; and

- Direct assistance to coal-fired generators.

The Energy Industry considers that the assistance proposed for each of these core elements justifies differing levels and sources of funding.

Given Australia's national interest in the development of CCS technology, funding for CCS development should reflect its whole-of-economy importance and should potentially be outside the quantum determined for the ESAS. In this context, it should be noted that the vast majority of coal and gas production in Australia is for export – the success of CCS technology is of greater significance to the continued operation of Australia's resource sector as opposed to the domestic electricity production sector. Embedded CO_2 in coal and gas exports is expected to be double the emission intensity of Australia's entire energy sector by 2010.

Rationale for direct assistance to coal-fired generators

As discussed previously, modelling for esaa indicates that to deliver a 10% reduction in emissions at 2020, along with a 20% renewable energy target, would require significant investment and transition in the energy supply sector. 6,700MW of mostly coal-fired generation plant would have to be closed prior to its business as usual life, with the value of many other generation facilities substantially reduced due to the significant cost of emission permits and reduced volumes of generation. Meanwhile, to meet electricity demand, 15,000MW of investment would be required in gas-fired and renewable generation.

Without direct structural adjustment assistance to coal-fired generators there could be serious implications for the short-term viability of the NEM due to the financial distress of a significant number of generators (as described in the first section of this submission - *Energy supply sector and emissions trading scheme*). The large impacts on asset values could trigger debt facility review events which in turn could lead to repayments or a credit rating downgrade, which could cascade to the suspension or withholding of payments under electricity hedge/bilateral contracts. This has the potential to undermine the financial stability of the whole electricity supply industry, with wider financial market implications.

More holistically, a failure to provide adequate assistance to significantly impacted generation assets sends a poor signal to future investors about the Government's willingness to make substantial policy change and strand electricity sector assets in the process. This would jeopardise the long-term efficient supply of electricity as it would increase the perceived risk of investing in the generation sector.

Uncertainty has an important effect on investment decisions particularly when these decisions cannot be reversed, or only at great cost. In this context, it is useful to distinguish between uncertainty and risk. Risk can normally be managed through mitigation measures but uncertainty presents a more serious informational problem, because it implies that the distribution of fundamental parameters determining the value of an investment is largely unknown. In the presence of uncertainty, investors worry that their investment could be stranded and will tend to factor in the option of

waiting for new information before making investment decisions. While uncertainty is a fact of life for investors, there are particular features of climate change policy that make investment uncertainty a significant problem of significant scale.

The scheme will fundamentally change the risk profile of electricity investments. The financial success of electricity investments will be highly dependent on the form and operation of rules and regulations of the scheme, which will be subject to change over time. In particular, there is likely to be significant and ongoing uncertainty over future targets and abatement pathways.

From an investment perspective, shifts in fundamental scheme parameters imply shifts in the price of carbon, and hence returns across various types of investments. Confidence in the likely direction of the regulatory arrangements is important for industries such as electricity where investment in assets is lumpy, and requires significant lead-time. This means even short periods of uncertainty can have significant effects on investment outcomes.

The provision of structural adjustment assistance can mitigate these effects. It is a demonstration by the government that it recognises that policy changes can cause shocks to investors and is a commitment to minimising the detrimental effects of uncertainty resulting from policy changes that are outside the control of investors. In providing structural adjustment assistance, the Government effectively imposes a cost on itself when it comes to making significant changes to scheme parameters. This in turn can encourage the Government to make any changes in an orderly way and with sufficient advance notice.

In addition, unless it is assumed that there is a substantial pipeline of new producers and projects that will come on line relatively quickly, the delivery of the abatement objectives is in part contingent on the decisions made by current asset holders. If these asset holders suffer substantial asset stranding, their investment decisions will be affected. Structural adjustment assistance will help to give existing asset holders confidence that their new investments are not likely to be subject to stranding risk. Finally, if existing asset holders are financially distressed, the provision of transitional assistance can help to minimise the impact such distress has on future investment decisions.

The Green Paper makes reference to the notion of forseeable regulatory change and the view that investors should have taken account of a carbon price risk in the discount rate applied to new investments.

Many of the existing coal-fired generators currrently supplying the bulk of electricity in Australia were built and commissioned more than two decades ago. For more recent investments and acquisitions, investors have had no empirical basis to make an assessment of carbon price risk as there has been no detail or information on the timing, form or level of a carbon impost. It is only in the last two or three years that the industry has seen actual detail on a possible national approach to emissions trading. As the Green Paper recognises, it was not until June 2007 that there was bipartisan support at the national level for a broad-based emissions trading scheme. Importantly, all of the national schemes that have been canvassed in recent years by

state and federal governments have accepted the need for offsetting assistance to high emission plant adversely impacted by the introduction of a price on emissions.

Quantum of assistance

The Energy Industry recognises that determining an appropriate quantum of direct assistance to electricity generators requires that a medium-term national target be determined along with the initial scheme cap and gateway. As discussed earlier, a moderate medium-term target will mitigate some of the immediate impact on electricity generators and support a smooth transition to a low emission economy.

However, in the absence of a medium-term target, the Energy Industry cannot offer any comment on the appropriate quantum of assistance in quantitative terms.

The Energy Industry does observe that structural adjustment assistance to electricity generators should be on the basis of reduced asset value, owing to the significant reduction or elimination of forward cash flow profitability that the scheme will cause. Minimising the reduction in asset values will contribute greatly to ensuring that future investment in the sector does not attract a risk premium. In this regard, the Energy Industry considers that it will be the scale and sum of individual asset losses, rather than the average loss across the sector, which will affect the risk attached to future investment, especially as individual asset losses reflects ownership and financing structure.

Form of assistance

The Energy Industry considers that the direct structural adjustment assistance should be provided to electricity generators that combust coal as their primary fuel source and that the NGERS classifications should consistently be applied to categorise coal-fired electricity generators. The assistance should also have the following features:

- Provided as free permits. Permits received can be auctioned in the two-way auction process in exchange for cash if desired and can also act as a natural hedge against movements in the permit price if held. A spread of permit vintages should be provided, to prevent direct assistance distorting the first-year vintage permit market. Cash may be more applicable for assets with projected short lives.

- Determined and delivered ‘upfront’, once and for all, on an asset by asset basis. Delivery of assistance prior to scheme commencement will allow the coal-fired electricity generators to commence participation with sufficient knowledge of their market position and prudential requirements.

- Provided without conditions. As the Green Paper recognises, conditions will distort market behaviour and frustrate the scheme objective of meeting emission reductions targets in the most flexible and cost-effective way.

The Energy Industry supports a post-scheme commencement review of the structural adjustment assistance to provide assurance to the Government that there have not

been any windfall gains. The scope and terms of the review should be subject to industry consultation and clearly articulated in governing legislation.

Tax and accounting issues – Chapter Eleven

The Energy Industry considers that the tax system should not introduce distortions to the scheme market, and the Green Paper's focus on cost effectiveness, simplicity and neutrality in relation to tax is welcome. In particular the Energy Industry endorses the proposal to create discrete provisions in the income tax law to provide uniform income tax treatment of permits for all taxpayers, increase certainty and reduce complexity.

GST

The Green Paper proposes that the normal GST Rules (i.e. taxation and credit) will apply to the treatment of permits, with the aim of avoiding complexity and minimising compliance costs. The Energy Industry considers that this approach would actually give rise to a number of costs and distortions and the preferable alternative would be to make permits exempt for GST purposes.

Application of GST to permits could:

- Impose significant additional financing costs exacerbating the impact of the scheme on cash flows. Usually the recovery of GST may involve claiming an input tax credit in the tax period following the one in which payment and invoicing occurred. Where large sums are involved, as will be the case for emission intensive businesses, this 'wash through' mechanism will impact cash flows and impose significant financing costs.

- Increase compliance costs as not all transactions may be subject to GST. As a result, it will be necessary for tax payers to determine whether or not a transaction is a taxable supply. For example, under the proposed rules the buying or selling of a permit will be a taxable supply, while import/export of permits may not give rise to GST liability or be GST-free.

- Create distortions in the market as not all transactions in permits may be subject to GST. Distortions would arise where any part of the potential market is not entitled to an input tax credit (for example, because it involved an investment activity).

- Create distortions in the treatment of international transactions and linkages. Potential price differentials and distortions in the market could be introduced in cases where non-residents do not exercise their entitlement to register to claim input tax relief in Australia.

The Green paper also signals the intent to allow for international trade in permits by linking to other schemes in the future. It should be noted that perhaps the most likely partner for linking, the New Zealand ETS, has decided to zero rate trading in emissions units for GST purposes. A key reason for this approach was to allow for international permit trade.

Tax treatment of permits

The Green Paper proposes that the cost of acquiring permits would be immediately deductable, unless the permit is banked in which case the deduction would be deferred until surrender or sale, and that proceeds of sale would be treated as assessable income. The Energy Industry considers that the proposed treatment is simple, clear and neutral. However, where the permit is held at the end of the financial year for surrender within six weeks of 30 June, the cost of acquiring the permits should be deductible in the previous income year.

However, this treatment does not readily translate to the taxation of free permits. The Green Paper's preferred position is that the value of the free permits be included in the taxpayer's assessable income in the year in which the free permits are received. When free permits are surrendered, the taxpayer may claim an offsetting deduction equal to the amount included in assessable income, resulting in a nil net tax liability. It is also proposed that taxpayers could still benefit from the above deduction if the first surrender date after receipt of the free permits falls in the next income year.

One key concern arising from the Green Paper's preferred position of recognising free permits as part of assessable income in the year of receipt is that a taxpayer may be subject to a tax liability but receive no offsetting deduction where free permits are "banked" and carried forward.

The Energy Industry's preferred approach would be to allocate a *nil value* to free permits which would reflect their historical cost. They would be treated as assessable on receipt but would be allocated a nil value. A nil value deduction would correspondingly arise on use.

Alternatively, in order of decreasing preference, the Energy Industry would support:

- *Matching recognition against the life of the underlying asset:* Under this approach the value of the free permits allocated to a taxpayer would be viewed as compensation for a permanent reduction in the value of the long-held structural assets of the taxpayer.

  The once off allocation of free permits would be treated as capital in nature. The value of the permits would be offset against the capital gains tax ("CGT") cost bases of such structural assets of the taxpayer. If the value of the free permits is less than the relevant CGT cost bases, this may have the result of deferring taxable gain until disposal of the underlying assets.

  Support for this approach may be gained from the approach applied in TR 95/35 Income tax: capital gains: treatment of compensation where, among other things, certain compensation wholly in respect of a permanent reduction in the value of post-CGT underlying assets of a taxpayer (where there is no disposal of such assets) may be considered to represent a recoupment of all or part of the total acquisition costs of the asset, reducing the assets' CGT cost base.

- *Defer income until free permit is used / disposed:* This approach is broadly the same as outlined above except that the intent is for recognition of the income arising from the receipt of free permits to be deferred until the permit is actually used or disposed. If so, then this approach may alleviate more timing mismatch concerns.

  Support for this approach may be drawn from the approach adopted in Subdivision 20-A of the Income Tax Assessment Act 1997 ("ITAA97"). (Very broadly Subdivision 20A introduces special matching rules for certain assessable recoupment of previously deducted losses / outgoings.)

- *Recognise free permit as income when available for use:* As outlined in the Green Paper, the recognition of the value of a free future dated permit would be deferred until the first year it is available for use at the value of the permit in that year.

Valuation methodology

The use of the rolling balance method for deferring deductions is appropriate. However, the Energy Industry considers that it is important that Tax Payers are allowed to make the choice between using historical cost or market value for valuing permits held in the rolling balance. This would be consistent with existing practises.

Stamp duty

The Green Paper does not directly address the issue of stamp duty. The Energy Industry considers that it is important to ensure that transactions involving permits are free from stamp duty in all States and Territories and that the Commonwealth should take a leadership position to deliver this. Any difference in treatment between jurisdictions would create unnecessary distortions and stamping permit transactions would reduce the efficiency of the carbon market.

Price cap

The Green Paper notes that the income tax law does not allow a deduction for the payment of a penalty under Australian law. The paper then concludes that penalties imposed under the scheme legislation, including the payment for failing to surrender sufficient permits, would not be deductible.

The Green Paper proposes a price cap mechanism to manage the economic risks to Australia associated with unanticipated very high carbon prices and seeks feedback on the form that this price cap should take. In this context, the price cap is a deliberate risk management feature of the scheme and participants would only opt to pay the associated fee if the prevailing carbon prices exceeded the threshold deemed tolerable by the Government. Therefore, opting to pay this fee in lieu of surrendering permits should not be seen as non-compliance with the system and the fee should be deductable. If the emission fee is not tax deductable, then the after tax cost of the emission fee should be considered in setting the appropriate fee.

Transitional issues

Transitional arrangements for existing schemes such as NSW Greenhouse Gas Reduction Scheme (and others as detailed below) should aim to avoid creating new tax events for participants and compensate for any unavoidable tax impacts that arise.

Broader tax neutrality

Distortions in the tax system that place exploration for geothermal and carbon sequestration resources at a disadvantage to hydrocarbon and mineral exploration should be removed.

Attempts by other sectors to use the introduction of the scheme as an opportunity to further distort the taxation system in favour of particular tax outcomes in not supported by the Energy Industry.

Transitional issues – Chapter Twelve

The Green Paper correctly recognises that introduction of the scheme is a whole of economy reform for Australia and all sectors will need to respond to both the subsequent costs and opportunities. The Energy Industry supports the proposed Climate Change Action Fund and its focus on assisting those activities that are not receiving assistance as an EITE industry or through the ESAS.

The Energy Industry welcomes the Green Paper's desire to conclude State and Territory programs with similar objectives that also apply to the energy sector. In particular, the Energy Industry considers that the NSW Greenhouse Gas Reduction Scheme, the ACT Greenhouse Gas Reduction Scheme, and the QLD Gas Electricity Scheme should be discontinued as the schemes should deliver their policy objectives. These disparate schemes have been a source of additional uncertainty to the industry for a number of years. The Commonwealth and relevant governments are urged to work cooperatively and provide adequate transitional assistance. Investments and contracts made in good faith under existing schemes to be transitioned or ended early should be fully compensated, on the basis of not penalising early movers.

Governance arrangements and implementation – Chapter Thirteen

The Green Paper correctly places emphasis on the importance of establishing and clearly defining the governance arrangements for the scheme. It is acknowledged that the delineation of roles and responsibilities between government and scheme regulator is not a simple task. The Energy Industry considers it preferable that the majority of responsibilities should be allocated to the scheme administrator, and government retain authoritative capacity on exceptional matters only.

The Energy Industry supports the proposition that the Government and Parliament retain responsibility for the longer term, significant policy decisions, including the framework for the scheme and the establishment (and internationally the negotiation

of) national targets and trajectories. However, with clear rule-based provisions, the scheme regulator should be charged with numerous responsibilities including:

- establishment of scheme caps and gateways;
- quantitative limitations on permit borrowing;
- quantitative limitations on use of international instruments;
- establishment of the audit and compliance regime; and
- allocating permits, including auctioning proceedings.

Allowing the scheme regulator to administer the majority of the scheme will contribute to certainty and predictability for scheme participants and the related permit market. The Energy Industry considers that accelerated establishment of the scheme regulator, adapted from other independent authority models existing in Australia and elsewhere, will considerably assist in the smooth implementation of the scheme.

Conclusion

The Energy Industry welcomes the release of the Green Paper. Its scope and detail of design options underlines the significant reform that the introduction of an ETS will be for Australia. The Energy Industry supports the Green Paper's recognition of the unique challenges for Australia in regard to the energy sector and the importance of maintaining the national asset of a strong, liquid and stable electricity market. This submission is intended to supplement the thinking within the Green Paper to assist in achieving this important reform initiative.

The importance of this issue has brought four of the key Energy Industry Associations together in this submission. As there are a number of issues which specifically impact particular sectors of the industry, individual industry associations may also make supplementary, complementary submissions to this process.

Should you wish to discuss any of the comments offered in regard to the propositions of the Green Paper, feel free to contact any of the undersigned representatives.

Yours sincerely




Brad Page	**John Boshier**	**Cameron O'Reilly**	**Cheryl Cartwright**
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Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Framework for the Carbon Pollution Reduction Scheme		
1.1	The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.	Supportive.
1.2	Design options are to be assessed against the following assessment criteria: • environmental integrity • economic efficiency • minimisation of implementation risk • policy flexibility • promotion of international objectives • implications for the competitiveness of traded and non-traded industries • accountability and transparency • fairness.	Supportive, noting the importance of each criteria is subject to variation, dependant on the design feature being considered.
Coverage		
2.1	All greenhouse gases included under the Kyoto Protocol—carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons— would be covered from scheme commencement.	Supportive.
2.2	In general, the emissions threshold for direct obligations under the scheme would apply to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more. Different thresholds may be required for the waste sector and synthetic greenhouse gases.	Supportive.
2.3	Stationary energy emissions would be covered from scheme commencement by applying scheme obligations both to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more and to suppliers of fuel to small energy users.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
2.4	a) Transport emissions would be covered from scheme commencement, with scheme obligations applied to upstream fuel suppliers. b) The Government would work with the fuel supply industry to develop administrative arrangements to enable fuel that is exported, used for international transport, sequestered in plastics and supplied to visiting defence forces and consular vehicles to be excluded from obligations under the scheme. c) The Government has committed to cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the Carbon Pollution Reduction Scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism. d) To assist rural and regional areas, the Government has committed to provide an equivalent rebate to businesses in the agricultural and fishing industries for three years. e) The Government has committed that for heavy vehicle road users, fuel taxes will be cut on a cent-for-cent basis to offset the initial price impact on fuel associated with the impact of the Carbon Pollution Reduction Scheme. The Government will review this measure after one year.	a) Supportive. b) No comment. c) Not Supported. Suppressing the intended carbon price signal is counter-intuitive to the objective of the ETS. d) Not Supported. Suppressing the intended carbon price signal is counter-intuitive to the objective of the ETS. e) Not Supported. Suppressing the intended carbon price signal is counter-intuitive to the objective of the ETS. All transitional support mechanisms should be designed to avoid or minimise reducing the economic efficiency of the primary scheme. The price signal is critical to the efficiency of the CPRS, and all consumers and business should be exposed to the full marginal cost of carbon in their decision making.
2.5	Fugitive emissions would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.	Supportive.
2.6	Emissions from industrial processes would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.	Supportive.
2.7	Synthetic greenhouse gas emissions would be covered from scheme commencement by applying scheme obligations to bulk importers of synthetic greenhouse gases, large importers of equipment containing synthetic greenhouse gases, and domestic synthetic greenhouse gas manufacturers (of which there are currently none), with a threshold to be determined.	Cautiously supportive. Obligations to surrender permits should reflect actual occurrence and timing.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
2.8	Emissions from the waste sector would be covered from scheme commencement, with the precise scope of coverage, thresholds and other detailed design issues to be determined.	Supportive.
2.9	Carbon that is transferred to carbon capture and storage (CCS) facilities would be netted out of the originating entity's gross emissions. Scheme obligations for fugitive emissions—from transport of the carbon and from the CCS facility—would be imposed on the operator of the CCS facility.	Supportive.
2.10	Scheme obligations for emissions from fuel combustion would be applied to all fuel excise and customs duty remitters for all liquid fuels currently subject to fuel excise and excise-equivalent customs duty, with thresholds to exclude smaller customs duty remitters to be determined.	No comment.
2.11	Scheme obligations for emissions from synthetic liquid fuels would be applied to fuel excise and customs duty remitters.	No comment.
2.12	Scheme obligations for emissions from liquefied petroleum gas would be applied to producers, marketers, distributors and importers of liquefied petroleum gas supplied to energy users.	No comment.
2.13	Scheme obligations for emissions from domestic combustion of liquefied natural gas and compressed natural gas would be applied to producers of those fuels.	No comment.
2.14	Scheme obligations for emissions from natural gas combustion would be applied to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more, and to natural gas retailers and gas producers for emissions from gas supplied to small emitters.	No comment.
2.15	Scheme obligations for emissions from black coal combustion would be applied: • to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more • to all coal mines, distributors, washeries, and producers of coke and coal by-products for emissions from small emitters.	Supportive.
2.16	Scheme obligations for emissions from brown coal combustion would be applied: • to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more • on manufacturers of brown coal briquettes and other brown coal by-products for emissions from small emitters.	Supportive.
2.17	Scheme obligations would not apply to emissions from combustion of biofuels and biomass for energy; they would receive a 'zero rating'.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Ch2.5.7	Stakeholder feedback is sought on netting out arrangements.	To avoid confusion regarding netting arrangements, registration as a liable entity should be required in a timely fashion, prior to the commencement of the compliance year, to allow upstream suppliers to adequately plan and account for covered, and uncovered sales.
2.18	The scheme would cover only domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol emissions account.	Supportive.
2.19	The Government is disposed to include agriculture emissions in the scheme by 2015 and to make a final decision on this in 2013. Given the compliance costs that would be involved if scheme obligations were to apply at farm-level, the Government seeks stakeholder views on the merits of an approach to coverage that would apply obligations generally off-farm, at some other point in the supply chain (for example, on fertiliser suppliers, abattoirs, dairies and beef exporters). The Government recognises that any approach will also need to provide appropriate incentives for on-farm abatement.	Agriculture emission account for over 15% of Australia's emissions profile. Agriculture should be exposed to a policy environment that provides incentives for reducing emissions. This incentive could either come from the obligation to surrender permits (inclusion in the scheme), or alternatively the eligibility to create offsets, that are recognised abatement under the scheme.
2.20	All reforestation (as defined for the first commitment period of the Kyoto Protocol) would be included, on a voluntary basis, from scheme commencement in 2010, with design details to be determined.	Supportive, all potential sinks should be eligible to assist the scheme meeting targets at least-cost.
Ch2.8.1	Stakeholder feedback is sought on reporting and acquittal periods, accounting rules, thresholds and other design details.	No comment.
2.21	After careful deliberation the Government does not propose to include deforestation in the Carbon Pollution Reduction Scheme. Australian deforestation emissions have reduced markedly since 1990, largely due to increased protections against land clearing.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
2.22	a) The scheme would not include domestic offsets from agriculture emissions in the period prior to coverage of these emissions. b) The Government would consider the scope for offsets from emissions sources that cannot be included in the scheme in 2013, following final decisions on coverage of agriculture emissions. c) The Government is committed to facilitating the participation of Indigenous land managers in carbon markets and will consult with Indigenous Australians on the potential for offsets from reductions in emissions from savanna burning and forestry opportunities under the scheme.	a) Not Supported. If agriculture is uncovered for any period, there should be the ability to create offsets during this period. b) Supportive of including offsets. Based on established protocols such as Greenhouse Friendly, legitimate offsets should be included from scheme commencement. c) Supportive.
Carbon Market		
Ch3.1.2	The Government seeks specific feedback on whether the scheme regulator should publish the following information that would assist in the development of the permit market: a) quantities and prices of carbon pollution permits auctioned by the regulator; b) the quantity of free carbon pollution permits received by each entity and/or by industry sector; c) total shortfalls in permits surrendered by liable entities; and d) extent and nature of non-compliance with the scheme.	a) Supportive. However the quantity bought by each bidder should not be published. b) Supportive of publishing total quantities of free permits by industry sector only. Quantity received by individual entities should not be published. c) Supportive of publishing the total shortfall. d) Support of publishing the level and nature of non-compliance on a sectoral basis.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
3.1	a) A carbon pollution permit (which will be referred to in legislation as an Australian emissions unit) would be an entitlement composed of various 'rights' contained in the carbon pollution reduction legislation. The main rights would be the right to surrender the permit and to transfer it. b) The scheme regulator would issue only one type of domestic permit, called an Australian emissions unit (referred to in this green paper as a carbon pollution permit). c) The carbon pollution permits would be personal property. d) Each permit could be surrendered to discharge scheme obligations relating to the emission of one tonne of carbon dioxide equivalent of greenhouse gas. e) Each permit could be surrendered under the scheme only once. f) There would not be power to extinguish permits without compensation, unless there had been misrepresentation or fraud by the holder against the Australian Government or the scheme regulator in the creation or issue of the permits. g) Permits would be transferable. h) Permit holders would only be entitled to surrender permits that they hold on the national registry. Legal title would be transferred only by entry in the registry. i) The creation of equitable interests in permits would be permitted, as would taking security over them. j) Each permit would have a unique identification number and be marked with the first year in which it could validly be surrendered (its 'vintage'). It would not have an expiry date. k) The permit would be uncertificated; that is, it would be represented by an electronic entry in the registry rather than by a paper certificate.	a) Supportive. b) Supportive. c) Supportive. d) Supportive. e) Not Supported. Where permits in excess of an entity's liability are surrendered, the scheme regulator should be able to reinstate them back to that entity. f) Cautiously supportive. Compensation would have to reflect not just the a current permit value, but also the anticipated impact on permit value of increasing scarcity. Furthermore, it is observed that decisions regarding scheme caps have the capacity to extinguish the value of permits. g) Supportive. h) Supportive. i) Supportive. j) Supportive. k) Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
3.2	a) A permit could be held and traded by any legal or natural person (subject to verification of identity and measures to prevent criminal activity). b) There would be no restriction on foreign ownership of permits, apart from any that might apply under a law other than the scheme legislation.	a) Supportive b) Supportive, noting a strong preference that restrictions exist on the ability to surrender permits (see preferred position 5.14).
3.3	The permit would be a financial product for the purposes of the Corporations Act 2001, but some adjustment to that regime may be required to fit the characteristics of permits.	Not Supported. The legislative nature of the permit renders classification as a financial product unnecessary.
3.4	Unlimited banking of permits would be allowed under the scheme.	Supportive, noting that allowing banking may have implications on the initial permit prices if initial scheme caps are modest, but tighten considerably over time.
3.5	a) The scheme would permit a limited amount of short-term borrowing by allowing liable entities to discharge up to a certain percentage (less than 5 per cent) of their obligations by surrendering carbon pollution permits dated from the following year. b) The exact percentage should be subject to further investigation and should be considered in conjunction with decisions about the level of the initial scheme caps.	a) Supportive, noting that in the initial years of the scheme, and until liquid secondary markets are available, an increased percentage of borrowing should be allowed to assist in a smooth transition for all covered sectors. b) Decisions on percentage should also be timed with decisions on limitations of international credits.
3.6	The scheme would have a compliance period of one year. Further consultation with industry will be needed for reporting and compliance periods for reforestation.	Supportive.
3.7	a) The scheme would have a price cap for the period 2010–11 to 2014–15. b) The price cap would be set high enough above the expected permit price to ensure a very low probability of use. The precise level would be set taking into account all information about scheme design and the expected abatement costs in the economy. c) The price cap would be reviewed at the first review point, taking into consideration banking and borrowing arrangements, limits on the surrender of international units for compliance, the maturity of the market and future international linking commitments.	The policy intention behind the proposed price cap is quite unclear and further articulation of the government's motivation is required before the Energy Industry can provide meaningful comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Ch3.5.2	The Government seeks comment on the alternative forms that a price cap might take.	Supportive of no make good provision.
Emissions targets and Scheme caps		
4.1	At the end of 2008, in the context of the white paper, the Government would announce a medium-term national target range for 2020 that provides upper and lower bounds to give investors and market participants information on directions and retains sufficient flexibility for the Government.	Supportive, noting that the scheme gateway for 2020 and scheme caps should be announced at the same time. However, this needs to be accompanied by a firm trajectory (see comment under 4.2 and 4.3).
4.2	The Government would announce an indicative national emissions trajectory to provide broad guidance on the pathway towards the medium-term target range.	Supportive, noting that scheme gateways should also be announced at the same time and be within a range that allows investment and commercial certainty.
4.3	The Government would announce a minimum of five years of the indicative national emissions trajectory, to be extended by one year, every year as required to maintain a minimum of five years of guidance at all times after commencement of the scheme.	Not supported. As the scheme cap is a subset of this trajectory, the national emissions trajectory will be of limited use if it is set only for the same five year duration, as the scheme cap. The national trajectory should be set for at least 10 years.
4.4	The difference between the scheme cap and the national target would be explicitly and transparently reconciled through notional allocation (and retirement) of permits for sources of emissions not covered by the scheme.	Supportive, so far as it increases transparency.
4.5	Scheme caps would be set and announced for a minimum period of five years in advance at any one time. In the event that Australia's international commitment period extends beyond five years, scheme caps would be extended to the end of the commitment period.	Not supportive. Scheme caps should be set for a minimum of 10 years.
4.6	Scheme caps would be extended by one year, each year, as required to maintain a minimum five-year certainty period. Should the international commitment period (and therefore scheme caps) already extend beyond five years, an annual extension would become optional.	Subject to a period of 10 years for scheme caps, extending by one year, each year is supported.
4.7	By using gateways, the Government would provide guidance over future scheme caps beyond the period of fixed scheme caps.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
4.8	The Government would provide guidance over future scheme caps beyond the initial certainty period through the use of a gateway in each of the following years, to the end of the gateway period.	Supportive. Noting that the bounds of each gateway should reflect the proximity to the last scheme cap, and be within a range that allows investment and commercial certainty.
4.9	The initial length of the gateway would be 10 years beyond the minimum five years of scheme caps.	Supportive, noting it would be 10 years beyond the preferred 10 years of scheme caps.
4.10	Gateways would be extended by five years, every five years, as part of a strategic review of international conditions and Australia's likely future international commitments.	Not supportive. Gateways should be extended by one year, each year, as a continuous 10 year outlook.
4.11	The scheme cap would not be adjusted in the event that it is incompatible with internationally negotiated national targets and, if necessary, the Government would make up any shortfall in internationally agreed targets by purchasing international emissions units.	Supportive.
4.12	The Government would announce an approach in early 2010 for expanding the cap to accommodate increases in scheme coverage that provided a smooth scheme price path.	Supportive. Noting that once the decision rule is established, the scheme regulator should be charged with exercising that rule, upon direction from government that an additional sector is to be covered in the scheme cap.
Ch4.4.2	The Government seeks comment on the appropriate decision rule to facilitate this approach.	No comment beyond approach suggested in preferred position 4.12
Reporting and compliance		
5.1	a) NGERS would be the starting framework for monitoring, reporting and assurance under the scheme, and elements of that system would be strengthened to support the scheme. b) Where practical, the scheme would also seek to utilise related provisions in other Australian Government schemes, such as the fuel excise and customs duty arrangements for liquid fuels, to minimise additional compliance burdens.	a) Supportive, noting that NGERS is still in its infancy and contains provisions not relevant to the scheme. Reporting should be at the asset level not at the portfolio level. b) Supportive, noting that streamlining of reporting should not be undertaken to the jeopardy of scheme integrity.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
5.2	In general, entities with operational control over covered facilities or activities would be liable for emissions obligations arising from those facilities or activities under the scheme. a) Where multiple entities exercise a degree of operational control over a covered facility or activity, a single responsible entity would be required to register and meet scheme obligations. b) For corporations, obligations would be placed on the controlling corporation of a company group where either the controlling corporation or a member of the group has operational control over a covered facility or activity. c) Unincorporated entities would also be liable under the scheme if they have operational control over a covered facility or activity. Further consultation and analysis would be undertaken on the definition of liable entities under the scheme in relation to the forestry sector, upstream fuel suppliers (for example, to align scheme obligations with fuel excise and customs duty liability).	Operational control is cautiously supported as a default point of liability; however it should be possible to nominate the entity with financial control of a facility, with the consent of all relevant stakeholders. a) Supportive. b) Placing obligations on the controlling corporation is not supported. The Green Paper provides no policy justification for this approach, nor any analysis of the associated benefits and risks. Such an approach will have significant ramifications for project financing and investment structures, and introduces unnecessary new risks for existing investors. The Energy Industry considers that the point of liability should be consistently focussed at the facility level, except where upstream acquittal is required for practical reasons, and does not support cross-subsidy of carbon liabilities across portfolios. c) Supportive.
5.3	Emissions estimation methodologies under the scheme would be those available under the National Greenhouse and Energy Reporting System.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
5.4	Noting the four classes of methodologies available for NGERS (see Box 5.1), where Method 2 or above is already in widespread use for a source, those methodologies would be imposed as the minimum to be used from the commencement of the scheme. The following sources would have minimum standards for emissions estimation methodologies imposed from the commencement of the scheme: a) electricity sector emissions (as required for the National Greenhouse and Energy Reporting Scheme and the Generator Efficiency Standards program) b) perfluorocarbon emissions (from aluminium production, as is current business practice and used for the National Greenhouse Accounts) c) fugitive emissions from underground coal mines (as currently mandated by state safety regulations for the large majority of mines). Staged increases in the accuracy of emissions estimates over time would be pursued by imposing increasing minimum standards for estimation methodologies, where this is cost effective for the scheme overall. Additional sources would be investigated for the possible imposition of minimum standards for emissions estimation methodologies soon after the commencement of the scheme, but not in the first two years of the scheme. Sources that may warrant investigation include: • emissions from coal use (non-electricity, such as steel production) • waste sector emissions • natural gas combustion emissions (non-electricity) • fugitive emissions from open-cut coal mines.	Supportive, noting that estimation based on Method 1 may provide greater opportunity for under-reporting of emissions, in effect disadvantaging those sectors where higher-order, more accurate reporting is required.
Ch5.3.1	Comments are sought on these or other sectors that could be considered for higher order measurement methods following the commencement of the scheme.	Differentiating expectations across sectors may lead to advantaging or disadvantaging in the scheme.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
5.5	Further consultation and analysis would be undertaken to establish appropriate reporting requirements and emissions estimation methodologies relating to the obligations of upstream fuel suppliers under the scheme.	No comment.
5.6	Consistent with adjustments to the scheme trajectory, five years notice would be given before major revisions of emissions estimation methodologies that affect the majority of stakeholders. Consultation would be undertaken and appropriate notice would be given before imposing or increasing minimum standards for emissions estimation methodologies.	Supportive. No liable entity should be allowed to regress on reporting accuracy.
5.7	Noting the four classes of methodologies available for NGERS, where an entity has elected to use Method 2 (see Box 5.1) or above for a particular source, that methodology would be the minimum standard for that entity for a period of four years. The scheme regulator may grant exceptions to this rule in some circumstances.	Supportive. Rules for granting exceptions should be clearly enunciated. Strong justification would be required for proposing to adopt an estimation methodology that results in reduced accuracy. In general, expectations on estimation methodologies should reflect the principle of continuous improvement.
5.8	Provisions relating to documentation and record keeping under the scheme would be based on those set out for the National Greenhouse and Energy Reporting System.	Supportive, noting that such guidelines are still forthcoming.
5.9	a) A single report would be sufficient to satisfy an entity's obligations under both the National Greenhouse and Energy Reporting System and the Carbon Pollution Reduction Scheme, with reports to be submitted by 31 October each year. b) Emissions obligations under the scheme, the types of assessment methodologies used and any uncertainty estimates reported by liable entities would be published by the Government on the internet as soon as is feasible after reports are submitted.	a) Supportive. However a quarterly report, should also be required, and subsequently the data published in the interests of increased market transparency. This quarterly report would not require the same level of assurance as the annual compliance report. b) Supportive. However, this information should be published by the scheme regulator once the compliance period, reporting and permit surrender has concluded. This is highly price sensitive market information.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Ch5.3.2	The Government seeks feedback on whether the scheme should provide for the publication of reported information to the facility level.	Supportive of the publication of reported information to the facility level, to improve transparency and assist market participants in forecasting demand and supply.
5.10	a) Large emitters (those with obligations under the scheme of 125,000 tonnes of carbon dioxide equivalent or more) would be required to have their annual emissions reports assured by an independent accredited third party prior to their submission. The Government would consider the need to extend this requirement on the basis of initial experience, developments relating to international linking and the compliance burdens likely to be placed on small entities. b) The scheme regulator would have powers to conduct assurance audits using a risk based approach for all emissions reports submitted under the scheme, as is the current approach under the National Greenhouse and Energy Reporting System. The regulator would also have the power to review an annual emissions report for up to four years after its submission, except in the case of fraud, in which case the period would be unlimited. c) The Government would investigate further the scope to align financial and emissions reporting and verification systems.	a) Not supportive. Third party assurance audit requirements should be on an exceptions basis where the scheme regulator has cause for concern; universal requirement would be an unnecessary cost burden. Self assurance models as in MRET and the proposed NZ ETS are preferred. b) Any further audits required by the scheme regulator should be at its cost, unless the audit uncovers fraudulent or negligent reporting. Statutory limitations should be provided for fraudulent reporting, in the interests of minimising the implications on market activity, particularly with regard to mergers and acquisitions. c) Supportive
5.11	a) Assurance under the Carbon Pollution Reduction Scheme would be carried out in accordance with guidelines made under the National Greenhouse and Energy Reporting Act 2007 and standards produced by the Australian Government's Auditing and Assurance Standards Board. b) All third party assurance providers would be accredited to ensure the development of a pool of properly trained and qualified providers. The form and nature of accreditation (including whether it is conducted by the Government or a non-government body) would be determined after further consultation, with a view to minimising compliance costs.	a) Supportive. b) Supportive.
5.12	The scheme would operate on a financial-year basis.	Supportive, noting that different entities in the market have different financial years.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
5.13	The final date for the annual surrender of permits would be a fixed time after the final date for emissions reporting. At scheme commencement, this period would be six weeks.	Supportive. If the scheme regulator chooses to extend the final date, notice should be provided prior to the commencement of the affected compliance year.
5.14	a) Liable entities would be allowed to surrender permits at any time before the annual surrender deadline to meet their end-of-year obligations (any permits surrendered would not be available for future compliance periods). b) Any entity or individual would be allowed to voluntarily surrender permits regardless of whether they have obligations under the scheme.	a) Surrender at any time is supported, however where permit surrender exceeds obligation, permits should be reinstated (see preferred position 3.1e). b) Not supportive. Surrender of permits should be reserved for liable entities only. Voluntary surrender in the initial years of the scheme will expose the Australian permit market unintentionally to international markets, which the Green Paper seeks to avoid (see preferred position 6.1). The Australian Government could not prevent one way linking by other international mandatory or voluntary schemes if any party could surrender and extinguish Australian permits.
5.15	a) The regulator would be given a range of compliance, investigative and enforcement powers, and a broad range of mechanisms to respond proportionately to noncompliance under the scheme. b) The emissions trading regulator would be able to exchange information with relevant Australian Government, state and territory governments, and international regulators. c) Compliance and enforcement provisions, including penalties, would be finalised over the remainder of 2008.	a) Supportive. b) Supportive, to the extent that information exchange assists in monitoring compliance. c) Supportive, assuming there is comprehensive consultation.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Linking the scheme to international markets		
6.1	The scheme would be designed so that it can link with international markets and schemes, with a preference for open trade within an effective global emissions constraint. All targets for the scheme, as well as the commitment to reduce national emissions by 60 per cent below 2000 levels by 2050, will be defined in terms of net national emissions-that is, imported units would be counted towards our national target, and exported units would be excluded from the national target. Any restrictions placed on linking would be to ensure: • the stability and ongoing credibility of the scheme • the environmental integrity and effectiveness of the scheme • the scheme's consistency with international objectives and obligations.	Supportive - Provided Australia is not disadvantaged by its participation, the scheme should be linked (in some form) to complementary international schemes to lower the cost of abatement. Note: as per response 5.14, if non liable entities are able to surrender and extinguish AEU's, then the Australian Government could not prevent another international scheme recognising surrender of Australian permits in their scheme.
6.2	A carbon pollution permit (which would be referred to in the legislation as an Australian emissions unit) would be created for the scheme, and it would be distinct from Australia's international (Kyoto Protocol) units.	Supportive.
6.3	Subject to restrictions, the scheme would link internationally via the Kyoto Protocol's flexibility mechanisms in the early years of operation.	Supportive. Noting that Australia should also pursue reductions in emissions from deforestation and forest degradation (REDD).
6.4	The Government believes the short-term priority is to minimise implementation risk while the scheme is being established. This includes promoting price stability and predictability in the early years of the scheme. Liable entities would be able to meet their obligations by using eligible Kyoto units for compliance in the scheme, limited to a maximum percentage of each entity's obligation (for the period 2010–11 to 2012–13).	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
6.5	No assigned amount units would be accepted for compliance in the scheme (for the period 2010–11 to 2012–13). This position would be reviewed in the light of international developments.	Not supportive. The scheme is intended to assist Australia meet a national target, which in the early years of operation is an international commitment under the Kyoto Protocol based on a 1990 baseline. Dismissing potential options to satisfy the 1990 emissions budget will exclude Australia and the scheme from potential low-cost measures to meet the intended targets.
6.6	Emission reduction units created under the Kyoto Protocol's joint implementation mechanism would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).	Supportive.
6.7	Removal units would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).	Supportive.
6.8	Certified emission reductions generated by the Kyoto Protocol clean development mechanism would be accepted (for the period 2010–11 to 2012–13), with the exception of those that have associated contingent obligations and high administrative costs: currently, temporary certified emission reductions and long term certified emission reductions from forestry-based projects.	Supportive, noting comments on REDD in preferred position 6.3.
6.9	Certified emission reductions and emission reduction units generated in the first Kyoto Protocol commitment period would be recognised for compliance in the scheme in 2012–13 and in subsequent years, in accordance with the rules set out in the protocol and any restrictions that apply to the use of international units set out in the Australian scheme. Certified emission reductions generated through abatement from 2013 onwards by projects established in the first commitment period would be recognised for compliance in the scheme in 2012–13 and subsequent years, in accordance with the rules set out in the protocol and subject to any restrictions that apply to the use of international units set out in the Australian scheme.	Supportive

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
6.10	International non-Kyoto units would not be accepted for compliance in the scheme. This position would be reviewed for the post-2012–13 period in the light of future developments in international negotiations. Australia would continue to support the development of robust internationally accepted methodologies for reductions from deforestation and forest degradation in developing countries, noting that these are currently not recognised under the clean development mechanism.	Supportive, noting comments on REDD in preferred position 6.3.
6.11	In order to facilitate a smooth start to the scheme and to minimise implementation risks, the Government would not allow Australian permits to be converted into Kyoto units for sale in and transfer to international markets in the early years of the scheme.	Supportive
6.12	a) Australia would not host joint implementation projects in sectors that are covered by the scheme. b) Decisions on joint implementation projects for uncovered activities would be aligned with decisions on domestic offsets. c) The scheme would not include domestic offsets (and therefore joint implementation) from agricultural emissions in the period prior to coverage of that sector's emissions. d) In 2013, the Government would consider the scope for offsets (and joint implementation) in sectors that cannot be included in the scheme. e) Australia would not host joint implementation projects before the start of the scheme.	a) Supportive b) Supportive c) Not supportive – see comments on equivalent constraints for uncovered sectors and incentives to reduce emissions (preferred position 2.19). d) Supportive, noting comments on equivalent constraints for uncovered sectors and incentives to reduce emissions (preferred position 2.19). e) Supportive
Ch6.8	The Government seeks stakeholder input on how much notice should be given before qualitative restrictions are changed, including in a situation in which the environmental integrity of a particular type of international unit has been compromised.	Notice period should be as long as possible, based upon transparent criteria of what will trigger a qualitative restriction to be changed. Grandfathering of existing legitimate contractual arrangements would need to be considered.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
6.13	The Government would provide the maximum feasible level of certainty about future linking arrangements, consistent with retaining enough flexibility to respond to changing international arrangements. The Government would: a) at the end of 2008, in the context of the white paper, determine and announce the quantitative limits on the use of Kyoto units by liable entities for the period from 2010–11 to 2012–13, in conjunction with decisions on the national trajectory and scheme cap b) in early 2010 confirm quantitative limits that might apply to the use of Kyoto units for five years up to and including 2014–15 c) extend the certainty over quantitative limits that might apply on the use of Kyoto units thereafter by one year, every year d) at the end of 2008, in the context of the white paper, confirm the types of Kyoto units that will be recognised for compliance in the scheme for the period 2010–11 to 2012–13 e) in early 2010 confirm the types of Kyoto units that will be recognised for compliance in the scheme for five years up to and including 2014–15 f) extend the certainty on the types of Kyoto units that will be recognised for compliance thereafter by one year, every year g) at the end of 2008, in the context of the white paper, confirm restrictions on the conversion of Australian permits into Kyoto units for sale and transfer to other countries for the period 2010–11 to 2012–13 h) in early 2010 announce any provisions and relevant restrictions that might apply to the conversion of permits into Kyoto units for sale and transfer for other countries for the period 2012-13 to 2014–15 i) extend the certainty on provisions and relevant restrictions that might apply to the conversion, sale and transfer of units to other countries thereafter by one year, every year	a) Partially Supportive – at least the first five years should be announced. Also noting that this responsibility should ultimately rest with the scheme regulator (see preferred position 13.1). b) Not Supported. All information relevant to the first periods scheme caps should be announced as soon as possible at least one year prior to implementation. Scheme caps should be ten years in duration (see preferred position 4.5), c) Supportive. d) Supportive. e) Not supportive, limitations should be announced earlier. f) Supportive. g) Supportive. h) Supportive. i) Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
6.14	Linking arrangements would be subject to review in the light of ongoing international negotiations and market development, with a clear preference for relaxing restrictions on linking with credible schemes and mechanisms as the Australian scheme matures. The Government would investigate on a case-by-case basis more direct bilateral linking opportunities (including mutual recognition of compliance units and harmonisation) with the schemes of other countries, after the scheme has been established.	Supportive provided there is a rules-based approach that will provide transparency and forward looking information.
Auctioning of Australian carbon pollution permits		
7.1	Allocations would, over the longer term, progressively move towards 100 per cent auctioning as the scheme matures, subject to the provision of transitional assistance for emissions-intensive trade-exposed industries and strongly affected industries.	Supportive of progressive move to full auctioning of permits remaining after allocation of transitional assistance to SAI's and EITE's Flexible settlement terms should be available to smooth transition and reduce impacts on working capital and prudential requirements.
7.2	a) The relevant minister would direct the regulator in the early phase of the scheme. b) The scheme regulator would later assume all auction policy responsibilities. c) The responsibilities of the scheme regulator, auction design, and the relevant minister's power of direction would be reviewed at the five-year review.	a) Not supportive, the scheme regulator should be independent of the Minister. b) Supportive, but from the outset. c) Supportive.
7.3	Four auctions would be held each financial year, one in each quarter. The Government seeks stakeholder feedback on the relative risks of alternative models, such as annual or weekly auctions.	Not supportive. Auctions, particularly in the early years of the scheme should be more frequent than quarterly.
7.4	At least one auction of the relevant year's vintage would be held after the end of the financial year in the lead-up to the relevant surrender date. A suggested date would be within one month prior to the acquittal date.	Supportive, noting the percentage of permits should be less than the one eighth, suggested in Box 7.6 of the Green Paper.
7.5	The first auction would take place as early as is feasible in 2010, prior to the start of the scheme.	Not supportive. Auctions should commence earlier than 2010. The commencement of the Australian Emission Trading Units market (May 2008) is evidence of the appetite to commence taking positions.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
7.6	Four years of vintages would be auctioned (current vintage plus advance auction of three future vintages).	Not supportive. To contribute to the certainty and stability of the policy, additional vintages should be opened to auction.
7.7	The advance auction of future year vintages would occur once each year.	Not supportive. Future year vintages should be auctioned more frequently than annually.
7.8	Subject to the lodgement of any required security deposit, universal participation would be permitted at auctions.	Supportive. Flexible settlement arrangements could assist liable entities in participating in auctions, whilst timing compliance costs with business cash flows.
7.9	Ascending clock auctions would be used for single vintage auctions, and simultaneous ascending clock auctions would be used for multiple vintage auctions.	More rigorous assessment of ascending clock and sealed bid models is required. Auction model selected should deliver a uniform price for each vintage auctioned. Auctioning should also commence as early as practicable.
7.10	Only those entities that receive free permit allocations would be allowed to sell them through double-sided auctions in the early phase of the scheme.	Supportive, noting that a mature secondary market will also provide the same function.
Ch7.5.6	The Government seeks comment on the operational feature of the auction detailed in Box 7.8.	Uniform pricing of each vintage auctioned is desirable. Proxy bidding is appropriate – the auction interface should allow a bidder to input a series of instructions/bids. Reserve price should be published. Internet auction platform is appropriate – trials and user training should be available. A minimum parcel size is a appropriate.
Household assistance measures		
8.1	The Government has committed that every cent raised for the Australian Government from the Carbon Pollution Reduction Scheme will be used to help Australians – households and business – adjust to the scheme and to invest in clean energy options.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
8.2	The Government is also committed to providing low-income households with increases in assistance through the tax and payment system and all households with other assistance to address the impact on their living standards. It is committed to: a) Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme. b) Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme. c) Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme. d) Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme, noting that these payments are automatically indexed to reflect changes in the cost of living. e) Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.	Supportive. Rather than shielding consumers from the price signal, the objectives of the scheme (while still distortionary) will be better served by assisting affected household through income assistance. Removal of retail price regulation and ensuring cost reflective tariffs in regulated markets is critical to ensure the viability of retailers and the stability, security and reliability the energy markets. Consumer information on energy efficiency could greatly assist households adapt to the impacts of the scheme.
8.3	The Government has indicated in the terms of reference for Australia's Future Tax System Review that it is to consider the interrelationships between the tax and transfer payment systems and the scheme.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Assistance for emissions-intensive trade-exposed industries		
9.1	The key rationales for providing assistance to emissions-intensive trade-exposed (EITE) industries would be to: a) address some of the competitiveness impacts of the scheme on EITE industries in order to reduce carbon leakage b) provide transitional support to EITE industries that will be most severely affected by the introduction of a carbon constraint c) support production and investment decisions that would be consistent with a global carbon constraint. The Government's support for EITE industries would be balanced against its objectives for non-assisted sectors and households. EITE assistance would be adjusted over time to ensure that all parts of the economy contribute to the objective of reducing emissions. The EITE assistance policy would be reviewed at each five-year scheme review to determine whether that assistance continues to be consistent with the rationale for assistance, appropriately balances the competing policy objectives and continues to be consistent with Australia's international trade and climate-change obligations.	Supportive. Any compensation or subsidies that may be provided to emissions-intensive trade-exposed industries should minimise distortions to the permit market and impacts on other industries. Note: some EITE's have long term power purchase agreements with individual generators that will prevent pass through of carbon prices. The compensation methodology should account for these agreements.
9.2	The proposed assistance would be provided to emissions-intensive trade-exposed industries in the form of free allocations of carbon pollution permits at the beginning of each compliance period, contingent on production.	Note: some EITE's have long term power purchase agreements with individual generators that will prevent pass through of carbon prices. The compensation methodology should account for these agreements.
9.3	The proposed emissions-intensive trade-exposed assistance would be provided on the basis of the industry-wide emissions from a process or activity to ensure that assistance is well targeted and is equitable both within and between industries.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
9.4	Emissions-intensive trade-exposed (EITE) assistance would be provided for the direct and indirect electricity emissions associated with the activity or process. Only emissions covered by the scheme would be considered in determining EITE assistance. A measure of emissions per unit of revenue would be the most transparent and comparable indicator of the materiality of the carbon cost impact across different traded industries.	Note: some EITE's have long term power purchase agreements with individual generators that will prevent pass through of carbon prices. The compensation methodology should account for these agreements.
9.5	All industries, other than those for which there exists a physical barrier to trade, would be considered for emissions-intensive trade-exposed assistance.	No comment.
Ch9.3.4	The Government seeks stakeholders' views on: a) the proposed assessment process for establishing the emissions per unit of revenue for different production activities in the economy b) the use of data from 2006–07 to 2007–08 to determine eligibility of production activities c) the entity to which EITE assistance should be provided.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
9.6	Up to around 30 per cent of Australian carbon pollution permits would be freely allocated to emissions-intensive trade-exposed (EITE) activities. At the outset of the scheme, if agricultural emissions are excluded from scheme coverage, this would be up to around 20 per cent of permits. Eligibility for EITE assistance would be based on the industry-wide emission intensity of an activity or process being above a threshold of about 1,500 tonnes carbon dioxide equivalent (CO_2-e) per million dollars of revenue. Initial assistance would cover around 90 per cent of emissions for EITE activities that have emissions intensities above about 2,000 tonnes CO_2-e per million dollars of revenue and around 60 per cent of emissions for EITE activities that have emissions intensities between about 1,500 and 2,000 tonnes CO_2-e per million dollars of revenue. These thresholds and rates of assistance may be reconsidered on the basis of further information provided through the consultation process to ensure that the total quantum of EITE assistance is limited to around 30 per cent of permits (inclusive of agricultural emissions).	No comment.
Ch9.5.2	The Government seeks stakeholder views on whether baselines for allocations should be based on emissions and output data over the period 2006–07 – 2007–08	No comment.
Ch9.5.3	The Government seeks stakeholder views on the electricity factor to be used in calculating allocations for indirect electricity emissions and how it can be robustly and transparently calculated.	No comment.
Ch9.5.4	The Government seeks stakeholder views on the approach for estimating the level of output used to calculate assistance to EITE entities.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
9.7	Allocations of assistance for direct emissions of new and existing emissions-intensive trade-exposed (EITE) entities would be calculated on the basis of: a) an Australian historical industry-average emissions-intensity baseline for each EITE activity b) the output of the EITE activity for each entity c) the assistance rate for that EITE activity. Allocations of assistance for indirect electricity emissions of new and existing EITE entities would: a) be calculated on the basis of • an Australian historical industry-average electricity-intensity baseline for each EITE activity • an electricity factor, where the electricity factor is determined to reflect the likely average electricity price impact of the scheme • the output of the EITE activity for each entity • the assistance rate for that EITE activity b) take into account whether the EITE entity has contractual arrangements with regard to electricity supply that would shield them from increases in electricity prices as a result of the introduction of the scheme. If an entity ceases operating an EITE activity, it would be required to return carbon pollution permits that had been allocated to it for production that did not occur.	No comment.
9.8	The emissions-intensive trade-exposed (EITE) assistance rate would be reduced over time with the intent that the share of assistance provided to the EITE sector does not increase significantly over time.	No comment.
Ch9.6.1	The Government welcomes stakeholder views on how the proposed EITE assistance rate should be adjusted over time.	No comment.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
9.9	Between 2010 and 2020: • assistance would be provided to emissions-intensive trade-exposed industries as proposed unless broadly comparable carbon constraints are introduced in key competitor economies, in which case assistance would be withdrawn. Beyond 2020: • assistance would be withdrawn if broadly comparable carbon constraints are introduced in key competitor economies or • assistance would be phased out over a five-year period in the event of acceptable international action that places obligations on an industry's major competitors or • assistance would be continued as proposed in the absence of broadly comparable carbon constraints or acceptable international action.	No comment.
Strongly affected industries		
10.1	The characteristics of strongly affected industries are that they must: • be non-trade-exposed (as entities in trade-exposed industries may be eligible for assistance as emissions-intensive trade-exposed industries) • be emissions-intensive (exceeding the threshold for eligibility proposed for emissions-intensive trade-exposed industries) • include some entities that are emissions-intensive compared to their competitors, such that they cannot pass on carbon costs and could experience significant losses in asset value • have significant sunk capital costs • not have significant economically viable abatement opportunities available to them	Supportive.
Ch10.2	The Government seeks stakeholder feedback on whether any other industry might meet the proposed characteristics of strongly affected industries outlined in this chapter.	No comment.
10.2	Coal-fired electricity generators are likely to be strongly affected by the scheme, based on the characteristics proposed in Section 10.1.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
10.3	The Australian Government has made significant contributions to progress the commercial deployment of carbon capture and storage (CCS). These contributions, and any further support, should recognise the technical and institutional hurdles to the development and deployment of carbon capture and storage technologies, and reflect Australia's significant domestic and international interests in the development of this technology.	Supportive.
10.4	The Government would address particular impacts of the scheme on workers, communities and regions. Assistance would: • take into account the existence of generally applied measures that assist structural adjustment in all sectors (such as social security and employment policies) • be provided where a clear and sizable burden has been, or is highly likely to be, imposed on an identifiable segment of the community • be designed to assist the adjustment of workers, communities and regions to their new circumstances, rather than to prevent or hinder that adjustment • apply, as necessary, regardless of whether an affected industry has received support as a strongly affected or emissions-intensive trade-exposed industry.	Supportive.
Ch10.4.1	The Government seeks stakeholder feedback on the effect on the security of energy supply of: • measures specific to the energy market • the medium-term national target range • direct assistance to coal-fired electricity generators.	Retail price regulation would prevent retailers from passing on higher wholesale energy costs in a timely manner. Retailers could experience significant losses and be unable to contract forward with the remaining generators, forcing their eventual exit. Systemic failure or financial distress among major retailers would increase volatility and risks in the energy market and undermine reliability and security of supply. To ensure a smooth transition to a low emission energy supply system, a modest interim target should be set for 2020. This

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
		would mitigate some of the immediate negative impacts on coal-fired generators and improve prospects for security of supply until there is sufficient new investment in lower emission generation. Insufficient structural adjustment assistance to coal fired generators could result in an immediate reduction in generators' credit ratings and/or breaches of financial ratios (due to the immediate loss in asset value). This may trigger a revision by their financiers and/or result in the suspension of payment under their hedge contracts as the generators would be unlikely to meet any requests for additional credit support. This may result in a series of financial defaults throughout the market. These events could significantly undermine investor confidence in energy markets and increase the risk premiums applied to new investment. This would in turn increase retail energy prices.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
10.5	To ameliorate the risk of adversely affecting the investment environment, the Government proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators.	Supportive, where coal is the primary fuel source. NGERS classifications should be applied for defining coal types. Structural adjustment assistance to electricity generators should be on the basis of reduced asset value, owing to the significant reduction or elimination of forward cash flow profitability that the scheme will cause. Minimising the reduction in asset values will contribute greatly to ensuring that future investment in the sector does not attract a risk premium.
10.6	Final decisions on an appropriate quantum of the proposed direct assistance for coal-fired electricity generators would be made after the medium-term national target range is established.	Supportive, noting it is the scheme caps, as a subset of the medium-term national target that impacts on coal-fired electricity generators. This decision will trigger asset impairment assessment tests.
10.7	Eligibility for the proposed direct assistance for coal-fired electricity generators would be limited to those assets that were 'in existence' as of 3 June 2007, that is, assets that: • were in operation or • satisfied the National Electricity Rules criteria for a 'committed project'.	Supportive.
Ch10.5.2	The Government seeks stakeholder views on its proposed approach of giving the proposed direct assistance to the registered generator in the NEM or WEM in respect of particular generation asset, as of the day on which the proposed allocation of assistance is delivered.	Supportive.
10.8	The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method.	Generally supportive, provided the simple method provides a reasonable reflection of the loss of asset value.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Ch10.5.4	The Government seeks stakeholder views on: a) whether the relative proportion of the black coal and brown coal pools of assistance should be determined by estimating the relative impact of the scheme on these two asset classes using the broad results of a bottom-up electricity market modelling exercise b) the appropriate definition of brown and black coal for the purposes of allocating direct assistance between assets in the two classes c) whether it is appropriate to limit allocations of direct assistance to generation assets that are exclusively coal-fired.	(a) No comment (b) NGERS classifications (c) Definitions should be extended to cover generators where coal is the primary fuel source.
Ch10.5.4	The Government seeks stakeholder views on whether it is appropriate to allocate direct assistance: • to assets on the basis of their capacity on the eligibility cut-off date • on the basis of 'nameplate' or 'sent out' capacity.	Refer separate NGF and specific member submissions.
10.9	The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method that involves: • the available assistance being split into separate pools, with one pool being made available to brown coal-fired assets and the other to black coal-fired assets • assistance in each pool being allocated to individual assets in direct proportion to the capacity of each asset.	Refer separate NGF and specific member submissions.
Ch10.5.5	The Government seeks stakeholder feedback on the relative merits of providing direct assistance to coal-fired electricity generators through allocations of carbon pollution permits or cash payments.	Permits are preferred, as a natural hedge to the change in permit price, unless asset lives are forecast be short.
Ch10.5.5	The Government seeks stakeholder feedback on possible options for conditional support that would be consistent with the economic and environmental objectives of the scheme, and that would further the Electricity Sector Adjustment Scheme objective of ensuring security of energy supply.	Assistance should not be subject to conditions as this will distort the both the environmental and economic objectives of the scheme.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
10.10	The quantum of the proposed direct assistance for coal-fired electricity generators would be determined 'up front'—that is, before the scheme begins. However potential recipients will need to submit to a review process to minimise any prospect of windfall gains.	Supportive. Assistance should be determined and delivered 'up front'. The review should be clearly articulated in governing legislation.
10.11	The proposed direct assistance for coal-fired electricity generators would be provided on a 'once and for all' basis—that is, further allocations of assistance would not be provided after the scheme begins.	Supportive.
10.12	A decision on the timing of the delivery of the proposed direct assistance for coal-fired electricity generators would be made at the time the quantum of assistance is determined.	Delivery should be 'up front' and not conditional.
Tax and accounting issues		
11.1	Discrete provisions of the income tax law would be developed. Such provisions would provide generally the same tax treatment to permits purchased by taxpayers who are carrying on a business or other income-earning activity as would occur under existing legislation, but would provide increased certainty and reduced complexity. The provisions would allow a deduction for expenditure incurred on the purchase of a permit and include any proceeds from the sale of a permit in assessable income.	Supportive To support the efficiency of the scheme, no Stamp Duty should be payable in any jurisdictions on transactions involving permits. The Australian Government should lead negotiations to achieve this outcome.
11.2	a) The cost of acquiring a permit would be deductible at the time the permit is acquired. b) If the permit is banked, the effect of the deduction would be deferred until the time the permit is surrendered or sold. c) Any proceeds received on the sale of a permit would be treated as assessable income.	Supportive. However, where the permit is held at the end of the financial year for surrender within six weeks of 30 June, the cost of acquiring the permits should be deductible in the previous income year. Note the comments on 11.2, 11.3 and 11.4 must be read collectively.
11.3	The effect of deferring a deduction for the purchase of a permit would be achieved through a rolling balance method, under which the value of permits held at the beginning and end of the income year would be taken into account.	Supportive; noting that the tax payer should be able to choose the valuation method.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
11.4	The value of free permits would be included in the taxpayer's assessable income in the year the permits are received.	Supportive, noting treatment as assessable on receipt but allocated a nil value. Alternatively, in preference order; permit value should be matched against asset value loss; defer recognition until permit is disposed of; recognition deferred until permit is available for use.
11.5	The value of a cash grant given to a liable entity as assistance under the scheme would be included in their assessable income in the income year it is received.	Capital value should be offset against capital asset value loss.
11.6	Scheme transactions would be treated under the normal GST rules. This would ensure that scheme transactions would receive the same treatment as similar transactions in the broader economy. It would also be consistent with the underlying principles of the GST, including its broad-based nature, minimise compliance costs for entities and avoid complexity in the law. The treatment of permits under the normal rules would generally not lead to embedded GST for registered entities and, from a GST perspective, those entities would be indifferent as to whether permits were auctioned or free.	Not supported. Transactions should be GST free.
Transitional issues		
12.1	To assist business more generally, the Government proposes to establish the Climate Change Action Fund. This Fund will focus predominantly on those industries not receiving free permit allocation, but which nevertheless need assistance to adjust to the carbon price.	Supportive.
12.2	State and territory governments are encouraged to discontinue their market-based programs once the Carbon Pollution Reduction Scheme commences, as this is consistent with the Council of Australian Governments' complementary measures and streamlining agenda. The Government will continue to work cooperatively with the New South Wales, Australian Capital Territory and Queensland governments to assist them in their development of appropriate transitional arrangements.	Supportive. As the successor to earlier market-based policies for abating greenhouse gas emissions the scheme should not negatively impact on participants in the NSW, ACT or Queensland government schemes.
12.3	A program for allocating early action credits would not be established.	Supportive, noting the comments made on preferred position 12.2.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Ch12.4	The Government seeks stakeholder views on the impacts of the scheme on commercial contractual arrangements.	The implications of the scheme's introduction on existing physical supply contracts are of particular concern to the Energy Industry. The existence of non-reviewable contracts in the NEM, and the bilateral contracts structure of the SWIS, will pose considerable challenges for adequate cost pass through and recovery. This issue will also apply to gas pipelines as many contracts in the industry predate the fundamental policy shift that will occur with the introduction of the scheme. Consideration of these contracts will contribute to the stability of electricity and gas markets and assist in a smooth transition for market participants. The National Electricity Law and National Gas Rules, along with individual retail price regulation regimes, will also need to ensure that any prudently incurred scheme related costs are included in pricing determinations.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
Governance arrangements and implementation		
13.1	Elected representatives (the Parliament and the Government, acting through the responsible minister) would be given responsibility for policy decisions with significant and far-reaching implications, and an independent regulator would be responsible for decisions that are essentially administrative in nature or that involve individual cases. The guiding approach to governance arrangements would be to provide as much certainty and predictability for regulated entities and the market as is practicable, while retaining a legitimate degree of flexibility for the Government to adjust the scheme in response to changed circumstances.	Supportive, noting that beyond negotiating internationally and setting Australia's long-term and medium-term national targets, the administration of the scheme, including establishment of scheme caps, gateways and limits on international instruments should be the responsibility of the scheme regulator.
13.2	a) A non-binding reference to the medium- and long-term national targets would be included in the objects clause of the Act establishing the scheme. Factors that the Government may consider when making decisions about the national targets over time could also be set out in the objects clause. b) The scheme caps and gateways would be set out in delegated legislation.	a) Supportive. b) Not supportive. The rules for determining the scheme caps and gateways could be set out in delegated legislation, but the scheme caps and gateways could be administered and announced by the scheme regulator, based upon national targets and trajectories determined by government.
13.3	The broad principles of industry assistance would be set out in the establishing Act. Further detailed criteria for determining eligibility and the quantum of assistance would be set out in delegated legislation. This would be administered by the regulator, which would have a high level of operational independence in determining individual cases in accordance with the legislatively prescribed criteria.	Supportive.
13.4	The Act establishing the scheme would set out a broad framework for monitoring, facilitating and enforcing compliance. The regulator would then be given responsibility for ensuring compliance by liable entities and, to that end, be given a range of compliance, investigative and enforcement powers, with the flexibility to select from a set of graduated options to respond proportionately to noncompliance.	Supportive.
13.5	An independent expert committee would be constituted every five years to conduct public strategic reviews of the scheme. The responsible minister would be provided with the power to bring forward a review. More frequent 'care and maintenance' reviews may be necessary in the early years of the scheme to assess the operation of administrative arrangements. To improve market certainty, the scope of those early reviews would be tightly defined.	Supportive.

Green Paper Reference	Preferred position / Feedback sought	Energy Industry comment
13.6	The scheme would be implemented through unitary Commonwealth legislation. States and territories will be informally engaged as part of ongoing cooperation and coordination on climate change policy through the Council of Australian Governments.	Supportive.
13.7	The scheme regulator would be given a high level of operational independence to implement the emissions trading legislation and apply it to individual cases. The regulator would be accountable to the responsible minister and subject to ministerial directions of a general nature only.	Supportive.
13.8	The regulator would be required to report on its operations each financial year to the responsible minister for presentation to the Parliament. The regulator's decisions would be subject to sound appeals processes, including judicial review pursuant to the Administrative Decisions (Judicial Review) Act 1977 and merits review by the Administrative Appeals Tribunal.	Supportive.
13.9	The regulator would be established as an incorporated body subject to the Financial Management and Accountability Act 1997. The regulator would have a commission structure with a number of statutory office-holders appointed by the responsible minister.	Supportive.
13.10	The Government will assess the potential for consolidating the Greenhouse and Energy Data Officer, the Renewable Energy Regulator and the proposed scheme regulator.	Supportive.

Review of the proposed ETS permit auction design

A REPORT PREPARED FOR THE NATIONAL GENERATORS FORUM

August 2008

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Review of the proposed ETS permit auction design

Tables & figures

Executive summary

INTRODUCTION

This report, prepared by Frontier Economics (Frontier) for the National Generators Forum (NGF), provides a high-level qualitative review of the proposed permit auction design contained within Chapter 7 of the Commonwealth Government's Carbon Pollution Reduction Scheme Green Paper (the Green Paper). This review was to primarily identify areas of concern or support for the proposed auction design, and areas where further analysis is required.

In addition to considering market efficiency, participant risk management and the effectiveness of a double-sided auction, this report was also to advise on any other potential issues with the proposed permit auction design, whether any alternative and appropriate auction designs better meet the NGF's objectives, and to identify further work required to refine the proposed design going forward.

As a preliminary statement, we note that in conducting this review Frontier has abstracted, to as large an extent as possible, from discussions regarding the process by which permits should (at least initially) be allocated. Thus we have proceeded under the assumption that the auctioning of permits will occur at some point in the future – the extent to which this occurs, and when, is at this stage uncertain.

On the whole, Frontier's impression is that the Government's proposed permit auction design as outlined in Chapter 7 of the Green Paper has been well considered and presented. While none of the key design elements outlined in the Government's proposal appear seriously flawed, we do have several criticisms of Chapter 7. These criticisms mainly relate to the depth of arguments concerning certain design features and the lack of detail provided about others. A summary of our positions regarding the key auction design elements is outlined below.

SUMMARY OF REMARKS

Remark 1: Ascending-clock format

Having considered the options, we tend to favour the ascending-clock design for its open and transparent process and price discovery characteristics. We consider that careful management of revealed information and other measures designed to curtail collusion would adequately prevent such behaviour. To make a more informed decision, we support Evans & Peck (2007) in recommending experimental investigations of the various proposed formats.

Remark 2: Uniform pricing

Uniform pricing is relatively simple and ensures that all participants pay a single price for all permits. Based on the (virtual) universal acceptance of uniform pricing in the carbon permit auction design debate both within Australia and abroad, we support the notion of uniform pricing.

Remark 3: Simultaneous auctions for different vintages

The substitutability characteristics between permit vintages are likely to outweigh any potential complementary characteristics. As such, we support the simultaneous auctioning of different vintages should an ascending-clock format be adopted. If a sealed-bid format is adopted, we prefer sequential auctioning of different vintages, as this process provides more information than simultaneous auctioning in the sealed-bid case.

Remark 4: Double-sided auction

We support a double-sided auction that will allow participants with grandfathered permits to participate in the permit auction process. A double-sided auction has the potential to improve auction efficiency and the accuracy of the final permit price due to the ability for a larger number of buyers and sellers to compete.

Remark 5: Reserve price

Both Holt et al (2007) and Evans & Peck (2007) argue that a reserve price should be set so as to reduce the incentives for collusion. While this result flows from the theoretical literature, further investigation is warranted in the present context as to whether this is a concern, given that the proposed level of information revelation should limit collusive opportunities.

Chapter 7 of the Green Paper provides no detail regarding at what level the reserve price is to be set, how it will be set, or indeed whether reserve prices will be made public *ex ante* auctions. Holt et al's (2007) argument in favour of publicly disclosing reserve prices at the beginning of each auction in the event they are set is convincing.

Remark 6: Auction frequency

On balance, we believe there is a case for more frequent auctions than presented in the Green Paper. Thus, we consider that there may be a case for monthly auctions due to the cash-flow benefits for participants (which flow through to the liquidity of the electricity derivative market) and the likelihood of little drop-off in participation. Weekly auctions could be considered as an alternative if they did not lead to a significant reduction in auction participation and competition or undermining of a secondary market. If weekly auctions were adopted, it may be worth considering sealed-bid sequential auctions as opposed to ascending-clock simultaneous auctions to minimise the expenditure of participant resources and to maximise information revelation.

Remark 7: Advance auction of future vintages

The Green Paper's proposal for auctioning three-eighths of permits in advance seems to be a reasonable lower bound in light of NEM participants' preference to be highly contracted. So long as any cash-flow issues surrounding advanced auctions can be addressed without excessively limiting participation, it may be appropriate to auction 50% or more permits in advance. Such a high proportion of permits auctioned in advance would tend to undermine the case for very frequent (say, weekly) auctions.

Remark 8: Participation and settlement

In general, we agree with the Green Paper's proposal to not limit participation in permit auctions beyond compliance with prudential requirements. Some form of financial assurance should be applied to ensure participants treat auction transactions as binding commitments rather than options.

Remark 9: Proxy bidding

The addition of proxy bidding adds additional flexibility to the ascending-clock format and allows bidders who wish to treat the auction as a sealed-bid format, or those who wish to be absent from the auction, to do so. We support the inclusion of proxy bidding should an ascending-clock format be adopted.

Remark 10: Auction platform

We support the administration of permit auctions via an internet platform. The low administrative and participation costs of running an online auction have the potential to encourage entry and hence improve auction efficiency.

Remark 11: Lot sizes and treatment of unsold lots

The Green Paper provides no cohesive argument as to why a maximum lot size should be set. We question the need to set a maximum lot size in the absence of any convincing reasons to do so.

Any unsold lots should be auctioned in the future according to a specific schedule and are not arbitrarily sold. This will reduce the political risk faced by auction participants as well as reduce the uncertainty regarding future expected permit supply.

1 Introduction

1.1 BACKGROUND AND SCOPE

This report, prepared by Frontier Economics (Frontier) for the National Generators Forum (the NGF), provides a high-level qualitative review of the proposed permit auction design contained within Chapter 7 of the Commonwealth Government's Carbon Pollution Reduction Scheme Green Paper[1] (the Green Paper). This review is intended to assist the NGF in formulating a response to the Government's proposed permit auction design, which will be part of a wider response by the NGF to the Government regarding its positions as outlined in the Green Paper.

The key auction design elements detailed in Chapter 7 of the Green Paper include:

- Permit allocations would over the longer term progressively move towards 100% auctioning as the scheme matures;
- Four auctions would be held each financial year, one in each quarter;
- At least one auction of the relevant year's vintage would be held after the end of the financial year in the lead-up to the relevant surrender date – A suggested end date would be within one month prior to the acquittal date;
- The first auction would take place early in 2010 prior to the start of the scheme;
- Four vintages would be auctioned each year, and the advance auction of future year vintages would occur once each year;
- "Ascending-clock" auctions would be used for single vintage auctions and simultaneous ascending-clock auctions would be used for multiple vintage auctions; and
- Double-sided auctions are only available to those entities that receive free permit allocations.

In the agreed Terms of Reference for this review, the NGF outlined its desire to understand the impacts for the generating sector of the proposed auction design and frequency proposals. In addition, the NGF stated that it considers the overarching objective of any permit auction is to deliver efficiently priced permits and to provide clear price signals to facilitate the development of the secondary permit market, while minimising the overall level of market risk.

In providing its high-level review, Frontier was instructed to primarily identify areas of concern or support for the proposed auction design, and areas where further analysis is required.

[1] Commonwealth Government (2008). *Carbon Pollution Reduction Scheme (Green paper)*, July 2008.

This review was to take into account:

- Market efficiency – which includes such considerations as; predictability, price discovery, simplicity, transparency, market depth and the development of the secondary market;
- Participant risk management – which includes such considerations as broad cash-flow management issues, prudential requirements and transaction costs; and
- The effectiveness of a double-sided auction as a mechanism to allow generators as potential holders of 'grandfathered' permits to access the market.

The theoretical literature assesses auctions across two dimensions – efficiency and revenue. Auction *efficiency* is defined by the extent to which an auction allocates object(s) to those that value them most, *ex post*. Auction *revenue* refers to the expected selling price an auction fetches for the object(s) being sold. As Krishna (2002) argues, private sellers naturally focus more on an auction's revenue performance than its efficiency performance. From the perspective of society, the converse is the case, as an auction's revenue performance is simply a wealth transfer, while its efficiency performance has real welfare implications.

While in theory a benevolent central-planner would choose an auction selling 'public' assets, such as radio and television spectrums or carbon permits purely on the basis of efficiency, in practice the design choice of 'public' auctions gives consideration to both efficiency and revenue. The oft-cited 'double dividend' effect[2] – using more 'efficiently' raised revenue from an auction to offset 'less efficient' taxation, thereby achieving both the initial environmental goal and alleviating a taxation distortion – is commonly used as justification for such a position.

In addition to considering market efficiency, participant risk management, and the effectiveness of a double-auction, the report was also to advise on any other potential issues with the proposed permit auction design, whether any alternative, appropriate auction designs better meet the NGF's objectives, and to identify further work required to refine the proposed design going forward.

As a preliminary statement, we note that in conducting this review Frontier has abstracted, to as large an extent as possible, from discussions regarding the process by which permits should (at least initially) be allocated, and have intentionally left discussions regarding the relative merits of grandfathering versus auctioning of permits to other forums. Thus we have proceeded under the assumption that the auctioning of permits will occur at some point in the future – the extent to which this occurs, and when, is at this stage uncertain.

[2] Cramton & Kerr (2002), p. 339.

To provide a contextual background, much of the proposed permit auction design contained within Chapter 7 flows from an expert report[3], prepared by Evans & Peck, which was commissioned by the National Emissions Trading Taskforce (NETT) prior to the Department of Climate Change assuming responsibility for a national ETS. In this report, Evans & Peck were asked to inform the further definition of the auction proposal made by the NETT in their 2006 discussion paper.[4] The Evans & Peck report does not itself represent original research, although it does provide a useful summary of both the theoretical auction literature and practical experiences to date, drawing heavily on the work of auction theorists who have considered permit auction design, such as, *inter alia*, Peter Cramton and Suzi Kerr.[5]

1.2 STRUCTURE OF THE REPORT

This report is structured as follows:

- Section 2 briefly outlines the key auction types and describes the proposed permit auction design across two dimensions – its mechanism design and operational design features;
- Section 3 reviews these key design elements and compares and contrasts the proposed design with the theoretical literature and other proposed permit auction designs. Frontier's position regarding the main design elements are summarised by Remarks 1-10; and
- Section 4 concludes.

[3] Evans & Peck (2007). *Possible Design for a Greenhouse Gas Emissions Trading System: Further Definition of the Auction Proposal in the NETT Discussion Paper*, prepared for: National Emissions Trading Taskforce, August 2007.

[4] NETT (2006). *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: A Discussion Paper prepared by the National Emissions Trading Taskforce*, August 2006.

[5] Both Cramton and Kerr provided peer-review assistance to the Evans & Peck report. Much of the technical basis of the Evans & Peck report is covered in: Cramton, P and Kerr, S. (2002). Tradable Carbon Permit Auctions – How and Why to Auction not Grandfather. *Energy Policy*, 30(1), pp. 333-345.

2 The proposed permit auction design

In this Section we briefly outline the proposed permit auction design, as outlined in Chapter 7 of the Green Paper.

2.1 INTRODUCTION

It is at this stage useful to define the key design elements of the proposed permit auction across two categories – mechanism design issues and operational design issues. We will use this structure in reviewing the key design elements of the proposed auction design in Section 3 below.

Mechanism design issues relate to the choice of auction mechanism. Mechanism features are primarily concerned with providing the correct incentives to bidders to ensure an auction's objectives are met. Examples of mechanism design issues include:

- The type of auction – ascending, descending, first-price sealed-bid, second-price sealed-bid;
- The form of pricing when multiple units of the same object are sold in a single auction – uniform pricing or discriminatory pricing;
- The timing and interdependence of auctions – simultaneous, sequential or combinatorial when multiple different objects are being auctioned (e.g. different permit vintages);
- Whether a one-sided or double-sided auction is used – is the only seller of permits the government, or can participants in possession of grandfathered permits also participate as sellers?;
- Bidding rules, designed to curtail or encourage certain behaviour;
- Reserve prices – whether a reserve price should be set, and if so to what level; and
- Information revelation – where applicable, how much information the auctioneer discloses to participants and/or the market both pre, during and post auction.

The choice of mechanism design features will depend on several criteria:

- The objectives of the auction (the efficient allocation of resources, revenue maximisation, etc);
- Characteristics of the object being auctioned (independent private value, common value, or a combination of both); and
- Characteristics of the auction participants (number and strength of bidders, level of sophistication of bidders, potential for collusive behaviour amongst bidders).

Operational design issues relate to the manner in which a given mechanism design is implemented and administered. Operational features generally influence

the effectiveness of an auction in achieving its objectives, and may also influence bidder strategies and behaviour. Such operational design features can include:

- Auction frequency – for example weekly, monthly, quarterly or annually;
- Auction timing – when the auction should begin and the extent to which permits are auctioned in advance;
- Participation and settlement – who is eligible to participate, what requirements and/or financial pre-qualifications must participants meet;
- Proxy bidding – whether bidding in advanced through bidding rules is permitted, and if so how;
- Auction platform – in person, mail, phone, internet; and
- Lot size and the treatment of unsold lots – whether minimum and/or maximum restrictions on the quantity a given party can buy/sell are set, and if so to what level such quantities should be set. In addition, how unsold lots are treated.

While the list of both mechanism and operational design issues is long, many of these issues are readily resolvable. Some mechanism design issues can be resolved using the auctioneer's objectives and the body of auction theory currently available. More complex mechanism design issues can be resolved by looking at the experiences of similar, past auctions and using experimental studies to guide the proposed design. Most of the operational design issues can be resolved using a combination of economic theory, past experience and participant consultation.

2.2 BRIEF OVERVIEW OF AUCTION TYPES

2.2.1 Introduction

The field of auction theory is vast and considerably technical. What follows is a brief overview of the main types of auctions and is by no means exhaustive. A more thorough but equally accessible review is provided in Evans & Peck (2007). For the inquisitive and determined reader, excellent collections of the auction theory literature to date include Klemperer (2004)[6] and Krishna (2002)[7].

2.2.2 Single-unit auctions

Auctions are generally classified broadly as single- or multi-unit auctions. We first consider a normal[8] single-unit auction, where multiple buyers compete to buy a single object from a single seller, the auctioneer. The four most common forms of single-unit auctions can further be classified into 'open-bid' auctions (ascending auctions and descending auctions, often called 'English' and 'Dutch'

[6] Klemperer, P. (2004). *Auctions: Theory and Practice*. Princeton, US: Princeton University Press.

[7] Krishna, V. (2002). *Auction Theory*. San Diego, US: Academic Press.

[8] 'Normal' implies that there is only one seller, and that this seller is the auctioneer. Procurement auctions, where the auctioneer is a buyer, do not change the standard results. Double-sided auctions, where multiple sellers exist, are discussed in Section 3.1.4.

auctions, respectively) and 'sealed-bid' auctions (first-price sealed-bid auctions and second-price sealed-bid auctions). The proposed permit auction design in the Green Paper, an ascending-clock auction, is a form of open-bid auction.

In an ascending auction, the price is successively raised until only a single bidder remains, and that bidder wins the object for the final price. Alternatively, in a descending auction, the price initially starts high and is successively lowered until the first bidder to call out wins the object for their nominated price.

In a first-price sealed-bid auction, each bidder independently submits sealed bids with no knowledge of other bidders' bids. The bidder with the highest bid wins the auction and pays its bid price. In a second-price sealed-bid auction, the same process is followed and the bidder with the highest bid wins the auction, however the winner is only required to pay the price of the *second* highest bid (alternative known as the highest *rejected* bid).

In the single-unit case, a descending auction and a first-price sealed-bid auction are 'strategically equivalent', and thus can be commonly referred to as 'first-price' auctions. Likewise, an ascending auction and a second-price sealed-bid auction share many of the same characteristics, assuming that bidders have 'private values'[9], and thus can be commonly referred to as 'second-price' auctions.

Under the standard theoretical assumptions, which include risk aversion, no budget constraints and private, independent 'signals' drawn from a common, strictly increasing, continuous distribution, these four auctions are equivalently efficient and raise the same expected revenue – this is the celebrated *Revenue Equivalence Theorem*.

2.2.3 Multi-unit auctions

In contrast to single-unit auctions, multi-unit auctions involve multiple bidders competing in auction(s) for multiple units. These units may be homogenous or heterogeneous, and thus may be substitutes or complements.[10] This form of auction is more realistic when thinking about permits auctions, since any permit auction will involve the sale of multiple – as opposed to individual – permits. We will initially review the auction formats used in selling multiple units in a *single* auction, and following this discuss the auction arrangements used to sell multiple units in *multiple* auctions.

As was the case with single-unit auctions, the choice of open-bid or sealed-bid also applies to multi-unit auctions. Thus, as before, open-bid auctions include ascending and descending auctions, while sealed-bid auctions include auctions analogous to the first-price and second-price sealed-bid auctions outlined above.

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[9] The *private-value* model assumes that each bidder knows how much she values the object(s) for sale, but this value is private information to himself. Alternatively, the *pure common-value* model assumes the actual value of the object is the same for each bidder, but bidders have different private information about what that value is. Finally, the *almost common-value* model assumes some combination of both.

[10] Two objects are said to be substitutes if the demand for the first object decreases (increases) with a decrease (increase) in the price of the second object. Two objects are said to be complements if the demand for the first object decreases (increases) with an increase (decrease) in the price of the second object.

Single, multi-unit auctions

In a single, multi-unit auction, multiple bidders compete in a single auction where multiple objects are up for sale. These objects may be homogenous or heterogeneous. In the homogenous case, bidders bid for different quantities of the same object, while in the heterogeneous[11] case, bidders bid for different quantities of the different objects. Restricting our attention to the homogenous object case, an important distinction between single-unit and multi-unit auctions is the price that is charged per unit in the multi-unit setting. Two options are available in this regard – a uniform price auction and a discriminatory[12] price auction.

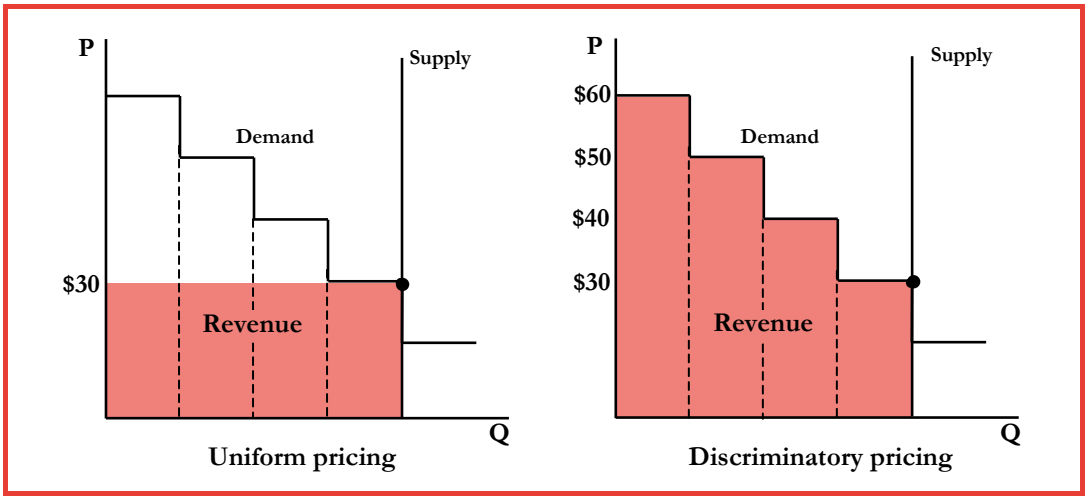

Figure 1: Uniform vs. discriminatory pricing

Source: Frontier Economics

In a uniform price auction, all units are sold at the market-clearing price, which equates demand and supply. Thus, the uniform-price, multi-unit auction is analogous[13] to the second-price, single-unit auctions outlined above. In a discriminatory auction, the price a bidder pays for each is exactly its bid price for that unit – thus the price paid by different bidders, and indeed by the same bidder but for different units of the same object, can differ. The discriminatory, multi-unit auction is analogous[13] to the first-price, single-unit auctions described above.

A graphical illustration of both uniform and discriminatory pricing is presented in **Error! Reference source not found.**. In this example, the market clears at four units. In the uniform price case, this results in a market-clearing price of $30, which applies to all four units. In the discriminatory price case, the price paid per

[11] Such auctions are sometimes referred to as *multi-item* auctions – thus the term *multi-unit* auctions is reserved for multi-unit auctions involving homogenous objects, while *multi-item* auctions refer to multi-unit auctions involving heterogeneous objects.

[12] Also called 'pay-your-bid' auctions.

[13] These analogies are used purely to aid explanation – importantly, the results derived in single-unit settings do not (necessarily) hold in more complex multi-unit cases.

unit depends on the bid submitted for each unit – the first unit has a price of $60, the second unit a price of $50, and so on.

Multiple, multi-unit auctions

Multiple, multi-unit auctions are generally used when the auctioneer wants to sell multiple units of different objects – that is, multiple units of several heterogeneous objects. Assuming multiple vintages of permits are auctioned under the Government's proposed design, this is the most relevant auction format to consider.

The options available to administer multiple, multi-unit auctions are largely the same as the single, multi-unit case. This means that the choice over auction format (open-bid or sealed-bid) and pricing (uniform versus discriminatory) for each auction must first be made. However, in addition, the *timing* of the multiple auctions must be considered. Again there are two options in this regard:

- Simultaneous auctions involve the simultaneous running of the multiple auctions – thus bidders can participate in both auctions concurrently; or
- Sequential auctions involve the running of the various auctions in sequence – thus a series of single, multi-unit auctions for each type of object, where the succeeding auction starts only after the preceding auction has finished.

In some cases, allowing bidders to make package or conditional bids may be desired. In particular, if the objects being auctioned are heterogeneous and strongly complementary, bidders may only wish to place a bid for one object contingent on obtaining other object(s). These auctions, known as 'combinatorial auctions', are best defined as a sub-category of simultaneous auctions, where bidders make package or contingent bids across the multiple auctions.

In summary, for the purposes of any potential permit auction design, the following auction design features are relevant:

- Assuming that only *current* vintages are auctioned, we are concerned with a **single, multi-unit auction** involving homogenous objects, since all permits of the current year vintage are assumed equivalent;
- Assuming that both *current* and *future* vintages are auctioned, we must now consider two options for the auctioning of multiple permits within each category of vintage, since current and future vintages are not assumed to be equivalent. These options include:
  - **Multiple, simultaneous auctions** – where in one auction, multiple units of current vintages are sold, while in other auctions, multiple units of different future vintages are sold. These auctions are run simultaneously. Additionally, a **combinatorial auction** can be run in this setting, where bidders can submit package or contingent bids across the various auctions; and
  - **Multiple, sequential auctions** – where, say, in the first auction, multiple units of the current vintage are sold, while in subsequent auctions,

multiple units of different future vintages are auctioned. Importantly, each successive auction occurs only once the preceding auction has finished.

2.3 THE PROPOSED PERMIT AUCTION DESIGN

In light of the above main single- and multi-unit auction formats, we now proceed with a brief outline of the Government's proposed permit auction design. Once again, it is convenient to define the proposed auction design on the basis of both its mechanism and operational design features.

2.3.1 Proposed mechanism design

The proposed mechanism design outlined in Chapter 7 of the Green Paper is an open-bid, ascending, uniform price, multi-unit auction. It is proposed to operate this format in respect of both single vintage and multiple vintage auctions, with multiple vintage auctions being conducted simultaneously. In addition, a double-sided auction has been proposed to allow participants who receive grandfathered permits to participate. In all cases, a reserve price is to be set and only the information regarding aggregate demand for permits will be revealed at the end of each auction round. Each of these key mechanism design issues is further explained below.

Ascending-clock format

The 'ascending-clock' auction is a form of English auction. Unlike a traditional open-outcry English auction, in the ascending-clock auction the auctioneer uses a clock to control the pace of the auction and to notify all participating bidders of the current price. Over successive rounds, the auctioneer announces a current price, which he increases from round to round. Bidders bid their desired quantity of permits at the given round's price, with only aggregate demand for permits being revealed to bidders at the end of each round. This process continues, with bidders dropping out as the rounds progress. Once a bidder has dropped out of the auction they are not allowed to re-enter. The auction finishes in the round where total demand is less than or equal to total supply. By definition, a standard ascending-clock auction has a uniform price – that is, the price paid by the winning bidders on their respective units is equal to the price at which excess demand is zero, which is common to all winning bidders.[14]

Uniform pricing

As mentioned above, the nature of the proposed auction format (i.e. an ascending-clock) implies that the multi-unit auctions conducted in this manner will generate a uniform price to be paid by all winning bidders for their respective quantities.

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[14] The actual price paid depends on what round demand no longer *exceeds* supply – if demand exactly equals supply in the final round, then this final round price is the final auction price. If supply exceeds demand in the final round (this can occur due to the discontinuous nature of bid increments) then the price from the previous round is used, and the excess supply at this price is allocated to bidders according to their penultimate-round bids. See Evans & Peck (2004), p.10, for details.

Simultaneous auctions for different vintages

The proposed permit auction design highlights that, in those cases where multiple vintages are to be auctioned, different vintages of permits will be auctioned simultaneously. Thus, multiple, multi-unit auctions will run simultaneously, selling multiple units of the differing vintages being offered.

Double-sided auction

The Green Paper tentatively proposes that participants who initially receive grandfathered permits will be allowed to participate in permit auctions in the early stages of the scheme – thus the auctions may be double-sided. This implies that more than one seller, the auctioneer, will exist. Preferred position 7.10 of the Green Paper does not guarantee that a double-sided auction format will be adopted, but rather implies that *if* double-sided auctions are adopted, only those recipients of grandfathered permits will be eligible to participate as additional sellers. Details of the proposed double-sided auction process can be found in Evans & Peck (2007), p.13.

Reserve price

The proposed permit auction design states that permits in any eventual auction will have a reserve price. Unsold permits (i.e. permits for which the price does not exceed the reserve price) would be sold in future auctions. No guidance as to what the reserve price will be, or how it will be set, is provided.

2.3.2 Proposed operational design

The proposed operational design is outlined in several Sections within Chapter 7 of the Green Paper. We note that, in addition to the 'Auction Operational Features' contained in Box 7.8 (some of which we feel are more appropriately classified as mechanism design issues), the Green Paper discusses several other operational design issues in Section 7.5.

Auction frequency

The proposed operational design calls for four auctions per year, with one auction falling in each quarter.

Auction timing

The proposed operational design indicates that at least one auction of the relevant year's vintage will be held *after* the end of the financial year in the lead up to the relevant surrender date. The suggested date of this auction is one month prior to the surrender date. The first permit auction would be held as soon as feasible in 2010, and by definition must occur prior to the start of the ETS. The proposed auction schedule also includes a transitional period up to the end of June 2010.

Advanced auctioning of future vintages

The proposed design calls for the auction of four vintages once in each year – the current year's vintage plus an advanced auction of three future vintages. However, during the 2009-10 transitional period, permits for future vintages may be auctioned on more than one occasion.

Participation and settlement

The proposed operational design indicates that universal participation would be permitted at auctions. Therefore, no requirements that bidders be participants in certain markets (e.g. participants in the wholesale electricity market) are mentioned. Preferred position 7.8 indicates that the lodgement of a security deposit may be a bidding prerequisite.

Proxy bidding

The proposed operational design allows proxy bidding by letting bidders submit demand schedules or 'bidding rules' in advanced. Proxy bidding will allow participants to be absent from part, or all, of the auction. It may also reduce the costliness of participation to less sophisticated bidders who may not wish to actively participate in each round.

Auction platform

Using an internet platform to administer the permit auctions is suggested in the proposed operational design. Using an internet platform is expected to encourage participation and hence competition due to the relatively low costs of entry, and will also likely be relatively cost-effective for the government to run.

Lot sizes and treatment of unsold lots

The proposed operational design indicates that both minimum and maximum lot sizes may be enforced. Minimum lot sizes may apply for the sake of administrative simplicity. Since a reserve price is to be set, the potential for supply to exceed demand at the reserve price, and hence for permits to go unsold, exists. The proposed operational design indicates that unsold permits will need to be sold in future auctions.

3 Review of key design elements

In this Section, we review and discuss the proposed permit auction design elements of Chapter 7 across the same two dimensions used in Section 2 – mechanism and operational designs. In reviewing and discussing each, we draw heavily on two main resources in addition to Evans & Peck (2007). The first is a final report[15] prepared by a panel of experts advising the RGGI[16] member States on their own potential permit auction design. The second is a response[17] by Peter Cramton to this proposed design. Given Cramton's involvement with the Evans & Peck (2007) report (and by extension Chapter 7 of the Green Paper), both the views expressed in Cramton (2007) and Holt et al (2007) are valuable resources in evaluating the proposed permit auction design.

Where applicable, we have considered results, conclusions and lessons learned from the theoretical literature in assessing the various design elements of the proposed permit auction. However, as Krishna (2002) observes, the analytical assessment of multi-unit auctions with interdependent valuations "makes the attendant difficulties [of multi-unit, private value auctions] more acute, even insurmountable". Krishna observes that in such settings we have, in many ways, reached the limits of what auctions can achieve as mechanisms for efficiently allocating objects. In such cases, decisions on auction design must increasingly be based on experimental evidence and/or past experiences, given the virtual impossibility of making sound *a priori* judgements and recommendations.

3.1 MECHANISM DESIGN ISSUES

3.1.1 Ascending-clock format

Terminology and general results

At this stage it is instructive to review two broad classifications of auctions – the *common-value* and *private-value* auction. In a common-value auction, all bidders have the same value for the object, and each has private information about this uncertain value – this scenario often arises when the object being auctioned is purchased for resale.[18] In a private-value auction, each bidder's value does not depend on information held by others, but depends on the bidder's particular situation – this scenario often arises when the object being auctioned has subjective value (such as art) or when the object is bought for consumption.

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[15] Holt, C., Shobe, W., Burtraw, D., Palmer, K. and Goree, J. (2007). *Auction Design for Selling CO_2 Emissions Allowances Under the Regional Greenhouse Gas Initiative: Final Report*; prepared for: RGGI Board, October 2007.

[16] The Regional Greenhouse Gas Initiative is a cooperative effort of several Northeast and Mid-Atlantic states in the US for a proposed regional cap-and-trade program, initially covering CO_2 emissions from power plants.

[17] Cramton, P. (2007). *Comments on the RGGI Market Design*, prepared for: New York Independent System Operator, November 2007.

[18] The resale price thus determines the realised 'common value'.

The distinction between common-value and private-value auctions is important in the context of designing carbon permit auctions, since the bidding behaviour of participants, and hence expected results, vary quite considerably across each of these auction types. As a further complication, carbon permits are likely to possess both private- and common-value characteristics. This is because permits will have a common value, set by the price in the secondary market, but will also be bought by participants for 'consumption', or to allow them to emit CO_2, and hence will also have a private-value component.

At this stage it is worth briefly reviewing some of the key results from the auction theory literature. While most of these results apply exclusively to the single-unit case and are based on somewhat restrictive assumptions, we discuss them for completeness:

- First, in the single-unit case with private-values and under standard assumptions, the Revenue Equivalence Principle implies that all standard auctions are equally efficient and will generate the same expected revenue (Klemperer, 2004);
- Second, also in the single-unit case with private values and under the standard assumptions but allowing for risk-aversion, first-price auctions generate more revenue on average than second-price auctions (Klemperer, 2004). This is because first-price auctions encourage bidders to bid more aggressively (or closer to their true valuation) than do second-price auctions; and
- Third, in the single-unit case with common-values, an auction format that 'links' the price paid to individuals' private information regarding their beliefs of an objects value will generate greater expected revenues, since the eventual price paid is linked to the winner's information (Klemperer, 2004). This result, known as the *linkage principle*, implies that in the presence of common-values, ascending auctions will generate greater expected revenues than second-price, sealed-bid auctions, which in turn will generate greater expected revenues than first-price, sealed-bid auctions.

While these and numerous other fundamental results hold in the single-unit case, multi-unit auctions are considerably more complex. Consequently, the theoretical predictions of single-unit auctions do not necessarily follow for multi-unit auctions. Indeed, Klemperer (2004) notes that the achievement of efficiency in multi-unit auctions is difficult, while Krishna (2002) observes that multi-unit auctions are generally inefficient.

In the uniform pricing case, this inefficiency arises since bidders have incentives to 'shade' their bids (i.e. reduce them below their true valuation), or practice what is known as 'demand reduction'. Demand reduction is a profitable strategy in a multi-unit auction with uniform pricing. This is because, by reducing demand and hence bids on early units, bidders benefit from the lower eventual (uniform) price paid on all units which are won. Thus, a bidder may find it profitable to buy fewer units than it actually wants, as doing so keeps the price paid for these units lower than if the actual desired number of units were purchased. As Klemperer (2004) observes, demand reduction is of most concern where there is a small number of large bidders – in such cases a natural analogy for demand reduction

behaviour in auctions is oligopsonistic behaviour in other naturally occurring markets.

The inefficiency of multi-unit auctions is not confined to uniform price auctions; discriminatory price auctions can also result in an inefficient allocation of objects. While the reasons as to why this occurs are somewhat more complex, the essence of the problem is that even symmetric bidders value different units of the same object differently (Krishna, 2002). Since different units of the same object in a multi-unit auction are valued in a non-symmetric fashion, bidding behaviour across units changes, and hence because the fundamental assumption of bidder symmetry is violated, discriminatory price auctions are inefficient.

'Open' versus 'sealed' bidding

Having briefly reviewed some key theoretical findings, we now consider the fundamental differences between the proposed open-bid, ascending-clock auction and an alternative format: a sealed-bid, uniform price auction advocated by Holt et al (2007).[19] The key difference between the open- and sealed-bid formats is that the former is a multiple-round auction while the latter involves only a single round of bidding. The multiple-round nature of open-bid auctions vis-à-vis sealed-bid auctions has three main implications which all stem from the issue of information revelation.

First, multiple-round auctions allow a process of price discovery, whereby bidders gain information in each round about the common-value component of a given object. This process of price discovery leads, in theory, to a more accurate and efficient final price since all participants (and the greater market if auction results are released) learn, across multiple rounds, the relative value to all bidders of the object being auctioned (Cramton & Kerr, 2002). This process of price discovery can be particularly influential in fostering the development of liquid, efficient secondary markets since the price discovery process during auctions informs the secondary market of the object's true value. While a sealed-bid auction will also determine a market price, the process by which this price is set is less transparent and importantly does not reveal to all bidders any information regarding relative differences between bidder valuations. Price discovery generally improves the efficiency of an auction's outcome by ensuring that both auction participants and any potential secondary markets receive accurate signals regarding the true valuation of the object in question.

Second, the price discovery and greater information revelation characterises of open-bid auctions helps to alleviate the 'winner's curse'. The winners curse is a strategic mistake on behalf of bidders in common-value auctions, where the winning bidder ends up over-paying for the object in question. Information revelation through multiple bidding rounds helps to better inform bidders of the 'common value' of the object in question, and hence links bidders' information

[19] Evans & Peck (2007) states: "It is relevant to note that the RGGI proposes to adopt an ascending-clock auction format" (p.9). This statement was based on a preliminary report prepared by Holt et al for the RGGI. In their final report, Holt et al dismissed the ascending-clock format they had earlier proposed in favour of a standard, sealed-bid auction.

to the price that is paid – this is the linkage principle. Thus, information revelation across repeated rounds encourages bidders to bid more aggressively without the fear of learning they have over-paid for an object (relative to other bidders) once it is too late. Alleviating the winner's curse is both an efficiency and revenue consideration – by providing greater information throughout the auction, bidders can be expected to bid more aggressively (i.e. closer to their true values) and hence auction efficiency and revenue is generally improved.

Third, open-bid auctions tend to be more susceptible to tacit collusion between bidders (Klemperer, 2004). While the first two issues generally support open-bid in favour of seal-bid formats, information revelation through multiple bidding rounds can be a double-edged sword. Open-bid auctions can lead to collusion in several ways. First, over repeated rounds, bidders have the ability to communicate with one another. This can be done implicitly by 'signalling' through bidding patterns or explicitly by passing information to rival bidders through some form of code.[20] Second, the greater level of information revealed to bidders in multiple-round auctions can aid collusion. For instance, if bidders know at the end of each round how many rival bidders are remaining, the potential for collusion will be greater. This is because collusion is easier to sustain with lower numbers of bidders – as the number of bidders decreases, the remaining bidders will face greater incentives to attempt to form a collusive buyers cartel, given that such a cartel is more likely to succeed.

It therefore seems apparent that when objects possess common-value characteristics, the open- and sealed-bid formats have opposing strengths and weaknesses. The open-bid format may potentially improve efficiency and/or revenue performance though reliable price discovery *vis-à-vis* sealed-bid formats. However, this potential is partially undermined by the greater scope for collusive outcomes. Likewise, while the sealed-bid format may under-perform relative to the open-bid format due to a lack of information revelation and the winner's curse, the lower probability for collusion potentially offsets this downside.

As Evans & Peck (2007) note, the potential for collusion under the ascending-clock format can, to some degree, be controlled through the level of information revelation at the end of each bidding round. Thus, the potential for collusion varies across a continuum of information revelation – collusion is more likely if each individual bid is published each round than if only aggregate demand at a given price is revealed each round. As Chapter 7 of the Green Paper proposes to reveal only aggregate demand at the end of each round – this should limit the potential for collusion while still providing adequate information to bidders regarding other participants' valuations.

Unfortunately, the theoretical literature provides no guidance as to which of the above effects is likely to dominate – in other words, whether an open-bid or sealed-bid format is preferred overall. This suggests that the choice between

[20] This was the case in the FCC spectrum DEF auctions, where rival bidders managed to communicate their desire to win certain spectrums by 'code bidding' – for instance, bidding \$3**1** could indicate your interest in Spectrum **1**, bidding \$4**2** could indicate your interest in Spectrum **2**, bidding \$5**3** could indicate your interest in Spectrum **3**, etc. See Cramton & Schwartz (2002) for details.

open- or sealed-bid formats is likely to be best made on the grounds of experimental evidence and/or past experiences.

Holt et al (2007) experimentally test several auction formats, including both an open-bid, ascending-clock and a standard, sealed-bid auction. Holt et al find no evidence that the sealed-bid, uniform price format out-performs the open-bid format on either efficiency or revenue performance measures. In addition, Holt et al (2007) find no evidence that collusion substantially affects one format more than the other.

In response to Holt et al (2007), Cramton (2007) notes that Holt et al's criticism of the ascending-clock auction on the basis of collusive concerns is unsubstantiated by their own experimental evidence. In addition, Cramton argues that Holt et al's use of a non-standard ascending-clock design negatively biases their results. Specifically, Cramton notes that the ascending-clock design used in Holt et al's experiments;

(i) did not reveal excess demand at the end of each round; and

(ii) did not allow intra-round bidding;

both of which would be likely to improve auction revenues and efficiency if they were included (Cramton, 2007).

Activity rules

The Green Paper makes references to the need for an appropriate set of 'auction rules' but provides no further details on the topic. More so than with sealed-bid auctions, open-bid auctions such as the proposed ascending-clock auction require activity rules to prevent 'disorderly bidding' and gaming.

Evans & Peck (2007) highlight three activity rules required under an ascending-clock format. These rules are 'plain vanilla' rules for such auctions, and are more completely described in both Holt et al (2007) and Cramton (2007):

(i) A bidder's total demand for a particular object cannot exceed its eligibility for that object, if such restrictions are enforced;

(ii) As prices rise, a bidder can only maintain or decrease its bid quantity – thus a bidder's total demand may never increase from round to round;[21] and

(iii) In the simultaneous ascending-clock case, if a clock does not tick to the next price between rounds (since demand is less than or equal to supply), any bidder that submitted a positive bid in the previous round must submit at least that same bid in the next round.[22]

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[21] This rule prevents last-minute 'sniping' and forces bidders to bid actively from the outset.

[22] This could occur if bidding stops on, say, a future vintage clock at a certain price, but continues on a current vintage clock. This rule implies that the final bid on the future vintage clock cannot be reduced as bidding continues on the current vintage clock.

A further consideration is whether to restrict a bidder's total eligibility to a given number of permits. Holt et al (2007) argue that limiting the share of allowances that a single entity can purchase in an auction will raise the cost of using auctions to "corner the market" and hence should be enforced to encourage competition and efficiency. Holt et al propose a maximum entitlement per bidder of 33% of the total permits available in a given auction. Evans & Peck (2007) also discuss this issue, and argue that to limit the potential for market power abuse, each bidder's entitlement should be limited to 20% of all permits available in a given auction. In setting maximum bidding entitlements, preventing the ability for large players to corner the market must be weighed against the need to allow large participants to access their required amount of permits. To the extent such restrictions prevent permits going to the bidder that values them highest, efficiency will be compromised. Holt et al (2007) note that a 33% cap should not place "too stringent a restriction" on what quantity of permits large participants can purchase. Evans & Peck (2007) report that the 20% cap imposed in the UK ETS auctions only bound once, with one bidder out of 38 constrained in the 2005 auction.

Intra-round bidding

Both Evans & Peck (2007) and Cramton (2007) highlight the value of intra-round bidding within the ascending-clock format, an issue that is not discussed in the Green Paper. Intra-round bidding involves bidders submitting demand schedules for prices in between the bid increments determined by the ascending-clock process. For instance, bid increments may be $5, but bidders who wish to submit intra-round bids may submit price-quantity bids at $1 levels within this $5 increment.[23] The major advantage of intra-round bidding is that it speeds up the auction process by alleviating the need to have excessively 'fine' bid increments, while ensuring that the final price is both more accurate and thus potentially more efficient. This is evident if one considers a situation in which supply exceeds demand at the final clearing price range. This excess supply is generally allocated between winning bidders according to their previous round bids. Allocations based on previous round bids is likely to be inefficient, since units will not be efficiently allocated if the *relative* bids of participants between the penultimate and final rounds change.

A related issue to intra-round bidding is the size of bid increments. The Green Paper provides no details as to what the bid increments will be, how they will vary according to the progression of the auction, or how they will be calculated. Evans & Peck (2007) propose that bid increments narrow as the auction progresses, and note that if intra-round bidding is not adopted, bid increments need to be sufficiently fine – this is to ensure that the final clearing price is accurate both from an efficiency viewpoint and in informing the greater market about the true price of carbon abatement.

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[23] For example, if the bidding increment increased from $20 to $25, bidders who wished to submit intra-round bids may submit price-quantity bids for $21, $22, $23, $24 and $25, as opposed to just $25. See Evans & Peck (2007) and Cramton (2007) for details.

Cost and complexity considerations

A sealed-bid format is likely to have advantages over an open-bid format with regards to administrative and participation costs. On this issue, Holt et al (2007) observe:

> Past experience suggests that a significant proportion of the administrative cost of holding auctions is related to the initial set-up of the auction, including the development of auction rules, deploying auction software, and establishing the mechanisms for pre-qualifying bidders (discussed below) and that the incremental costs of repeating a particular auction type will be low in comparison to these initial costs (p. 36).

It thus appears that the majority of any auction costs will be incurred up-front, and that the incremental cost of additional auctions could be relatively quite low. Notwithstanding this, the choice of auction format is likely to determine what such incremental costs are likely to be. While Evans & Peck (2007) observe that the technological costs of participating in an ascending-clock auction should be quite low, since any computer connected to the internet would suffice, the time taken to complete such auctions is an important consideration.

The administrative costs of running a single-round auction are likely to be lower than those associated with a multiple-round auction, mainly due to the longer time demands placed in participants in multiple-round auctions. As Cramton (2007) notes:

> The only potential downside of a clock auction compared with a sealed-bid auction is the clock auction takes time to run, which entails some cost for both the market operator and the bidders (p. 8).

Cramton notes that an ascending-clock auction would generally take between half a day to a full day to complete, depending on how many rounds are used. While we have no indication as to the likely time required to prepare bid schedules for sealed-bid auctions, it is likely to be less time-consuming than participating in either a half- or full-day open-bid auction. In addition, while we have no indication as to the likely incremental cost of running a sealed-bid auction, Holt (2006) reports that the Virginia NO_X allowance auctions, which were sequential, ascending-clock auctions and which raised approximately $10.5m, cost approximately $200,000 to design and administer.[24]

Assessment

There appears to be little consensus within either the theoretical or experimental literature regarding the preferred choice between an ascending-clock auction as proposed in the Green Paper, and a sealed-bid auction as proposed by Holt et al (2007). Having considered the options, we tend to favour the ascending-clock design for its open and transparent process and price discovery characteristics. We consider that careful management of revealed information and other measures designed to curtail collusion would adequately prevent such behaviour. To make a more informed decision, we support Evans & Peck (2007) in recommending experimental investigations of the various proposed formats. We

[24] This figure included one-off R&D costs, and thus the true incremental cost of holding the auctions was likely less.

note that neither intra-round bidding nor the potential costs of an ascending-clock auction (relative to a sealed-bid format) are discussed in the Green Paper. Both of these issues warrant further attention and may affect the final choice of auction format, given the lack of clear theoretical or experimental evidence on the issue to date.

Remark 1

Having considered the options, we tend to favour the ascending-clock design for its open and transparent process and price discovery characteristics. We consider that careful management of revealed information and other measures designed to curtail collusion would adequately prevent such behaviour. To make a more informed decision, we support Evans & Peck (2007) in recommending experimental investigations of the various proposed formats.

3.1.2 Uniform pricing

In addition to the auction *format* (ascending-clock versus sealed-bid), a second crucial decision unique to multi-unit auctions is the choice of *pricing*. As mentioned before, the two options are uniform and discriminatory pricing.

There is a general consensus between Chapter 7 of the Green Paper, Evans & Peck (2007), Holt et al (2007) and Cramton (2007) that a uniform price auction is preferable to a discriminatory price auction. As noted above, the theoretical revenue and efficiency performance of uniform versus discriminatory price auctions in the multi-unit setting is ambiguous. In both cases, auction outcomes can be inefficient – in the uniform-price case due to demand reduction and in the discriminatory-price case due to a violation of symmetry (Krishna, 2002).

The relative complexity of a discriminatory price design and the potentially undesirable feature that the price paid by different bidders (and indeed by the same bidder but for different units of the same object) can differ are universally used as justification for favouring uniform pricing over discriminatory pricing. Cramton & Kerr (2002) also suggests that uniform pricing may encourage participation by smaller bidders, since uniform price auctions are relatively strategically simple and smaller bidders tend to benefit from demand-reduction by larger bidders.

Remark 2

Uniform pricing is relatively simple and ensures that all participants pay a single price for all permits. Based on the (virtual) universal acceptance of uniform pricing in the carbon permit auction design debate both within Australia and abroad, we support the notion of uniform pricing.

3.1.3 Simultaneous auctions for different vintages

Assuming future vintages are auctioned, the decision regarding how auctions for different vintages are conducted (simultaneous, sequential or combinatorial) is contingent on two factors:

(i) Whether an open-bid or sealed-bid auction format is adopted; and

(ii) Whether different vintages are viewed as complements or substitutes.

We consider the decision of how to auction multiple vintages, contingent on each of these factors, below.

Open-bid versus sealed-bid

Under an open-bid format, two options exist for auctioning vintages of different years. These are, as highlighted in Section 2.2.3, multiple, simultaneous auctions or multiple, sequential auctions. Under a sealed-bid format, one likely option exists: multiple, sequential auctions. Running multiple, simultaneous auctions under a sealed-bid format is less desirable than running multiple, sequential auctions, since simultaneous auctions provide no potential for information from one auction to inform and impact behaviour in subsequent auctions.[25]

Cramton (2007) highlights the advantages of open-bid, simultaneous auctions, namely the ability for bidders to efficiently substitute between different vintages concurrently. This allows information and prices from one auction to influence bids in the other and vice versa. Crampton (1998) and Ausubel & Crampton (2004) discuss the benefits of substitution between simultaneous auctions in detail. In essence, this approach facilitates price discovery since bidders learn from the bidding process and condition their future bids on this information. By contrast, one possible issue with the sealed-bid approach, where iterative substitution between simultaneous auctions is not possible, is that the prices achieved in each vintage auction may not reflect bidders' preferences. This can result in inefficient outcomes. An extreme example of this would be if the price of a current year vintage were to fall below the price of future year vintages (assuming the cost of abatement was constant over the period). This situation is implausible, since a current year vintage is a perfect substitute for future year vintages (due to unlimited banking) but due to the cost of carry must be worth more today than in the future. Such a scenario is possible in a sequential auction if bidders make decisions based on imperfect information or make mistakes. But it is far more unlikely in a simultaneous auction, since this price difference would be immediately obvious to bidders, who would likely bid more aggressively for the current year vintage given the apparent mis-pricing.

An additional issue that arises in sequential auctions is a phenomenon known as the 'declining price anomaly'. This anomaly is described by a common observation: prices tend to *decline* with repetition over multiple, sequential

[25] On this point, Cramton (2007) notes that the potential for mis-pricing between different vintages, due to a lack of information, is somewhat mitigated when sequential versus simultaneous sealed-bid auctions are used.

auctions that sell homogenous objects exhibiting common-values. The declining price anomaly is counter-intuitive since the information revealed over multiple auctions should help to alleviate the winner's curse, and hence, due to the linkage principle lead to an upward drift in prices (Klemperer, 2004). The declining price anomaly is discussed in Ashenfelter (1989) and Milgrom & Weber (2000), amongst others.

The declining price anomaly is generally evident when homogenous objects are auctioned sequentially. For the purposes of carbon permit auctions, separate vintages (not assumed homogenous) might be sequentially auctioned. The extent to which the declining price anomaly may affect sequentially auctioned heterogeneous objects is uncertain. Certainly, any price drift downwards due to the declining price anomaly would be difficult to separate from the natural tendency of older vintages to sell at a discount due to the substitutability between permit vintages, and the cost of carry associated with holding younger permits for use later.[26]

Complements versus substitutes

If different vintages are viewed as complements, a simultaneous, combinatorial auction, in which package or contingent bids can be made, is likely to be more appropriate than simultaneous, non-combinatorial or sequential auctions. This is because the value of complementary vintages is contingent on obtaining other available vintages – obtaining only some of those vintages would detract from the overall package value. A simple example would be if two car park spaces are to be auctioned, and a potential bidder seeks both in order to park both her car and her boat. The value of both car parks to the individual as a 'package' far exceeds the value of winning just one of the car parks. Thus, the ability to make package or contingent bids when the objects in question are complementary (i.e. a car and boat car park) results in stronger bidding, increased participation and more efficient outcomes.

Conversely, if different vintages are viewed as substitutes, simultaneous auctions, where bidders can actively substitute between vintages of different years, are to be preferred (see Evans & Peck, 2007). A simple example was provided above regarding different permit vintages: if banking of permits is allowed, current year vintages are close to perfect substitutes for future year vintages, since one tonne of CO_2 can be emitted in 2010 by (i) purchasing a year-2010 permit today or (ii) purchasing a year 2008 permit today, and banking it for use in 2010. As a second-best solution when a sealed-bid format is used, sequential auctions are preferred, given that more information is available through sequential auctions than simultaneous auctions in the sealed-bid case. Thus, while real-time substitution is not possible in sequential auctions, it is nevertheless possible to base decisions on later auctions with information obtained from earlier auctions.

The extent to which permits of different vintages reflect substitutable or complementary objects is perhaps best judged by market participants. While it

[26] This assumes the cost of abatement remains constant across time.

appears *prima facie* that permit vintages exhibit stronger substitute characteristics, thus indicating that combinatorial auctions may be ineffective, a recent paper by Porter et al (2007) reports experimental results showing that a combinatorial ascending-clock auction outperformed both a combinatorial sealed-bid and a sequential ascending-clock auction when selling different vintages of $N0_x$ allowances.

Remark 3

The substitutability characteristics between permit vintages are likely to outweigh any potential complementary characteristics. As such, we support the simultaneous auctioning of different vintages should an ascending-clock format be adopted. If a sealed-bid format is adopted, we prefer sequential auctioning of different vintages, as this process provides more information than simultaneous auctioning in the sealed-bid case.

3.1.4 Double-sided auction

The issue as to whether the proposed permit auction design should be a single- or double-sided auction is particularly pertinent for those market participants who can expect to receive grandfathered permits in the early stages of the scheme. A double-sided auction would allow such participants to sell permits in the primary market, by participating as additional sellers, as opposed to relying on the secondary market.

The theoretical efficiency of double-sided auctions was first considered by Wilson (1985) who formulates a generalised, multi-buyer, multi-seller auction where each agent trades at most one indivisible unit. Subject to various assumptions, Wilson demonstrated that with sufficiently many buyers and sellers the double-sided auction is efficient in this setting.

Milgrom (2004) also notes that, provided individual buyers and sellers represent small proportions of total demand and supply respectively, double-sided auctions generally involve larger numbers of buyers and sellers, and thus incentives to bid-shade are reduced – thus double-auctions have the potential to improve efficiency and expected revenues.

Evans & Peck (2007) observe that adopting a double-sided auction may improve the accuracy of auction prices, and hence efficiency, since participation by all market participants in the primary market (permit auction) will result in better price signals than if some participants participate in the primary market and others (namely those participants who receive grandfathered permits and who wish to sell these permits) participate in the secondary market. Thus a single-sided auction may introduce some form of 'bias' in determining the final permit price, since only those firms with relatively high abatement costs (i.e. buyers of permits) will participate in the auction.

A final benefit of the double-sided auction is that is allows participants with grandfathered permits to access a liquid, transparent and relatively low-cost trading environment to sell their permits. If a single-sided auction is adopted,

these participants will need to trade in the secondary market, which at least initially may prove to be 'thin' and thus more costly in terms of search and transaction costs.

Remark 4

We support a double-sided auction that will allow participants with grandfathered permits to participate in the permit auction process. A double-sided auction has the potential to improve auction efficiency and the accuracy of the final permit price due to the ability for a larger number of buyers and sellers to compete.

3.1.5 Reserve price

Both Crampton (2007) and Holt et al (2007) highlight the benefits of setting a reserve price. Setting an appropriate reserve price is important from an efficiency perspective, since if the market-clearing price at which a bidder wins an object falls below the seller's valuation and no reserve price is set, efficiency will be harmed when the seller parts with the object for a price less than her valuation. However, a reserve price that is set too high can also harm efficiency – if a reserve price is set in excess of a seller's valuation, and a bidder has a valuation that is above the seller's valuation but below the reserve price, efficiency will be harmed since the bidder values the object more than the seller but the object is not traded.

Reserve prices can also play a role in determining an auctions revenue performance. In the single-unit case with symmetrically distributed, independent private values, it is always profitable for a revenue-maximising seller to set a reserve price that *exceeds* his or her value. This result, known as the *exclusion principle*, implies that it is optimal for a seller to exclude bidders whose values fall below a set reserve price, even if these values exceed the seller's valuation of the object (Krishna, 2002). Relaxing the assumption of independent private values and allowing for interdependent values and affiliated signals (i.e. common-values) invalidates the exclusion principle (Krishna, 2002). This result implies that in the single-unit case, reserve prices in common-value auctions should be set lower than those in independent, private-value auctions.

Reserve prices are also important in reducing the likelihood of collusion, since reserve prices reduce the profitability of collusion (Holt et al, 2007). This is because a reserve price reduces the potential collusive surplus that bidders acting in collusion can generate, thus making collusion harder to sustain and hence less likely to occur. The importance of reserve prices in limiting collusion is strongly supported in both the theoretical and empirical literature (Holt et al, 2007). Should a sealed-bid format be adopted as the preferred permit auction design, the importance of a reserve price as a mechanism to limit collusion could be somewhat diminished, since sealed-bid auctions are less susceptible to collusion than ascending-clock auctions by nature. In such cases, from an efficiency point of view, the reserve price should be set to broadly reflect the value the government places on such permits.

One final consideration regarding the appropriate level of reserve prices is their role in stabilising permit prices across auctions. By preventing the clearing price from auction to auction fluctuating significantly (at least on the down-side), reserve prices can help strengthen the pricing signals emanating from the auction process, and thus may provided broader market efficiency benefits.

The proposed permit auction design outlined in the Green Paper states that a reserve price will be set, but provides no details as to what this price might be, or how it will be calculated. Cramton (2007) outlines a simple formula for determining the reserve price, based on the history of prior auctions. Cramton's reserve price formula initially sets the reserve price to 10% of the expected clearing price of the first auction, and progressively increases this reserve price to 50% of the expected clearing price after 8 quarterly auctions. Thus the reserve price is determined using past auction prices (expectations are myopic) and ensures that reserve prices start low and progressively increase to a maximum of 50% of the expected closing price. Evans & Peck (2007) propose an initial starting reserve price of 33% of the lowest estimate of future permit prices, or alternatively 33% of the price of a comparable permit traded under another ETS, such as in Europe or under the RGGI scheme. The RGGI recently announced a reserve price of USD$1.86 per allowance for the first round of auctions, due to start in September of this year.[27]

In addition to questions regarding what the reserve price should be, and how it should be set, the decision regarding whether the reserve price is made public also needs to be considered. Holt et al (2007) note that undisclosed reserve prices have been used in ascending-clock auctions selling wine and art, as well as in auctions selling publicly owned assets. Holt et al argue in favour of publicly disclosing the reserve price prior to any auction on the grounds that, on repeated participation in carbon permit auctions, some participants are likely to learn how reserve prices are set, and hence act as though this reserve price is public information even though the government may assume this information is private. Predicting this potential information-seeking behaviour, it may be best to publicly disclose reserve prices at the outset.

Remark 5

Both Holt et al (2007) and Evans & Peck (2007) argue that a reserve price should be set so as to reduce the incentives for collusion. While this result flows from the theoretical literature, further investigation is warranted in the present context as to whether this is a concern, given that the proposed level of information revelation should limit collusive opportunities.

Chapter 7 of the Green Paper provides no detail regarding at what level the reserve price is to be set, how it will be set, or indeed whether reserve prices will be made public *ex ante* auctions. Holt et al's (2007) argument in favour of publicly disclosing reserve prices at the beginning of each auction in the event they are set is convincing.

[27] http://www.co2-handel.de/article187_8274.html

3.2 OPERATIONAL DESIGN ISSUES

3.2.1 Auction frequency

As noted in the Green Paper, there is an inverse relationship between the frequency of auctions and the average number of permits allocated through each auction. The Green Paper also makes the case that the use of more frequent and smaller auctions has implications for a variety of criteria, such as:

- Reliability of price information;
- Timeliness of price information;
- Cash-flows of liable entities; and
- Administrative costs to government and businesses.

The issue of "absorptive capacity" raised in the Green Paper seems to be encompassed by other criteria such as the reliability of price information and cash-flow impacts on participants.

Generally speaking, we consider that the Green Paper provides a fair description of the types of factors that ought to be taken into account in determining auction frequency and the trade-offs between them.

However, there are several areas where the Green Paper could potentially provide an incomplete picture of the magnitude or nature of the trade-offs involved between the criteria. On the whole, most (but not all) of these areas of incompleteness lead to a preference for less frequent as opposed to more frequent auctions.

This Section proceeds by discussing the areas where the Green Paper could have acknowledged a stronger case for more frequent auctions. This is followed by a discussion of the counter-arguments the Green Paper could have made in favour of less frequent auctions. On balance, we believe that the case for more frequent auctions is stronger than provided by the Green Paper.

Case for more frequent auctions than stated in the Green Paper

In general, the Green Paper appears to understate the importance of cash-flow and risk management for NEM participants. NEM participants are settled on wholesale purchases and sales of electricity approximately four weeks after the end of the relevant 7-day billing period. Many participants are presently financed in a manner that allows little spare cash-flow or the ability to borrow in order to finance the acquisition of permits for later use. In this context, if such participants are required to pay for permits immediately following an auction, it may leave many in a position where they are simply not capable of acquiring permits in advance of the period to which the permits relate, *even if the price of those permits fell significantly as a result of weak demand.* An inability to acquire permits at auction could subject those participants to significant contracting risk, as they would not be assured of acquiring a given number of permits prior to entering electricity derivative contracts that spanned the period to which the permits applied. The result could be an extension to the present "chilling" of the OTC derivative market, with negative implications for the efficiency of future

investment decisions in new generation plant and the competitiveness of retail energy markets.

In the longer term, it is probable (and desirable) that a liquid secondary market in permits would develop, in which intermediaries would buy and sell permits so as to effectively finance the acquisition of permits in advance of their application date in return for a higher future permit price. Such a market would enable cash-strapped market participants to enter into an agreement to take delivery of permits at the time they were required in exchange for a premium reflecting the cost of carry. This would allow participants to enter electricity derivative contracts with confidence. But such a secondary market is likely to take some time to develop. As discussed below, this issue of cash-flow timing is even more important to the auctioning of future vintages of permits due to the much longer timeframes involved.

Second, the Green Paper should have noted that the relationship between some of the criteria may not be directly proportionate. In other words, the *rate* at which one criterion needs to be traded-off to achieve another may vary. For example, a greater frequency of auctions does not *necessarily* mean that auctions will be less competitive and hence, that auction prices will be a less reliable indicator of the value of permits than less frequent auctions. After all, even if there are more frequent auctions of a smaller number of permits, the total number of permits auctioned over a finite period of time will not change. In fact, if all auction participants participate in all auctions, small frequent auctions may actually yield more competitive and stable prices than less frequent larger auctions. For small frequent auctions to yield less stable and reliable prices than infrequent large auctions, it must be the case that some bidders do not participate in all of the auctions. This may occur if auctions are held on an extremely frequent basis. For example, daily auctions will likely lead to some participants "sitting out" some proportion of auctions. However, if auctions are held quarterly or monthly (or even possibly weekly), it is quite possible that all active participants will bid in those auctions. If this occurs, it is likely that little if anything in the way of price reliability would be sacrificed in conducting auctions on a more frequent basis than quarterly. Consequently, it may be possible to secure the cash-flow benefits of more frequent auctions with little or no loss to price competitiveness and reliability.

Third, while the Green Paper acknowledged that it will be difficult to know how to set many auction variables in advance of experience, it did not mention that more frequent auctions allow greater scope for, and lower the costs of, minor changes to reflect initial experience. This point is not made to encourage fiddling by the auction administrator; rather, it is in recognition of the fact that some changes to the initial auction will almost inevitably be required in the initial phases of the scheme. Frequent smaller auctions limit the costs of early shortcomings while enabling them to be addressed quickly enough to avoid undermining confidence in the auction design.

Finally, the literature suggests that the incremental administrative costs of running frequent auctions can be low in the context of electronic internet-based platforms. As noted above, Holt et al (2007) note that the bulk of such auction

costs are once off and incurred at the set-up stage, whereas the incremental costs are relatively small and mainly incurred by agents in the process of participation.

Case for less frequent auctions than stated in the Green Paper

On the other hand, it may be the case that more frequent auctions will undermine the development of a liquid secondary market. To some extent this is inevitable, although we note that a combination of annual and monthly auctions of financial transmission rights in the Pennsylvania-New Jersey-Maryland (PJM) market in the United States has not prevented the formation of an internet-based secondary bilateral trading market.

Similarly, the Green Paper in our view possibly overstates the value of more timely price signals resulting from more frequent auctions. Cash-flow management issues aside, the efficiency of participants' investment or strategic decisions is unlikely to be improved by pricing signals emerging from weekly as opposed to monthly or even quarterly auctions.

Finally, given that ascending-clock auctions are likely to be more time-consuming for participants to engage in than sealed-bid auctions (see Section 3.1.1 above), it is worth noting that very frequent (say, daily or weekly) ascending-clock auctions could consume an excessive amount of participant time and trading resources. This suggests that if auctions were to be run on a weekly basis, it may be worth adopting sealed-bid auctions in place of ascending-clock auctions. This, in turn, would suggest the use of sequential auctions rather than simultaneous auctions.

Assessment

As noted in the Green Paper and above, a number of trade-offs need to be considered when coming to a view on the appropriate frequency of permit auctions. On balance, we consider that the case for more frequent auctions is stronger than that presented in the Green Paper due to the importance of smooth cash-flow to at least some NEM participants. Thus, monthly auctions could strike a better balance between smoothing participants' cash-flows and ensuring price reliability and stability than quarterly auctions.

Weekly auctions may also provide a viable alternative to quarterly and monthly auctions, but this would depend on: (i) the extent to which auction participants chose to "sit out" some or many of these auctions on the very account of their frequency; and (ii) the potential undermining impact on the development a secondary market. If participation levels were significantly lower for weekly auctions than monthly or quarterly auctions, this could mean that auction competition and price reliability would be compromised. This could more than offset any incremental cash-flow benefits brought about by weekly auctions. Similarly, to the extent that weekly auctions "crowded out" the development of a secondary market, efficiency could be compromised in the longer term. In addition, if weekly auctions were adopted, it may be worth considering sealed-bid sequential auctions as opposed to ascending-clock simultaneous auctions to minimise the expenditure of participant resources and to maximise information revelation.

Finally, it is important to note that the case for more frequent auctions to improve cash-flow management would be undermined if a large proportion of permits were auctioned in advance of the relevant financial year. This is discussed below in the context of auctions of future permit vintages.

Remark 6

On balance, we believe there is a case for more frequent auctions than presented in the Green Paper. Thus, we consider that there may be a case for monthly auctions due to the cash-flow benefits for participants (which flow through to the liquidity of the electricity derivative market) and the likelihood of little drop-off in participation. Weekly auctions could be considered as an alternative if they did not lead to a significant reduction in auction participation and competition or undermining of a secondary market. If weekly auctions were adopted, it may be worth considering sealed-bid sequential auctions as opposed to ascending-clock simultaneous auctions to minimise the expenditure of participant resources and to maximise information revelation.

3.2.2 Auction timing

Frontier considers that the Green Paper provides a reasonable assessment of the issues influencing the appropriate timing of permit auctions. In particular, we agree with the notion that the first auction should be held after participants have had time to develop informed opinions about overall demand and supply conditions – especially, the scheme cap, although we note that this will become informally public before its final announcement. On the basis of current information, we agree that it would make sense for the first auction to held some time in the first half of 2010. If possible, this should be after the formal announcement of the scheme cap.

Finally, the Green Paper proposes auctioning three-eighths of the permits for a given vintage in advance of the start of the relevant financial year. This issue is discussed in more detail below in the context of auctions of future vintages.

3.2.3 Advance auction of future vintages

As noted above, the Green Paper proposes auctioning three-eighths of the permits for a future vintage in advance of the start of the relevant financial year. It also restricts the proportion of permits sold *in any one* advanced auction to one-eighth of the total number of permits for that year. By way of comparison, Cramton (2007) proposes that 50% of available permits for a given year be sold as future vintages while 50% be reserved for sale within that year.

In principle, the auctioning of future financial year permit vintages seems sensible. We also accept the points made in the Green Paper regarding the trade-offs involved in deciding whether and how many future vintage permits should be auctioned in advance. As noted in Chapter 7 of the Green Paper, auctioning future vintages would provide market participants with the option of acquiring future vintage permits in advance of when they were required, thereby mitigating the risks of relying on acquisition at auctions closer to the financial year of the

relevant vintage. This should help support the electricity derivative market, as recognised in Cramton (2007, p.10). In this context, we understand that many NEM participants prefer to hedge at least two-thirds to three-quarters of their sales and purchases in advance. This suggests that more than half the permits relating to a particular vintage could usefully be auctioned in advance of the start of that financial year.

However, an important caveat to the adoption of this view is that participants' concerns about the timing of settlement for future years' vintages need to be considered. As noted above, some market participants may lack the cash-flow to pay for permits in advance of their use. If a significant number of potential bidders do not participate in auctions for future year vintages, it is likely that the efficiency of permit pricing that emerges from those auctions will suffer, with negative flow-on effects for the liquidity of the electricity derivatives market. While these efficiency problems could be resolved through an active secondary market, we would highlight again that this might take some time to develop. Further, relying on the secondary market to resolve inefficient permit allocations arising from auctions suggests that there is little value in careful design of the auctioning regime in the first place – a position that does not appear to be held by the DCC. Therefore, if cash-flow concerns are likely to significantly deter participation in auctions held in advance for future vintages, it may be wise to limit the proportion of future vintage permits sold in advance to minimise any inefficiency.

The problems created by immediate payment for future vintages of permits could be addressed by postponing the requirement to settle such purchases until closer to the time of their use. For example, payment for permits from the 2011-12 vintage that were auctioned in 2010 could be required at the commencement of the relevant month or quarter. This would help to align participants' payments for permits with their revenue stream through the spot and forward electricity markets. On the other hand, such a deferral of settlement could lead to higher rates of non-payment or default than would occur if settlement were required to immediately follow an auction. This issue is discussed further in the next Section.

To the extent that immediate settlement of auctions cannot be avoided, there is likely to be a trade-off between:

- Auctioning future vintages in advance to assist participants manage the risks of obtaining enough permits and promoting liquidity of the electricity derivatives market; and
- Auctioning future vintages closer to the time they are to be used in order to maximise bidding competition and the reliability of auction prices.

Finally, we would highlight that if a substantial proportion of permits were to be auctioned in advance, the case for much more frequent auctions would be undermined. After all, if the benefits of frequent auctions lie in improved cash-flow management, but most permits are auctioned in advance, it is difficult to see how those cash-flow benefits would be realised.

Assessment

In light of the strong historic preference of NEM participants to enter derivative contracts in respect of a large proportion of their purchases and sales in advance, we consider that the Green Paper's proposal for three-eighths of permits to be auctioned in advance appears reasonable as a minimum lower bound for consideration. So long as any cash-flow issues surrounding advanced auctions could be addressed without excessively limiting participation, it may be appropriate to auction 50% or more permits for future vintages in advance. However, such a high proportion of permits auctioned in advance would tend to undermine the case for very frequent (say, weekly) auctions.

Remark 7

The Green Paper's proposal for auctioning three-eighths of permits in advance seems to be a reasonable lower bound in light of NEM participants' preference to be highly contracted. So long as any cash-flow issues surrounding advanced auctions can be addressed without excessively limiting participation, it may be appropriate to auction 50% or more permits in advance. Such a high proportion of permits auctioned in advance would tend to undermine the case for very frequent (say, weekly) auctions.

3.2.4 Participation and settlement

Liable vs. all entities

Chapter 7 of the Green Paper raises the risk of speculation as the only real reason to limit participation in permit auctions to liable entities. We agree that, other things being equal, greater participation should mean more efficient auction outcomes and a more vibrant secondary market.

While speculation may occur if participation is not limited, it is not obvious that non-liable entities are likely to bid for permits in a more speculative manner than liable entities. If anything, liable entities may have stronger incentives to acquire and hoard larger numbers of permits than non-liable parties. While liable entities may hoard permits in order to deter new entry into the NEM, non-liable entities may be motivated to bid for permits solely to make profits from their subsequent sale. On the other hand, non-liable entities such as financial institutions may have "deeper pockets" than liable entities and be able to pay much higher prices. However, this does not imply that such parties are likely to be willing to pay more for permits than their efficient value.

Financial assurance

On the issue of the financial standing of participants, the Green Paper suggests that some form of financial guarantee would be required to ensure that bidders will be able to pay for the permits they buy at auction and to encourage only genuine bidders (p.269). The Green Paper goes on to say that the form of guarantee could be a cash deposit or some other form of security. Depending on

the auction outcome, the deposit would either be refunded in whole or part or be used to reduce the bidder's payment.

Frontier recognises that the administrative arrangements for auctions need to provide participants with a strong incentive to pay for permits. Evidence from auction processes for spectrum, nitrogen oxide (NO_X) and carbon dioxide (CO_2) in the United States and elsewhere suggests that weak eligibility rules can lead to parties defaulting on their bids (Holt et al (2007), p.41). The problem with mechanisms only requiring payment when a permit is needed is, as explained by Klemperer (2004), that they potentially provide the purchaser with an *option* as to whether to proceed: if the value of the right later turns out to be less than the price bid at auction, the purchaser may choose to renege on its purchase (p.176). This potentially undermines the integrity and efficiency of the auction process.

Potential forms of financial assurance mentioned in Holt et al (2007) include the posting of a bond, deposit or letter of credit that would cover a substantial fraction of the bidder's ultimate payment should it win (p.41). These could be combined with, or avoided by, the imposition of a penalty for participants that failed to settle permits by a specified date close to the applicable time period of the permits.

At the same time, we again highlight the cash-flow issues that can arise for NEM participants if they are required to pay or lodge a substantial proportion of the price of permits in advance of when those permits are used. Ideally, some form of financial assurance could be required that did not create barriers to the participation of NEM participants. This would be even more important for the auctioning of permits from future vintages, where cash-flow issues or of even greater importance.

Remark 8

In general, we agree with the Green Paper's proposal to not limit participation in permit auctions beyond compliance with prudential requirements. Some form of financial assurance should be applied to ensure participants treat auction transactions as binding commitments rather than options.

3.2.5 Proxy bidding

Evans & Peck (2007) and Crampton (2007) highlight the value of allowing proxy bidding under an ascending-clock auction format. Proxy bidding involves bidders submitting a demand schedule that specifies quantities demanded at various prices. Proxy bidding allows participants who wish to be absent from part or all of auction to be so. Both Evans & Peck (2007) and Cramton (2007) argue that proxy bidding may especially appeal to smaller bidders who do not wish to participate in each round (presumably due to the cost or complexity of dynamic bidding) but who still wish to participate in the auction. The addition of proxy bidding under the ascending-clock format allows those bidders who wish to treat the ascending-clock auction as a standard, sealed-bid, uniform price auction (and hence not take advantage of price discovery across rounds) to do so. Having said that, bidders who behave in such a way are likely to not do as well as if they took

account of the information revealed through each round of the ascending clock in their bids.

Remark 9

The addition of proxy bidding adds additional flexibility to the ascending-clock format and allows bidders who wish to treat the auction as a sealed-bid format, or those who wish to be absent from the auction, to do so. We support the inclusion of proxy bidding should an ascending-clock format be adopted.

3.2.6 Auction platform

The proposed operational design within Chapter 7 calls for permit auctions to be administered on an internet platform. The idea of an internet platform is supported by both Evans & Peck (2007) and Cramton (2007). Administering auctions on an internet platform is low cost for both the government (in terms of administration costs) and participants (in terms of participation costs). Low participation costs will encourage entry and hence has the potential to increase competition. Evans & Peck note that specialised software is available to operate such auctions, and that such software has been used in high-stakes auctions worldwide for several years. We support the recommendation that care be taken in designing the user interface of any online auction. Such design considerations could be tested experimentally, or else trialled thoroughly.

Remark 10

We support the administration of permit auctions via an internet platform. The low administrative and participation costs of running an online auction have the potential to encourage entry and hence improve auction efficiency.

3.2.7 Lot sizes and treatment of unsold lots

The proposed operational design within Chapter 7 states that both minimum and maximum lot sizes may be enforced in permit auctions. Minimum lot sizes are generally imposed to reduce administrative costs and speed up the auction process. The size of lots needs to be carefully considered, since lot sizes that are too small may discourage entry, while lot sizes that are too large may burden some bidders and impede their ability to obtain their desired (albeit relatively small) quantity of permits. The Green Paper states that maximum lot sizes may be imposed "to ensure credible auction results while still allowing legitimate bidders to participate at auction". This statement is vague on the issues and requires further detail. While Evans & Peck (2007) appear to propose lot sizes of "one tonne CO_2-e" (presumably implying that there is no minimum lot size, other than that permits must be sold in discrete units), both Cramton (2007) and Holt et al (2007) propose minimum lot sizes of 1,000 tonnes.

The setting of a reserve price allows for the potential situation where supply exceeds demand at the reserve price, and hence permits go unsold. While the Green Paper states that unsold lots would need to be sold at future auctions, the

process by which this is achieved is not discussed. Crampton (2007) highlights the advantage of auctioning unsold permits according to a specific schedule, rather than unsold permits being assigned to an actively managed contingency reserve account and sold in an arbitrary manner. Cramton argues that by committing to sell unsold permits according to a specific schedule, the political risk associated with the managing of a contingency reserve fund would be mitigated, thus reducing market uncertainty.

Assessment

The setting of a minimum lot size due to administrative costs is frequently cited. Given that any permit auction is likely to be conducted online and that bidders will need to meet certain pre-requisites before competing, we question the extent to which setting a minimum lot size will discourage entry and reduce the administrative burden of running the auctions. It does not seem *prima facie* that setting a minimum lot size is necessary or indeed desirable. The Green Paper provides no cohesive argument as to why a maximum lot size should be set. We question the need to set a maximum lot size in the absence of any convincing reasons to do so.

We support the recommendation made by Crampton (2007) in ensuring that any unsold lots are auctioned in the future according to a specific schedule and are not arbitrarily sold. This will reduce the political risk faced by auction participants as well as reduce the uncertainty regarding future expected permit supply.

Remark 11

The Green Paper provides no cohesive argument as to why a maximum lot size should be set. We question the need to set a maximum lot size in the absence of any convincing reasons to do so.

Any unsold lots should be auctioned in the future according to a specific schedule and are not arbitrarily sold. This will reduce the political risk faced by auction participants as well as reduce the uncertainty regarding future expected permit supply.

4 Conclusions

On the whole, our impression is that the Government's proposed permit auction design as outlined in Chapter 7 of the Green Paper has been well considered and presented. Through his indirect involvement with the Evans & Peck report, many of Peter Cramton's (a renowned auction theorist with extensive experience in designing and administering high-stakes auctions) recommendations have been adopted.

While none of the key design elements outlined in the Government's proposed auction design appear seriously flawed, we do have several criticisms of Chapter 7. These criticisms mainly relate to the depth of arguments concerning certain proposed design features and the lack of detail provided about others. While Remarks 1-11 outline our position on the key auction design elements contained in Chapter 7, we briefly outline our main concerns with both the mechanism and operational designs below.

Mechanism design issues

First, we note that while the Government's proposed ascending-clock format has its strengths and has been successfully used in other high-stakes auctions, it is not the only viable option. As Holt et al (2007) argue, a second option is a standard, sealed-bid, uniform price auction. While Chapter 7 does mention this auction form, we believe that the choice between these two formats deserves further attention. As outlined in Section 3.1.1, the ascending-clock and sealed-bid, uniform price auctions have different strengths and weaknesses – the former provides greater price discovery properties while the latter better guards against the potential for collusion. Neither the theoretical literature nor Holt et al's experimental results provide conclusive evidence as to which auction type is preferable overall.

While we tend to favour the ascending-clock format for its transparency, we support Evans & Peck's call for experimental research into which format performs best under conditions reflective of the Australian permit auction environment. Such experiments could also be used to hone other key design elements, such as a process for allowing intra-round bidding, the impact of different reserve prices, the impact of restricting certain combinations of current and future vintages, and the best form of user interface if online auctions are used.

Second, we note that several key mechanism design issues are not discussed in the Green Paper. These include the potential for intra-round bidding, the level and evolution of bid increments, the level and process for setting reserve prices, and whether reserve prices will be made public. While other less crucial details will likely be resolved with the passage of time, we consider that these issues require further consideration in the near term.

Operational design issues

One of the key operational design issues for participants is the frequency of auctions. Given that some auction participants face serious cash-flow constraints in participating in permit auctions, we contend that the case for more frequent auctioning of permits (perhaps monthly as opposed to quarterly) is stronger than the Green Paper suggests. In this context it is not necessarily the case that more frequent auctions will result in lower levels of participation and hence less competition – the inter-relationship between the frequency of auctions and their competitiveness is not as simple as the Green Paper assumes. Indeed, more frequent auctions may result in greater competition between bidders if either the number of bidders does not fall or if the bidders that do participate compete more fiercely for the smaller number of permits available as a result of more frequent auctions.

Closely inter-related to the choice of auction frequency are the issues of future vintages and settlement. In particular, many NEM participants are likely to favour a substantial proportion of future vintage permits being auctioned in advance to facilitate their entry into electricity derivative contracts. This raises the question of whether participants should be required to pay upfront a substantial proportion of the price of any future vintages bought in advance. While substantial upfront payment is likely to be necessary to prevent participants reneging on their obligations (should doing so be privately profitable), such a requirement may deter entry to auctions and hence harm competitiveness and efficiency. Thus the appropriate degree of auctioning in advance and the form of financial assurance needs to be determined carefully alongside the choice of auction frequency to ensure the right trade-offs are made. Finally, we observe that auctioning a large proportion of permits in advance undermines the case for much more frequent auctions to address participants' cash-flow concerns.

Finally, we question the Government's position in regard to minimum and maximum lot sizes on the basis of the evidence provided. While it is feasible that a minimum lot size may reduce the administrative burden of running these auctions, the extent to which this occurs when auctions are held via an online platform is uncertain. In addition we question the need for a maximum lot size, especially if (maximum) eligibility requirements are imposed, as was proposed by Evans & Peck. The Green Paper provides no compelling reasons as to why a maximum lot size would be necessary.

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