



Western Australian Government Submission  
to the Commonwealth Government on the

# Carbon Pollution Reduction Scheme Green Paper

October 2008





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## Introduction

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The Western Australian Government welcomes the opportunity to provide comments to the Commonwealth Government on its Carbon Pollution Reduction Scheme (CPRS) Green Paper (the Green Paper).

This submission is constructed to provide:

1. Alternative design options on the aspects of the scheme design that have the potential to significantly affect the State's economy (and the national economy); and
2. Information on circumstances in Western Australia that should be taken into account by the Commonwealth Government when considering the scheme's design and undertaking economic modelling.

The views conveyed were formulated in the absence of the Commonwealth Government's economic modelling of the CPRS. The Western Australian Government urges the Commonwealth Government to publicly release its modelling results as a matter of priority. This will enable the effects on the Western Australia economy to be assessed more fully.

The Western Australian Government may provide additional submissions to the Commonwealth Government on the CPRS following the release of additional information such as the economic modelling results, the CPRS White Paper and the emissions trajectory.

This submission focuses on three key emissions trading priorities:

- maintaining Western Australia's international competitiveness;
- ensuring the design takes into account the characteristics of the Western Australian energy sector; and
- ensuring the design is equitable.

The submission also provides the State Government's position on other important aspects of the design, such as the timeline for introduction and the coverage of agriculture and forestry.

## Summary of Recommendations and Key Points

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### International competitiveness and emissions-intensive, trade-exposed industries

- The Western Australian Government strongly supports compensation for emissions-intensive, trade-exposed industries (EITEs) to minimise carbon leakage. The mechanism proposed in the Green Paper requires further work to ensure that this objective is achieved.
- The denominator in the emissions intensity formula should be changed to a measure that better reflects the effect of the carbon price on a company's operating margin. If gross value added is the most viable replacement measure, then some provision needs to be made for addressing its volatility.
- Eligibility for compensation should include an assessment of trade exposure.
- Compensation should be based on an approximation of the disadvantage that firms will actually face.
- The Commonwealth should consider introducing a sliding scale for compensation. A sliding scale would allow compensation to be targeted to those activities where the likelihood of carbon leakage is greatest and overcome the arbitrariness of hard thresholds (if the activity approach unveils a continuum of emissions intensities).
- In the absence of refinements to the compensation arrangements to EITEs, eligible activities should be periodically reviewed to ensure that the compensation is appropriately targeted.

### The Western Australian energy sector

- Assistance to communities, workers and regions negatively affected by structural adjustment in the electricity sector should take a higher priority than the provision of assistance to existing coal-fired electricity generators.
- The Commonwealth Government needs to take into account the economic ramifications of the CPRS on the liquefied natural gas (LNG) industry, if this results in new LNG projects being delayed. Much of Western Australia's new domestic gas supply depends on applying the State's domestic reservation gas policy to new LNG developments.
- The State Government seeks the cooperation of the Commonwealth Government to develop a consistent and complementary approach to assist households to manage the electricity price rises in Western Australia arising from the CPRS.

- Western Australia’s energy infrastructure will need to be upgraded to enable large-scale deployment of low-emissions renewable energy.

### Equity considerations

- The Western Australian Government supports assistance to households to meet the additional costs arising from the CPRS.
- The Commonwealth Government should ensure that remote operations and communities with no short-term access to lower emissions energy substitutes do not face disproportionate disadvantage.
- The CPRS would worsen the living standards of Western Australians living in regional and remote communities, especially those living in very remote indigenous communities (with extremely low income levels), unless the assistance provided recognises the limited viable substitutes for emissions-intensive electricity generation and limited opportunities for behavioural change in these communities.
- Although Western Australia is experiencing strong economic growth driven by high commodity prices, the associated increases in the cost of essential goods and services (including housing) has put strain on low-income households. These circumstances should not be overlooked when considering levels of assistance.
- The cost of providing essential services such as power and water will rise in response to the CPRS. This is likely to increase the value of existing concessions and assistance provided by the State Government to households by at least \$6 million a year if the State was to fully mitigate the impact of the CPRS.
- It is recommended that the Commonwealth Government work with the States and Territories to identify the additional support or needs that will arise from the CPRS and find the best mechanisms to deliver this support.

## International Competitiveness and Emissions-Intensive, Trade-Exposed Industries

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### Compensation for emitting industries

The Green Paper proposes a mechanism that seeks to minimise the risk of carbon leakage and provide transitional assistance to firms. However, the Western Australian Government is concerned that the proposed mechanism will not adequately address the problem. This is primarily because:

1. The mechanism does not differentiate between firms and activities that are already located in Australia, to which the sensitivity of moving offshore varies with the share of costs that are fixed, and future investments, which have no fixed (sunk) costs and will be extremely sensitive to any movements in costs;
2. Emissions intensity is defined relative to revenue rather than fixed costs and will not identify those EITEs for which the carbon price represents a significant proportion of fixed costs, and will therefore be more at risk of closing down;
3. Eligibility for compensation does not include an assessment of trade exposure, meaning that some firms may be over-compensated or under-compensated relative to their risk of carbon leakage;
4. The compensation is based on arbitrary values (90% and 60% of costs), rather than an approximation of the disadvantage that firms will actually face;
5. The mechanism does not recognise that there may be offsetting macroeconomic effects, such as the depreciation of the Australian dollar, given that Australia will increase its costs structure relative to competitors who do not adequately price carbon; and
6. The proportion of permit revenue available for compensation is capped at 30%. The consequences of this decision are that the compensation parameters are set with no reference to the potential for carbon leakage and that the value of compensation to EITEs will decline over time.

These issues are explored further in the remainder of this section along with a number of other relevant concerns.

## The risk of carbon leakage in Western Australia

It is difficult to quantify the risk of carbon leakage to the Western Australian economy from the CPRS. There are currently no data available to assess the emissions intensity of activities, which is the basis for the proposed compensation mechanism. Consequently, there are no economic models available to perform activity analysis. Industry emissions intensities, as provided in Appendix D of the Green Paper, are indicative and may not appropriately reflect the direction of compensation. It is also difficult to develop an appropriate counterfactual argument to determine which projects would have occurred in the absence of an emissions trading scheme.

Nevertheless, **the risk of carbon leakage has a stronger relationship to international exposure than to emissions intensity.** The Western Australian economy is the most trade-exposed State economy, with 46.7% of the State's income derived from exports, compared to 20.5% of the national income (in 2006-07). Accordingly, Western Australia is likely to suffer the negative economic impacts of carbon leakage more acutely than other jurisdictions.

Based on the preliminary analysis of EITE activities in the Green Paper, alumina is the only commodity in the State's top ten exports by value (Appendix 1) that would be eligible for compensation, exposing the remaining \$51.6 billion of export value (or 84.4<sup>1</sup>%) to the full effect of the carbon price. A considerable portion of this value is derived from products for which the price is set internationally and for which it will be difficult to pass on the carbon price. These commodities include gold, petroleum and oil, nickel ores, copper ores, other base metal ores and concentrates, and nickel. These exports were worth approximately \$25.2 billion in 2007-08.

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<sup>1</sup> ABS cat. no. 5368.0. This proportion is exaggerated because it assumes that alumina is the only product in Western Australia's confidential commodities trade (valued at \$9.6 billion in 2007-08). The confidential commodities trade is broader than alumina and includes various nickel products and mineral sands (among other commodities). According to the Western Australian Department of Industry and Resources, alumina exports were valued at \$4.2 billion in 2007.

Modelling undertaken for the National Emissions Trading Taskforce (NETT) estimated that the Western Australian economy would experience a relatively small decline in Gross State Product (GSP) of 0.5% in 2030 compared to business as usual under an emissions reduction scenario of 30% by 2030 (relative to 2000 levels). These results were predicated on 100% compensation for increased energy costs for EITEs<sup>2</sup> and a wider eligibility for compensation than shown in the current Green Paper's industry analysis<sup>3</sup>. Consequently, the effect of an emissions trading scheme on the Western Australian economy is expected to be higher than estimated for the NETT, as most of the State's exports would not be eligible for compensation.

The sector of the Western Australian economy with the greatest exposure to carbon leakage is probably the manufacturing industry, which is already more emissions-intensive than the national average. The State's manufacturing industry is based on processing minerals to more intermediate products. These processes tend to be more energy intensive than mining and exporting unprocessed ores, but are not as energy intensive as transforming intermediate goods into final products. The Green Paper's proposed compensation arrangements for EITEs may distort economic activity away from intermediate processing (as extractive industries may not experience large cost increases and final processing could be eligible for compensation); meaning that future investment in existing and new projects may be reduced.

The demand for Western Australian commodities has lifted the national terms of trade, benefiting all Australians. Western Australia's top ten exports accounted for 33.9% of total national exports by value in 2007-08. Current prosperity may be undermined if these commodities are highly susceptible to carbon leakage. Consequently, a careful assessment of carbon leakage should be the overriding consideration when developing the compensation mechanism.

## Definition of emissions intensity

The Green Paper proposes to calculate emissions intensity on the basis of emissions of tonnes of carbon dioxide equivalents (CO<sub>2</sub>-e) per million dollars of revenue attributable to an activity.

Emissions intensity can be measured in many ways, such as dividing emissions by operating expenditure; capital expenditure; value added; profit; earnings before interest, tax, depreciation or amortisation; or revenue. The Climate Strategies report

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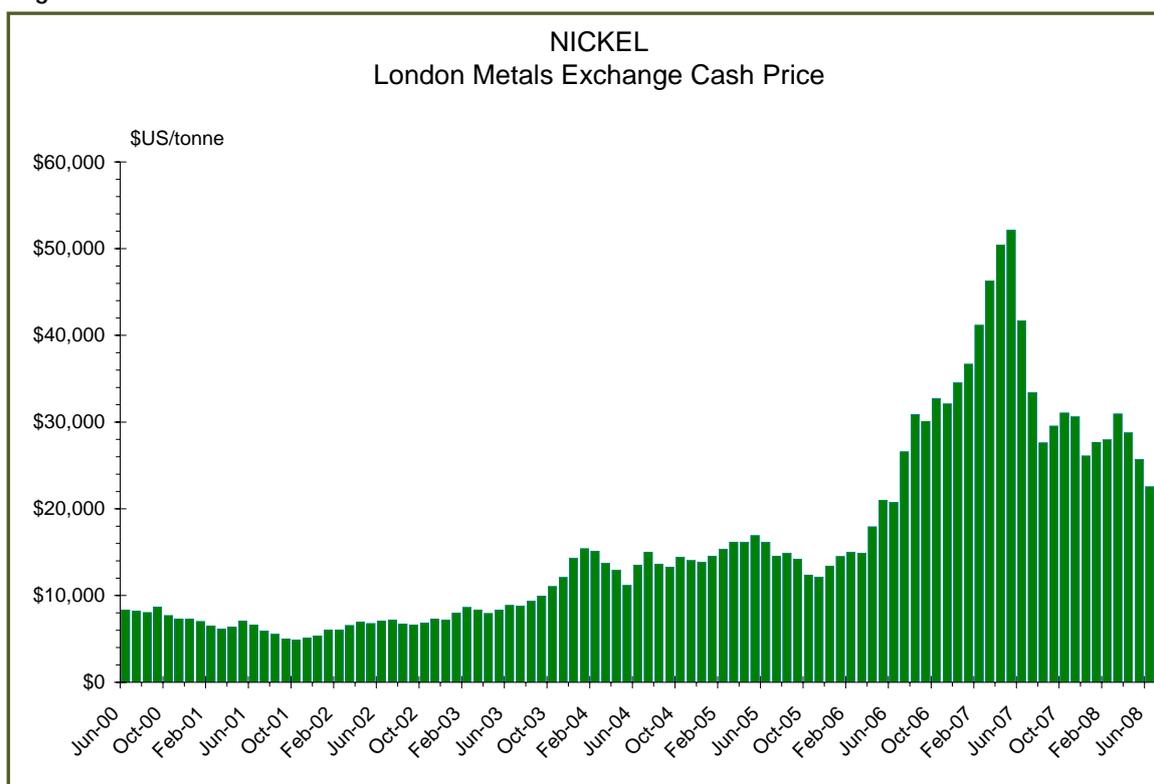
<sup>2</sup> EITEs were classified as those industries that were trade exposed and had energy costs greater than 3.5% of total operating costs in the 2004 MMRF database. Under this definition, other mineral ore, iron and steel, alumina and aluminum and other metal products received compensation.

<sup>3</sup> In addition to the sectors in the footnote above, compensation was provided to underground coal miners in New South Wales and Queensland, LNG producers in Western Australia and oil producers in Victoria, South Australia and Western Australia to offset the direct cost effects of the permit price from fugitive emissions.

favoured value added<sup>4</sup> as the most appropriate measure because it is the ‘most stable metric over time... reflects the fraction of costs that are under the direct control of the firm and is less subject to strategic optimization’<sup>5</sup>. The disadvantages of using value added are that it is harder to obtain value added data than revenue data and value added can be more volatile than revenue.

Revenue may also be volatile when prices are variable or cyclical, as is common for commodities. The chart below shows changes in nickel prices since June 2000.

Figure 1



Source: Datastream

The average nickel price over 2006-07/2007-08 (\$US33,215 per tonne) more than doubled the average price in 2004-05/2005-06. Assuming no change in emissions from nickel production, the more than doubling of the nickel price would lead to a more than halving of its emissions intensity. Recent high commodity prices (and consequently high revenue) could result in some activities being ineligible for compensation that would have been

<sup>4</sup> Value added was defined as “the income generated by the business, industry or sector less their intermediate consumption of goods and services used up in order to produce their output... [it] consists of labour costs (e.g. wages and salaries) and an operating surplus (or loss)” (Demailly, D., Grubb, M., Hourcade J., Sato, M. 2007, ‘Climate Strategies Report: Differentiation and Dynamics of EU ETS competitiveness impacts’, Interim Report, p. 4-5).

<sup>5</sup> Hourcade, J., Demailly, D., Neuhoff, K., Sato, M. 2007, ‘Climate Strategies Report: Differentiation and Dynamics of EU ETS Industrial Competitiveness’, p. 58.

eligible under more normal prices. The reverse situation would also apply. High commodity prices are not necessarily a problem for assessing eligibility for compensation if prices remain at those levels for the length of the compensation period or if activity eligibility is reassessed at regular intervals.

Volatility can be addressed by using an average for a period longer than a few years, however the Green Paper proposes to use only two years of data (2006-07, 2007-08).

More importantly, entities investing in new projects make their decisions based on profits, while existing firms will make the decision to stay open based on whether they cover variable costs and some proportion of fixed costs, not revenues. If the purpose of compensating EITEs is to stop carbon leakage, then some form of value added or profit is the appropriate measure for new investments, while some measure of fixed costs is appropriate for currently existing forms. If a firm thinking of making a new investment has thin margins, as many capital-intensive resource projects do, then an increase in costs (even a minor one compared with total revenue) could cut profitability significantly, perhaps resulting in a loss of production to overseas. This will occur even for firms with some pricing power on world markets.

## Definition of trade exposure

The Green Paper's model for compensating EITEs does not include an assessment of trade exposure. The Green Paper proposes to define trade exposure as 'all industries without a physical barrier to trade'.

The absence of a more rigorous and effective trade exposure criterion could result in some businesses with a low risk of carbon leakage receiving compensation, while others with a higher risk of carbon leakage may not receive compensation.

**It is important to assess trade exposure, as it will determine the extent to which businesses can pass on carbon costs.** Products could be assessed as trade-exposed if the product is a price-taker (possibly set by the international market) or if the demand for an entity's product depends to a significant degree on the price charged for similar products made in countries with no carbon constraint. In the case of Western Australia's top ten exports, producers of some commodities may have some capacity to influence prices (for example, iron ore), while for others prices are linked to, or set by, world markets (crude oil and condensate, gold, nickel, and wheat). In these cases, Western Australian commodity producers would have limited scope to influence prices and pass carbon costs to customers. This applies equally to exporting and import-competing businesses.

The Green Paper cites two measures of trade exposure already used in Australia (the Australian Competition and Consumer Commission Merger Guidelines and the Australian Bureau of Statistics' tradeable/non tradeable price series). Both measures adopted a

trade share of 10%. The Climate Strategies Report also developed a measure of trade exposure (or 'trade intensity'), which it defined as:

- Non EU trade intensity = (value of exports to non EU + value of imports from non EU)/(annual turnover + value of imports from EU + value of imports from non EU).

The Climate Strategies Report noted that although it was "an imperfect indicator, and in response to large price differentials could change substantially over time... it remains... the most plausible aggregate indicator of the barriers to large scale imports and exports"<sup>6</sup>. This measure could be considered alongside further analysis of the previously cited trade measures when considering eligibility criteria.

Another important aspect is whether, if an industry is trade-exposed, are its major production and/or investment competitors subject to a carbon permit price similar to that in Australia. If a firm competes with companies from the European Union (EU), which is covered by an emissions trading scheme, and has a comparable carbon price, then there is no case for EITE compensation.

Assessing this criterion requires an examination of the relevant market, which is not necessarily the world market. For example, Russia produces most of the world's natural gas, and is covered by the EU scheme, but this is exported almost entirely to Eastern and Western Europe. Australia's LNG production competes against Malaysia, Brunei, Indonesia, Qatar, Oman and the United Arab Emirates, none of which price carbon adequately, if at all.

## Levels of assistance to EITEs

The Green Paper does not propose to provide full compensation to EITEs. Activities that emit above 2,000 tonnes of CO<sub>2</sub>-e per million dollars of revenue will have initial assistance set at 90% of the industry average for that activity. Activities that emit between 1,500 and 2,000 tonnes per million dollars of revenue will have assistance set at 60% of the industry average.

These arbitrary compensation levels are unlikely to bear any resemblance to the actual level of disadvantage faced by various firms, nor the factors that will cause existing firms to relocate offshore, or for new investments to look elsewhere.

New investments at the margin will not be made if there is an alternative location where the firm could produce in a free-carbon environment or where competitors who are able to increase supply face no price for carbon emissions. Hence, less than full compensation will deter future investment, even if full compensation over-compensates the firm compared with the worldwide carbon price alternative.

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<sup>6</sup> *ibid*, p. 17

Existing firms will close down if the cost of the CPRS forces variable costs to rise above price. Hence, a potential measure might be to compensate firms if the cost of the CPRS rises above Gross Operating Surplus (or a threshold of less, for example 75%) for the relevant industry in the Australian Bureau of Statistics (ABS) Input-Output tables<sup>7</sup>.

Alternatively, given the EITE problem is about the slope of the demand curve facing exporters, or the import supply curve competing against local producers, directly compensating firms by calculating a rough measure of the difference in prices between the EITE situation and the case where the whole world prices carbon at a rate similar to Australia. This is essentially the solution proposed in the Garnaut Climate Change Review Draft Report<sup>8</sup> but this report does not specify how the difference in price should be calculated.

A hard threshold for compensation, such as the Green Paper's proposed thresholds of 1,500 and 2,000 tonnes of CO<sub>2</sub>-e per million dollars of revenue, makes intuitive sense when there are quite defined gaps in emissions intensities. Appendix D of the Green Paper provides an industry level breakdown of emissions intensity. It shows an obvious increase in emissions intensity above 2,000 tonnes and at 1,500 tonnes. The use of revenue in this analysis may have also contributed to the definitiveness of the gaps.

However, it is not clear that the activity approach will show such definitive gaps in emissions intensity. The initial assessment of activities may produce many more data points than the industry approach (which examined only 109 industries), as there are multiple activities in each industry. The list of activities could produce more of a continuum of intensities. In the absence of definitive gaps for activities, the Commonwealth should adopt a sliding scale to determine the level of compensation to be paid to EITEs, which would minimise the potential for inequity should particular activities be just short of the hard thresholds.

The Green Paper proposes to limit the proportion of permits available for EITE compensation to 20% of the total pool (expanded to 30% if agriculture is covered by the Scheme from 2015). The cap underpins the thresholds and ratios proposed in the compensation mechanism. These parameters may change, pending further information from the consultation process. However, a compensation cap means that the parameters are unduly restrictive and may not adequately prevent carbon leakage. Furthermore, the cap also means that the number of permits available for compensation will decline over time, irrespective of the risk of leakage.

The purpose of the cap on compensation is to ensure that the proportion of compensation does not rise over time and erode assistance to other groups such as households. However, the Green Paper does not provide a reason for setting the cap at 30% or explain

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<sup>7</sup> Production of the Input-Output tables at a greater level of industry detail may be required for this to function as desired.

<sup>8</sup> Garnaut Climate Change Review Draft Report June 2008

how this relates to the risk of carbon leakage. This is particularly concerning when the cap underpinned the compensation parameters. The central focus of the Green Paper's treatment of the EITEs appears to be containing the level of compensation provided rather than preventing carbon leakage. Carbon leakage is a lose-lose outcome, potentially imposing significant costs for no environmental benefit.

Additionally, if the aim of EITE assistance is to ameliorate the effects of other countries not pricing carbon correctly, then the total level of assistance should rise over time, as more cost-sensitive industries make investment decisions.

The need to refine the eligibility criteria is reinforced by the application of the 30% cap. This is because the proposed arrangements may lead to the limited amount of compensation being poorly targeted. Three key refinements to the eligibility criteria are necessary:

1. Add a specific measure of trade exposure to reduce the likelihood of compensating companies with a low risk of carbon leakage;
2. Adopt a measure of profitability for new investments and fixed costs or level of disadvantage for existing industries; and
3. Use a sliding scale to determine the value of compensation for activities to better reflect exposure to the carbon price.

Furthermore, if the 30% cap for EITEs is to be retained, further detail is needed on timeframes proposed and the allocation of the total pool of compensation. In particular:

1. Is there a point when the economy will have adjusted sufficiently and that changes in consumer behaviour will mean households no longer need assistance? and
2. If agriculture is allocated 10% of the EITE cap, how will the 10% be used in the years prior to inclusion or afterwards in the absence of inclusion?

## Other issues

### ***Defining activities***

The activities approach to assess eligibility for compensation is more suited to the manufacturing industry than extractive or agricultural industries. It may be more difficult to develop a comparable activity in extractive industries because each project, and potentially each process, may be individually tailored to the characteristics of the ore body or the specifications of the inputs (e.g. the chemical make up of the gas to be recovered – whether it is 'sweet' or 'sour', 'wet' or 'dry' – dictates the number and complexity of the intermediate processing steps required to produce a marketable product).

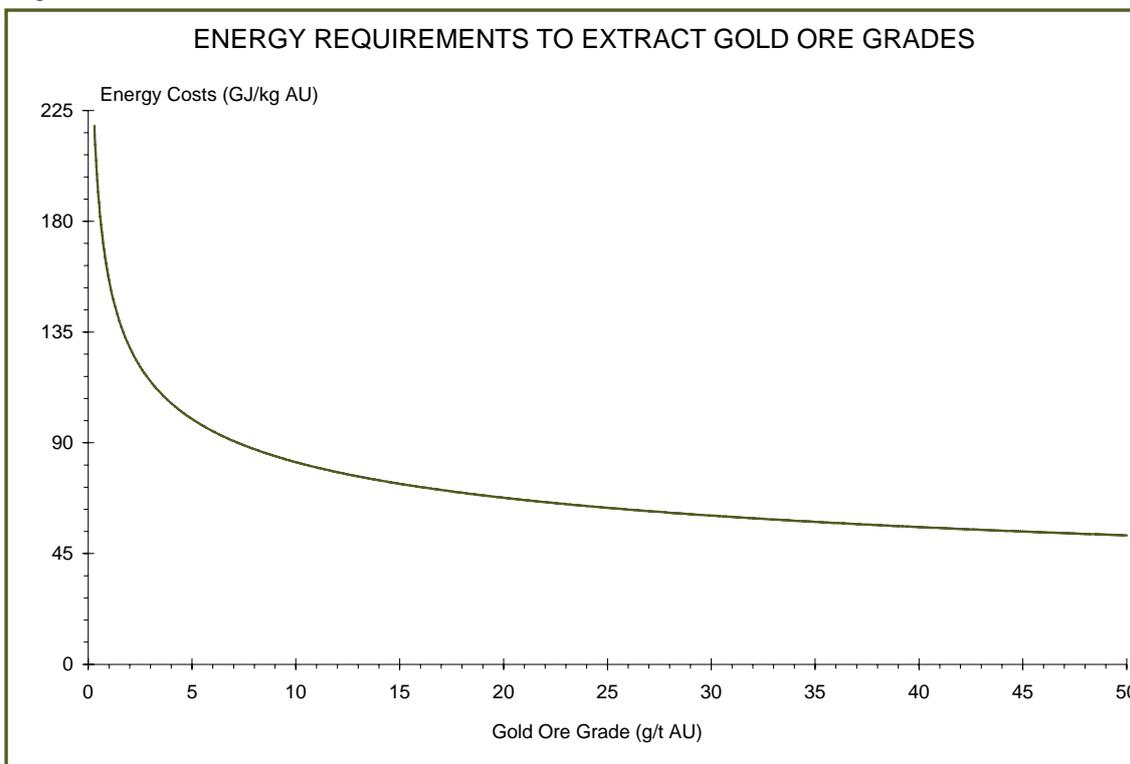
The activities approach appears to have little or no benefit over an industry approach when applied to the agriculture sector. Using industry averages, with a high level of granularity to capture the different types of agricultural production, should be sufficient.

Where processes exist, the activities approach provides mixed incentives to define an activity. There is an incentive to define activities broadly to capture as much of the emissions as possible (as the numerator) and to define activities tightly to minimise the measure used as the denominator. As a result, companies that engage in similar activities may define their activities differently. Bounding an activity by tradeable products may aid comparability.

Appropriate definitions of activities for extractive industries will need to be devised. For example, iron ore tends to be considered a single commodity, but there are two types of iron ore – haematite and magnetite – that have different chemical compositions. These different types of iron ore need different industrial processes to bring those goods to market. Haematite iron ore tends to be ‘mined and shipped’, while magnetite iron ore is crushed and magnetically separated to produce a tradeable commodity. It is estimated that magnetite production may be eight times more energy-intensive than haematite production. Similarly, the bulk of nickel is in two types - laterites and sulfides - that use different productive processes to separate out the nickel metal. Extractive activities should be defined to enable different ore types to be separately identified for the initial assessment of emissions-intensive activities.

Different producers within extractive industries can have very different emissions profiles. This may occur for two reasons. Firstly, the geographic location of the ore bodies will influence fuel mix used in extraction and processing. Western Australia has many mines located off the main electricity grids (South West Integrated System (SWIS) and the North West Interconnected System (NWIS)) or gas pipelines, and these tend to be fuelled by diesel generators of various levels of efficiency, with few or no fuel substitutes available. Second, different ore bodies may have different grades or types of ore that require different energy levels to extract and process. For example, the following chart illustrates the level of energy required to extract gold from various gold ore grades.

Figure 2



Source: Mudd, G., 2007, 'Gold mining and sustainability: A critical reflection'.

In the same way as emissions from extractive industries are closely linked to the quality of the natural resource (for example the quality of the ore body), agricultural emissions are linked to variables such as climate and land quality (i.e. the local climate may not support production alternatives that have lower emissions). In this respect, the extent to which agricultural emissions can be reduced is determined by the constraints of the environment in which the production is based. This means that some producers may have few viable substitutes and a limited capacity to reduce emissions in response to the carbon price. This issue also has implications for the development of averages for EITEs in the agricultural sector (for the purpose of calculating compensation). Averages that fail to take into account the emissions variation arising from the crop type, type of animal and weather events could lead to perverse outcomes.

Despite these issues, the activity approach overcomes some of the difficulties of the industry approach. The industry approach relies on the alignment of Commonwealth Government emissions data with ABS industry data. The ABS Input-Output tables segment industries at a very high level (109 industries), which obscures important intra-industry and inter-industry differences. The NETT final report notes that within the cement, lime and concrete slurry industry, cement manufacture is considerably more emissions intensive than slurry manufacture. An industry approach for compensation could lead to some entities being eligible for compensation despite not being emissions intensive, while compensation may not be sufficient (or non-existent) for those that may require it

more. The activity approach also overcomes some of the difficulties of the firm approach, which were highlighted in the Green Paper.

### ***Developing activity benchmarks***

There are three issues that the Commonwealth should consider when developing activity benchmarks. The first is how to calculate an appropriate benchmark where there is a sole producer or very few producers of a particular commodity in Australia. For example, Australia has one producer of silicon (Simcoa) and one London Bullion Market Association accredited gold refiner (AGR Matthey). Australia also has sole producers of chromite, tantalum and lithium.

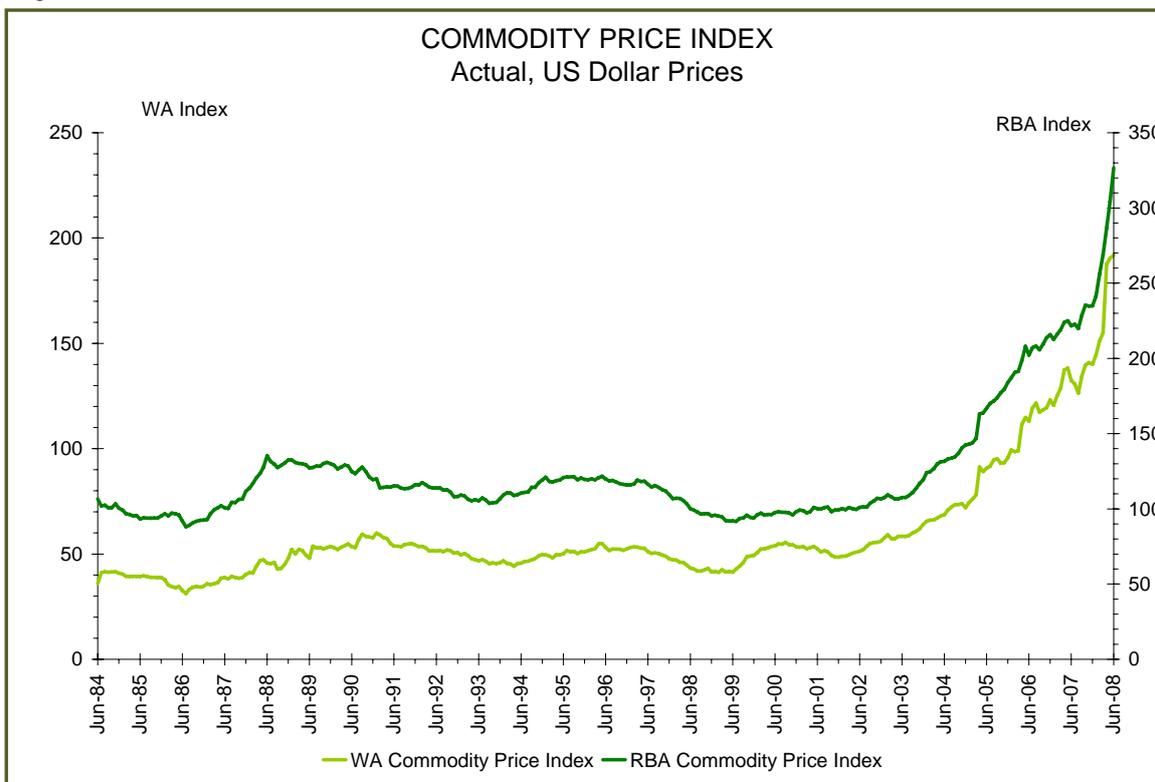
The second issue is how to benchmark new industries or activities in Australia. The Commonwealth will need to assess activities sufficiently early in the project development stage, as eligibility for compensation may influence the viability of the project.

The third issue relates to the poor suitability of some industries to averaging. As discussed earlier, there can be significant variability in emissions intensity between projects within the same industry. This is particularly the case in extractive industries such as gold, where the emissions intensity depends on the quality of the ore deposit and access to energy.

### ***The appropriate data period for assessing eligibility for compensation***

The Green Paper seeks stakeholders' views on the use of data from 2006-07 and 2007-08 to assess activities for compensation. As noted previously, using a revenue denominator may skew emissions-intensity calculations in periods where prices are volatile or cyclical and may result in some activities being made ineligible for compensation (and vice versa). This is particularly the case in commodity prices, which grew strongly in those two years, as demonstrated by the Western Australian Commodity Price Index and the Reserve Bank of Australia Commodity Price Index (Figure 3). If a revenue-based measure is to be used, an average for a period longer than two years should be used to address the volatile nature of commodity prices.

Figure 3



Source: RBA and Western Australian Department of Treasury and Finance

### ***Review mechanism for activities eligible for compensation***

The Green Paper proposes to include all activities eligible for compensation into the Scheme regulations. This would be a ‘once and for all’ assessment of activities and eligible activities would continue to receive compensation until phased out over time or competitor nations apply similar constraints on their own carbon emissions. Eligible activities would not be reviewed at a later date. Activities would be added to the regulations if the Scheme coverage extends to agriculture or new activities occur in Australia.

A once-off assessment of activities would provide compensation security to entities that engage in eligible activities. However, it is possible that eligible activities would be different if assessed at a different time period. In the absence of refinements to the compensation arrangements to EITEs (such as the inclusion of a trade exposure measure and the use of a measure that better reflects the operating margins of a company), the Western Australian Government would prefer a reassessment of eligible activities to reflect newer conditions.

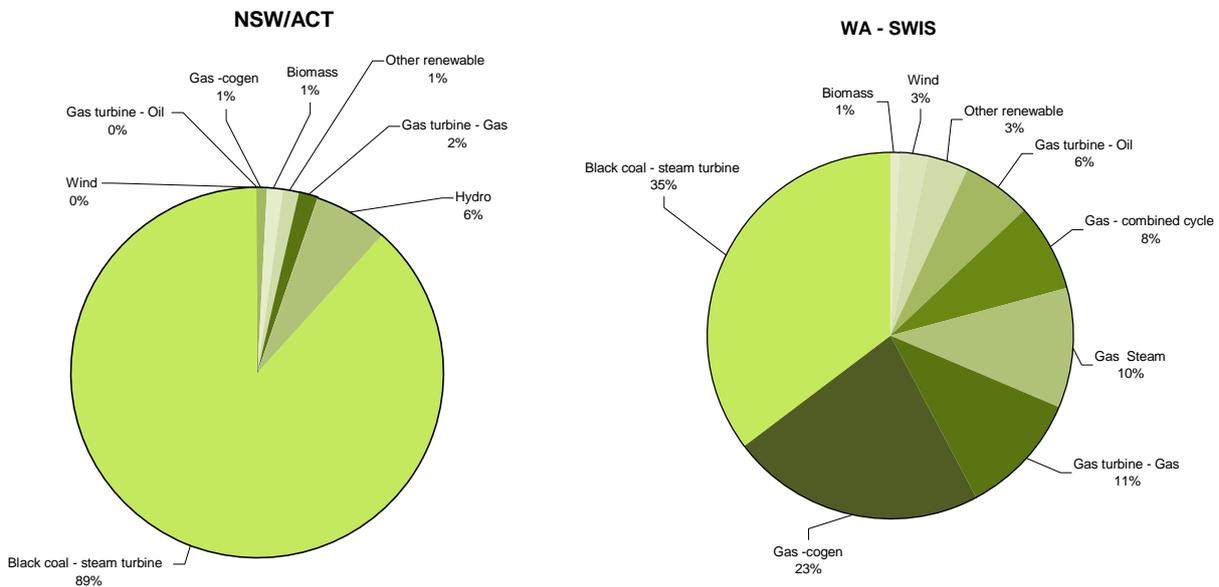
## The Western Australian Energy Sector

### Stationary energy

In 2006 the stationary energy sector was the source of 40% of Western Australia's emissions - the largest of any sector. Accordingly, stationary energy will be the sector most significantly affected by the CPRS.

Compared to a State such as New South Wales (NSW), Western Australia's stationary energy sector, by generation type, is relatively diverse. To illustrate, Figure 4 below shows the stationary energy generation composition of the SWIS in Western Australia, and of NSW and the Australian Capital Territory (ACT) in 2007<sup>9</sup>. By comparison, Western Australia is significantly less reliant on black coal (steam turbine), using a greater proportion of gas-based generation. In the north west of Western Australia this difference is even more pronounced, with almost all of the electricity in the NWIS generated from gas. Western Australia's greater reliance on gas, which is costlier and less emissions-intensive, means that at a lower permit price more abatement is likely to occur in States with a greater reliance on coal-fired electricity, such as NSW and Victoria.

Figure 4



<sup>9</sup> McLennan Maganasik and Associates 2007

Unlike most of the east coast of Australia, Western Australia is not serviced by a fully integrated transmission system. This is a result of the size of Western Australia and the remoteness and sparseness of its population outside of the metropolitan region. Depending on their needs and location, Western Australian businesses and communities source their energy by connecting to an integrated electricity system or from a pipeline or distribution system, or self-generate electricity from a stand-alone system. The options are:

- The SWIS – the integrated electricity network servicing the south west of the State and supported by the Wholesale Electricity Market (WEM);
- The NWIS – a partly integrated system servicing the north west of the State;
- The Dampier to Bunbury Natural Gas Pipeline;
- The Midwest Pipeline;
- The Goldfields Gas Transmission Pipeline;
- The Parmelia Pipeline;
- The WestNet Energy Gas Distribution Systems;
- The Gas Distribution Systems located in Esperance, Leinster and Margaret River; and
- Stand alone electricity generation plants (gas, coal, diesel and renewable).

The absence of a State-wide fully integrated energy system raises a number of issues when considering what responses to the proposed CPRS are feasible in Western Australia.

First, stand-alone diesel powered generation is the main source of energy for remote operations and communities where there is no option of connecting to an integrated system. Faced with a carbon price, these operations and communities will be unable to offset some of the carbon cost except by reducing consumption, as switching to cleaner fuels will not be an option due to the absence of alternative energy supplies in the short term. This could result in remote facilities becoming unviable for companies supplying products onto the international market at prices determined on a global basis. Negative social implications are likely where remote communities are closely aligned with a single production facility, such as Norseman. Norseman Gold generates its own power at its mine site and also supplies all of the nearby township's electricity.

Second, the Western Australian electricity market is split between the SWIS, the NWIS and other non-interconnected systems, and the size of each system is relatively small. The relatively small size of the market has been taken into account in the design of Western Australia's wholesale electricity market (WEM), which services the SWIS, by structuring it as a capacity market (with a Reserve Capacity Mechanism (RCM)) and a separate electricity market. As a result, the WEM is not expected to respond to the carbon price in the same way that has been predicted for the National Electricity Market (NEM) on the east coast. For example, the RCM provides more certainty that investment

in new generation will take place in a timely manner, so the investment shortfalls and supply security concerns for the NEM arising from the CPRS, are less likely in Western Australia.

Third, Western Australia has a range of excellent low-emission renewable energy sources. However, the system and network have not been developed with a view to optimising access to these resources. Although similar issues have been identified for the NEM, the issue in Western Australia is of a greater magnitude. The infrastructure task and technical challenges of responding to the carbon price through enabling large-scale deployment of low-emission renewable energy sources may therefore be more significant in Western Australia.

### Expanded Mandatory Renewable Energy Target impacts and interaction with the CPRS

A substantial and rapid increase in the cost of carbon would be required to make renewable energy generation competitive on a large scale. It is not expected that the initial targets will be of the magnitude required to drive such an increase.

Consequently, the expanded national mandatory renewable energy target (MRET) scheme is expected to be the primary driver of renewable energy investment in Western Australia in the short to medium term. Western Australia is expected to be a competitive location for the development of renewable energy resources due to its comparatively high electricity prices.

Challenges to increasing renewable energy investment include managing the impacts of intermittent generation on the electricity network and accessing new renewable energy resources through a constrained and comparatively loosely meshed network.

In view of these challenges, a national MRET scheme design that encourages a lot of wind generation early in the life of the scheme will be unhelpful from a Western Australian perspective and will do the least to help facilitate Western Australia's transition to a low carbon emission economy.

### Gas market

Western Australia has 80% of Australia's natural gas reserves and about 66% of Australia's natural gas production<sup>10</sup>. Demand for natural gas in Western Australia has risen from less than 20% of national consumption in the mid-1980s to a current level of around 35% of national consumption. This is a significant share, considering that the net amount of

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<sup>10</sup> Argonaut Securities Pty Limited, 'The Western Australian Gas Market', September 2007, p.2

energy consumed in Western Australia each year accounts for only 14% of total energy consumption in Australia. Natural gas accounts for about 41% of total energy consumption in Western Australia, compared with 20% nationally<sup>11</sup>.

The considerable distances between gas fields and markets and higher gas prices compared to the eastern states are likely to require a higher carbon price to encourage a shift to gas from coal for electricity generation in Western Australia. The majority of installed capacity in the north west is gas-fired with the current installed capacity of the NWIS being about 1100MW (all gas of varying efficiencies). Energy demand in the north west is growing so quickly that it is estimated that the load in the NWIS could double by 2015. This is largely due to the large number of resource projects proposed for the north west.

The future supply of domestic gas in Western Australia depends on the State's Domestic Gas Reservation Policy. New LNG projects must supply the equivalent of 15 per cent of gas for domestic use where access to Western Australian land or waters is required for processing or other purposes. Growth in the supply of domestic gas is therefore linked to new LNG projects and should be taken into account when considering the effects of the CPRS on the LNG industry.

## Electricity prices

Regulated retail tariffs in Western Australia have been frozen for some time. Residential tariffs have not increased since 1997-98, resulting in an estimated real price reduction to 2009-10 of about 30%. Until July 2007, large business tariffs had not increased in nominal terms since 1991-92, resulting in a 34% reduction in real electricity prices to 2006-07. Small business tariffs have not increased since 1991-92, resulting in a real price reduction of 38% to 2009-10.

In the 2008-09 State Budget, the previous Government announced that electricity tariffs for small use customers would be increased by 10% in 2009-10, with further annual increases of no less than 10% to be phased in over a six to eight year period until the tariffs reach cost-reflective levels. The current Government is yet to announce its electricity tariff policy. The combined effect of a move to cost-reflective pricing and a carbon cost has the potential to result in significant increases in the cost of electricity for tariff customers which, if unmitigated, could lead to more households experiencing utilities hardship<sup>12</sup>.

The Office of Energy has undertaken preliminary calculations to provide an indicative financial impact of the CPRS on residential consumers. Assuming a 10% tariff increase

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<sup>11</sup> ABARE, *'Energy in Australia 2006'*, 2007, pp.55; and Chamber of Commerce and Industry of Western Australia, *'Meeting the Future Gas Needs of Western Australia - A Discussion Paper'*, May 2007, pp.38-41.

<sup>12</sup> Utilities (or essential services) hardship is defined as those households which have the intention but not the capacity to pay utility bills without negatively affecting their ability to meet their other basic living needs.

glide path to 2010-11, the indicative effect on a residential customer (using 5,200kW per annum) at various carbon prices is detailed in Table 1.

The indicative effect of the CPRS on residential customers in Table 1 only relates to 2010-11. If the carbon price increases each year, the effect on the residential customer bill will increase accordingly, but this will also depend on how the emissions intensity changes in the SWIS due to the CPRS. Table 1 does not take into account increases to network prices as a result of the CPRS – it is simply an indicative effect based on the creation of a carbon permit price.

**Table 1: Indicative impact of a carbon price on electricity in 2010-11.**

Permit prices (\$)	27.02 <sup>13</sup>	30.00 <sup>14</sup>	40.00	50.00
Additional cost per k/Wh <sup>15</sup> (\$ (including GST)	0.03	0.03	0.04	0.05
Effect on the annual average residential bill (\$)	143.90	159.78	213.04	266.30
Percentage change	15%	16%	22%	27%

It should be noted that these costs are in addition to an assumed glide path to return tariffs to cost-reflective levels

A uniform tariff policy applies in Western Australia, meaning that applicable regulated tariffs outside the SWIS are the same for the same classes of customers inside the SWIS who have access to the uniform tariff. Under this policy, the price increases shown above would apply to customers inside and outside of the SWIS (Horizon Power’s carbon intensity is on average<sup>16</sup> similar to or lower than that of the SWIS).

## Compensation for coal-fired electricity generators

The Green Paper highlights three main rationales for providing assistance to coal-fired generators that have been raised in previous scheme proposals or by stakeholders:

- energy security implications;
- fairness; and
- the effect of direct assistance on the investment environment.

<sup>13</sup> Carbon cost forecast from the Tariffs Review component of the Electricity Retail Market Review (April 2008)

<sup>14</sup> The carbon price is assumed to be in nominal terms.

<sup>15</sup> Based on the SWIS emissions intensity modelled by Frontier Economics for the Electricity Retail Market Review (April 2008). Frontier Economics estimated that the SWIS emissions intensity to be 0.8 tCO<sub>2</sub>/MWh in 2010-11.

<sup>16</sup> This is because Horizon Power supplies gas-fired electricity to the NWIS and operates 33 isolated systems.

To reduce the risk of adversely affecting the investment environment, the Green Paper proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators as a means of offsetting some of their loss in asset value.

The State Government considers that energy security implications for Western Australia from the proposed CPRS are likely to be limited. As discussed earlier, coal-fired generation in Western Australia will remain viable at high gas prices and while carbon prices are relatively low. Furthermore, the WEM is designed to deliver greater investment certainty through the incorporation of the RCM.

As the proposed assistance is for loss in asset value and is not linked to production levels, existing coal-fired generators that are not viable after the commencement of the CPRS will shut down regardless of the provision of direct assistance. Communities, workers and regions economically linked to such generators will still be affected regardless of the provision of assistance. Accordingly, structural adjustments assistance for these groups should be given priority.

Direct assistance to existing coal-fired electricity generators will not affect electricity price rises as generators will pass through the carbon cost as higher prices. The only exception to this is when the generator is contractually restricted from carbon price pass through.

In Western Australia, Verve Energy, Griffin Coal (Bluewaters I & II) and Worsley Alumina (120MW coal-fired cogeneration unit) may be eligible for compensation for their coal-fired plants. The State Government is not aware of any other private self-generating facilities in Western Australia that utilise a coal-fired plant.

## Equity Considerations

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The Western Australian Government supports the provision of assistance to households affected by the introduction of the CPRS. The Green Paper's commitment to assisting households with the costs of the CPRS is welcomed.

The Green Paper proposes assistance to a variety of groups including low income households (income of \$53,000 or less), those receiving pensioner, carer, senior and allowance benefits, and middle income households (with incomes of \$150,000 or less). This assistance will help households meet the overall increased cost of living.

Estimates in the Green Paper, based on preliminary modelling and a carbon price of \$20, project the price of all goods to rise by 0.9%. Assistance to low-income households is particularly important, as low-income earners are more than proportionally affected by increases in prices of essential goods and services because expenditure on these items makes up a greater share of overall income. They generally also have less scope to make energy savings and may not have access to the capital required to reduce energy and water use by purchasing more efficient equipment.

The issues for Western Australian households arising from the introduction of the CPRS largely mirror those elsewhere in Australia, however given the size of Western Australia and rapid economic growth in recent years some sections of the community may be disproportionately disadvantaged. These are:

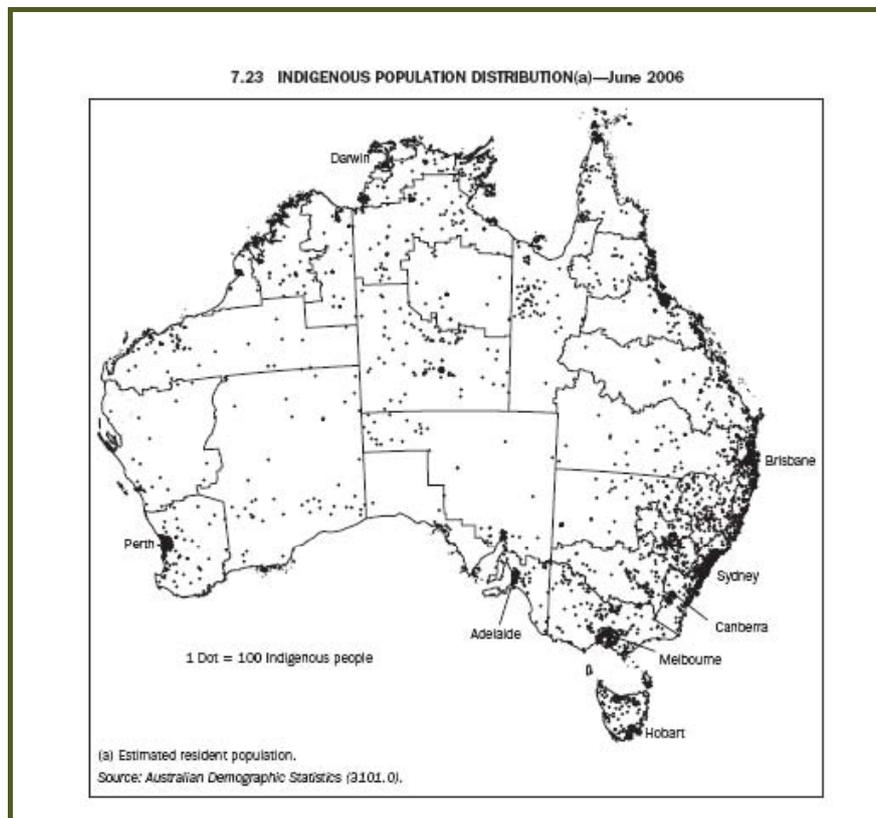
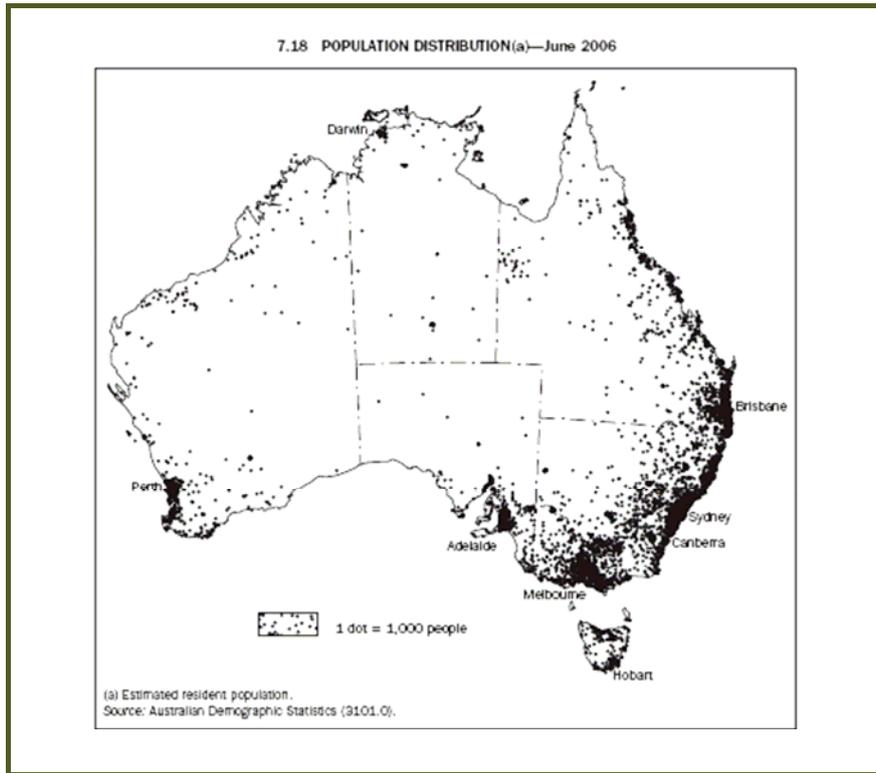
1. Remote and regional communities; and
2. Low income households.

### Remote and regional communities

Regional Western Australia is sparsely populated compared to the other States and is characterised by large unpopulated areas with few large towns. There are a large number of remote aboriginal communities, pastoral leases and farming properties. This is illustrated in figures 7.18 and 7.23<sup>17</sup>. Many remote communities are outside the two main electricity networks and must generate their own power. They generally have small populations and lack basic infrastructure.

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<sup>17</sup> ABS Catalogue 1301.0 pages 192 and 197.



In much of the north west and some parts of the south east of the State, on-grid electricity supply is limited and it is unlikely that many remote communities or properties will be connected to a networked (or grid) power supply in the near future. Self-generated power (usually diesel) is the only option in most of these cases. Self-generated power is more expensive and often unreliable. The CPRS will probably exacerbate the already high costs of electricity in these stand-alone power systems. These small communities are unlikely to be liable to purchase permits in the CPRS, however they will be affected by the carbon cost imputed in diesel fuel.

Diesel used to generate power for residential use is eligible for a rebate (currently 38.143 cents per litre) under the Diesel Fuel Rebate Scheme. However, diesel fuel used to generate electricity for other areas (such as schools or stores) is not eligible for the rebate and residents are not eligible for concessional tariffs if they generate their own power. The high cost of diesel fuel and resulting high cost of electricity means people are reluctant to use power, particularly those on low incomes<sup>18</sup>.

Limited or non-existent public transport in most regional areas means that long distances are travelled by car. Many remote communities are hundreds of kilometres from a larger town which has shopping, health and banking facilities, for example Warburton is more than 900 kilometres from Kalgoorlie and other communities are even more isolated. This also means that transport costs comprise a greater proportion of the costs of essential goods and services. With little or no substitutes available these residents have little option but to pay the full carbon price.

Automotive fuel costs are, on average, around 10% higher in regional areas than in Perth<sup>19</sup>, and in recent years, rises in liquefied petroleum gas (LPG) prices have disproportionately affected the cost of energy for regional households<sup>20</sup>.

The costs of living in regional Western Australia has risen as a result of the commodity price boom - both directly, due a higher cost for petrol and LPG, and indirectly, due to increased demand for housing and other services by mining-related activities.

Rental prices in regional centres benefiting from the resources boom have increased significantly. For example, Real Estate Institute of Western Australia data shows that median rents in Kalgoorlie-Boulder increased by 28% over the year to March 2008 to \$320 per week (just \$10 per week below median rents in Perth, which had an annual increase of just 6.7%). Rents in other regional centres have increased to much higher levels reflecting the remoteness of these locations and the shortage of housing compared with demand. The range of average rental prices in regional Western Australia is outlined in the table below.

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<sup>18</sup> [http://fueltaxinquiry.treasury.gov.au/content/Submissions/Industry/downloads/ACC\\_217.pdf](http://fueltaxinquiry.treasury.gov.au/content/Submissions/Industry/downloads/ACC_217.pdf).

<sup>19</sup> WACOSS, *The Rising Cost of Living in Western Australia*, August 2007.

<sup>20</sup> Office of Energy, *Summary of Public Hearings, Inquiry into LPG Affordability for Households in Western Australia* found that prices of bottled LPG vary around the State from \$75 in the Hills region of Perth to as high as \$200 in the Pilbara region.

**Table 2: Regional Rental Average Prices: Community Service Workers.**

Location	Rent (per/week)
Broome - Derby	\$300 - \$700
Halls Creek	\$300 - \$400
South West/Great Southern	\$175 - \$480
Karratha - Roebourne	\$800 - \$1500
Port Hedland	\$800 - \$1400
Mt Newman	\$800+

Source: WACOSS, WACOSS Survey - Accommodation for Community Service Workers in Remote Western Australia, December 2007

Regional households on lower incomes are struggling with increases in rental costs. This has reduced their capacity to afford other costs, including utilities. This is illustrated in Table 3, which shows a higher disconnection rate for regional customers whose power is supplied by Horizon Power.

**Table 3: Annual disconnections by Western Australia's electricity suppliers, 2006-07.**

Retailer	Number of disconnections	Disconnection (%)
Horizon Power	2,302	6.54
Synergy	6,535	0.74
Total	8,837	0.97

Source: Economic Regulation Authority, 2006-07 Annual Performance Report Electricity Retailers, January 2008, pg. 16

Given that increases in the cost of energy, transport and other goods and services flowing on from the introduction of the CPRS will be higher in many remote and regional areas of Western Australia, it is important that the special circumstances of households in these areas, especially those on low incomes, are properly considered in the design of the CPRS.

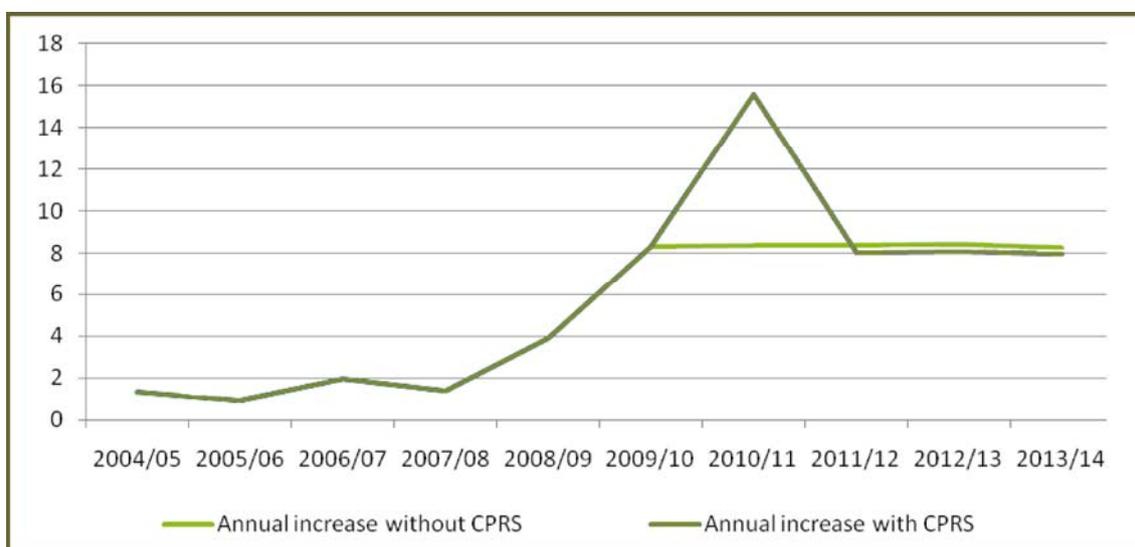
### Low-income households

The situation for low and fixed income households in Western Australia has worsened over recent years due to the faster rise in the prices of goods and services in Western Australia. Over the four years to the June quarter 2008 the Perth 'All Groups'

Consumer Price Index<sup>21</sup> increased by 17%, 3 percentage points higher than the increase recorded nationally.

Indicative modelling has been undertaken to show the potential additional cost of the introduction of the CPRS on household utility bills (comprising electricity, gas, water and sewerage) under a carbon price of \$30 a tonne. This is illustrated in the Figure 5 below. This modelling has only considered direct costs and has not, for instance, considered the potential effects of a carbon price on materials used for construction, which could affect capital costs. The modelling shows that, at a price of \$30 a tonne, the CPRS could increase annual household utility bills by 7.25 percentage points.

Figure 5<sup>22</sup>: Illustrative Annual Percentage Increases in utilities bills for Western Australian households, based on a carbon price of \$30 tonne.



Source: Western Australian government estimates based on: WACOSS, "The rising cost of essential services", June 2008, p3. ACF, ACOSS, Choice "Energy and Equity: Preparing households for climate change: efficiency, equity, immediacy" 2008, pg. 10; Office of Energy (Western Australia) estimates; Water Corporation estimates.

## State Government utilities subsidies

The State Government currently provides a range of concessions and rebates for electricity, gas, water and sewerage. The total cost of these programs in 2008-09 will be around \$90 million.

<sup>21</sup> ABS, cat. no. 6401.0

<sup>22</sup> It should be noted that the State Government has not yet determined an electricity price path.

Current expenditure on energy concessions and rebates alone is about \$36 million a year and is delivered largely through the Energy Supply Charge Rebate (refer to Table 4). This rebate is delivered to holders of Pensioner Concession, Hardship Concession and Seniors cards (which are not means tested or are liberally means tested). It applies to about 190,000 or 25% of customers on the A1/A2 Residential Tariff.

The rebate applies to customers that hold the following means-tested cards:

Concession Cards	Seniors Cards
Centrelink Healthcare Card	Commonwealth Seniors Health Card
Pensioners Concession Card	Western Australian Seniors Card
Veterans Affairs Gold Card	
Veterans Affairs Pensioner Concession Card	

The effect of the CPRS on the cost of the Western Australian Government’s rebate programs from an increase in costs sufficient to offset a carbon price would be at least \$6 million a year (this does not take into account the potential for more households to become eligible for rebates due to price rises).

The other major rebate recipients are those that qualify for the Dependant Child Rebate, which applies to around 44,000 recipients. This rebate is means-tested and is paid based on the number of children in the household. Other rebates include Life Support Equipment, Thermoregulatory Dysfunction and Seniors Air-conditioning Rebates.

**Table 4: List of State Government Concessions and Current Cost.**

State Government Concessions	Annual costs (\$ million)
Energy Supply Charge Rebate	23
Dependent Child Rebate	8
Account Establishment Fee Rebate	1
Seniors Air-conditioning Allowance	0.1
Meter Testing Rebate	-
Caravan Park Subsidy	0.2
Total Horizon Power costs for all the above	0.7
Life Support Equipment Electricity Subsidy	0.5
Thermoregulatory Dysfunction Energy Subsidy	0.1
Synergy and Horizon Power administration costs	2
<b>Total</b>	<b>36</b>

The State Government also provides additional support to the most financially disadvantaged households through a \$24.4 million package of measures to tackle utility hardship. The package includes financial counselling, grants to assist those in genuine financial hardship and energy efficiency initiatives to lower power bills.

## Other Issues

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### Scheme commencement date

The Western Australian Government recommends that the 2010 commencement date for the CPRS should be deferred for the following reasons:

- Activity level data is not available and no economic model exists to analyse activity level data;
- Current and accurate emissions data is not available and will not be available for some time;
- Further work is required on the compensation mechanism for the EITEs. This is unlikely to be resolved sufficiently within the existing timetable;
- Commonwealth Treasury modelling results have not been completed within the timeframe originally indicated (and are still unavailable) compressing the time available for the results to be considered by stakeholders;
- There is limited time between consultation milestones and no recognition given to competing processes such as the Garnaut Climate Change Review. For example the Garnaut Climate Change Review Draft Report was released one week in advance of the CPRS Green Paper;
- The final structure of the CPRS will not be known until the Federal Parliament considers it. This is not expected to occur until mid 2009, leaving approximately 12 months for liable parties to interpret the legislation and implement the necessary changes to their business practices. This means that many liable parties are unlikely to be fully prepared for the scheme; and
- The previous Commonwealth Government indicated that a 2012 commencement date for an Australian emissions trading scheme was feasible given the work required to design and implement it. It is unclear how the acceleration of the start date for the CPRS has been accommodated without compromising the quality of the final design and the level of preparedness of liable parties.

### Market design, governance arrangements and international linkages

#### **Market design**

The Green Paper proposes an initial price cap through to 2014-15 in the form of a penalty regime without a 'make good' provision. Unlimited banking of permits will also be allowed. A price cap is extremely important in the early years of the scheme to provide

participants with certainty as to their maximum exposure. It should be noted, however, that this need lessens once secondary markets arise, as they can provide the same risk management effect from purchasing such instruments as options to purchase future permits, at a known price.

Banking creates incentives to bring forward abatement, secure in the knowledge that unneeded current permits can be applied to future liabilities. Generally, there should be no limits on the ability to bank.

However, the combination of unlimited banking and price capped permits does raise concerns about the duration of the initial scheme design, due to the following factors:

1. A price cap essentially creates a right to purchase unlimited permits at the capped price. Economic certainty is therefore delivered at the expense of the emissions cap.
2. If price-capped permits can be banked and there is a reason to suppose that future permits will be more expensive than price-capped permits, a rational response would be to get as many price-capped permits as possible and bank them.
3. As a result, the integrity of the scheme will be impaired due to exceeding the emissions cap during the price-controlled period but also importing those permits into the non-price-controlled period - effectively breaching future emissions caps as well.
4. It is understood that the EU regards price capped permits as inimical to linking with an Australian emissions trading scheme as linking would effectively allow importation of Australian price capped permits into the EU scheme.

For these reasons, the combination of banking and price caps needs careful design consideration. Options to manage this issue include setting the price cap at such a high level that it will be well above expected future permit prices (although this would degrade one element of a price cap - that of controlling financial exposure) or preventing price capped permits from being banked into non price capped years. Should the latter option be pursued, it seems likely that it would not be possible to distinguish between 'ordinary' permits and price-capped ones as they would be fungible within the price capped period.

The combination of rolling firm caps and gateways balances the need to provide certainty to business and other liable parties on future caps with the need for flexibility to adjust future targets up or down as circumstances change. The gateways principle provides a means of signalling future intentions while not locking the Government into unnecessarily tight trajectories that may need to be amended.

## ***Governance arrangements and implementation***

The use of the Council of Australian Governments as a consultation mechanism between the Commonwealth and States and Territories is supported. However, the Green Paper is largely silent on the level of consultation and engagement of State and Territory Governments. This needs to be clarified.

## ***International linkages***

A key element of an effective emissions trading scheme will be predictability and stability of prices. The significant swings in permit prices seen in the early years of the EU scheme are considered to have damaged confidence among EU participants and avoiding these should be a priority for the CPRS. In the longer term, it is expected that the development of secondary markets will act to minimise volatility but in the early years there is a case, as the Green Paper recognises, to limit the import of international permits. However, given the potential for international permits to act as a safety valve, this element must be well designed and the Green Paper does not appear to specify any particular limit.

There will be restrictions on the export of Australian emissions permits in the early years of the scheme. Similar considerations apply to preventing the export of Australian permits. If there is a significant price difference between Australian and international permit prices, overseas liable parties could seek to meet their requirements from Australia. Given the relatively small size of the Australian economy this could result in significant permit shortfall, resulting in much greater than predicted economic affects. This proposal is therefore supported although it is agreed that Australia can do nothing to prevent unilateral linking.

## **Coverage**

### ***Forestry***

The Western Australian Government supports the treatment of forestry in the CPRS proposed in the Green Paper. Specifically, it supports the inclusion of forestry on an opt-in basis from the start of the scheme in 2010.

Western Australia has undertaken considerable work on the development of reforestation as a climate change mitigation option and would like to participate in the drafting of the detailed design rules and regulations for forestry in the CPRS.

Further information on the issues associated with the Western Australian forestry sector being included in the CPRS are provided in Appendix 4. The Western Australian Government is also preparing a separate submission in response to the Commonwealth Government's discussion paper on '*Detailed Design Issues Relating to Coverage of Reforestation*'.

## **Agriculture**

The Western Australian Government is keen to work with the Commonwealth Government to determine the process for assessing whether agriculture should be covered by the Scheme.

If agriculture is to be covered by the Scheme, a number of issues will need to be resolved beforehand. In particular there needs to be:

- increased accuracy in estimating and measuring emissions;
- development of practical and cost-effective management practices and technologies that reduce agricultural emissions;
- development of a system for agricultural coverage that has low transaction costs; and
- identification of the required levels of assistance to EITE agricultural producers.

Resolution of these issues will require significant research for both agricultural emissions and possible reduction opportunities, such as soil carbon and revegetation.

Further information on the issues associated with the Western Australian agricultural sector being included in the CPRS, are provided in Appendix 3. The Western Australian Government may also provide a supplementary submission on agricultural issues.

## **Development of low emission technology options**

The Western Australian Government seeks a more detailed consideration of the issue of research, development and commercialisation of low emissions technologies in the White Paper and a high level dialogue between the Commonwealth, States and industry regarding the best mechanisms to support low emissions technologies.

In this regard, the Garnaut Climate Change Review's Draft Report<sup>23</sup> highlighted the role of new low emissions technologies in minimising the costs of adjustment to the emissions trading scheme and the impediments to developing new low emissions technologies. To address this issue, increased funding for early research across relevant areas is recommended, potentially funded from revenue from the sale of permits.

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<sup>23</sup> June 2008.

## Appendix 1: Western Australia's Top Ten Exports, 2007-08

Rank	Commodity	Value (\$million)
1	Iron ore and concentrates	19,793
2	Gold, non monetary (excl. gold ores and concentrates)	12,016
3	Combined confidential trade	9,549
4	Petroleum oils and oil obtained from bituminous materials, crude	9,181
5	Natural gas	4,784
6	Wheat (inc. spelt) and meslin, unmilled	1,818
7	Nickel ores and concentrates; nickel mattes, nickel oxide sinters and other intermediate products of nickel	1,158
8	Copper ores and concentrates; copper mattes, cement copper	1,151
9	Ores and concentrates of base metal (excl. iron, copper, nickel, aluminium, uranium and thorium)	936
10	Nickel	789
	Other	7,455
	Total	68,630

Source: ABS cat. no.5368.0.

## Appendix 2: Level of Assistance to EITEs Equations

The short-run cost disadvantage faced by EITE exporters, if Australia is the only country in the relevant market to introduce a CPRS, is:

$$C_i = (P_{i,I} - P_{i,EITE}) * Q_{i,t-1}$$

where:

$$P_{i,I} - P_{i,EITE} = T_i * e_{si} * \left( \frac{1}{e_{si} - e_{dwi}} - \frac{1}{esi - e_{dAi}} \right)$$

$$e_{dAi} = n * e_{dwi} - (n-1) * e_{s,row}$$

where:  $C_i$  is the compensation for industry  $i$ , which produces product  $i$ ;

$P_{i,I}$  = the ideal world price for product  $i$  if a worldwide carbon price was in place;

$P_{i,EITE}$  = the world price if only a proportion of the world is covered by a CPRS;

$T_i$  = per unit production level of disadvantage faced by industry/activity  $i$  over and above any compensating macroeconomic effects;

$e_{si}$  = the elasticity of supply of industry  $i$ ;

$e_{dwi}$  = the elasticity of the world demand curve for the products of industry  $i$ , if all producers were covered by a CPRS;

$e_{dAi}$  = the elasticity demand curve facing the Australian industry  $i$ , if only Australia introduces a CPRS;

$n$  = the number of countries producing product  $i$ ; and

$e_{s,row}$  = the elasticity of supply from Australia's competitors for product  $i$ .

This can easily be generalised to the case where more countries than Australia introduce a CPRS, but less than full world coverage is achieved.

Broad judgements could be made about each of these parameters with, for example, industry  $i$ 's supply elasticity determined by its capital intensity. The level of compensation will invariably be less than 90% across a wide range of parameters, with many values less than 60%. This should enable a spread of assistance to a wider range of industries or a transfer of assistance from existing industries to new investments.

## Appendix 3: Agriculture

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### Emissions Uncertainty

The Western Australian Government is concerned that the emissions factors used in the National Greenhouse Gas Inventory (NGGI) may not be an adequate representation of actual emissions in agriculture. In the absence of more appropriate data, the Commonwealth Government adopts the International Panel for Climate Change (IPCC) default factors to calculate national emissions. Research undertaken across Australia found that nitrous oxide emissions were significantly less than the default value provided by the IPCC. Evidence of this kind led the Commonwealth Government to adopt a 'country specific' nitrous oxide emissions factor of 0.3% for non-irrigated crops, instead of the IPCC default value of 1.25%. Research is required to ensure that the emissions factors used by the NGGI are appropriate and adequately reflect actual emissions.

### Cropland, grazing land management and revegetation (Article 3.4 sinks)

Article 3.4 of the Kyoto Protocol relates to carbon sinks associated with agricultural soils, land use changes (cropping or grazing systems) and forest management. Research is required to determine the sequestration potential and liability of emissions, particularly in crop and grazing land management. The forestry section notes that similar research is required to define emissions from forest management.

The Western Australian Government could support inclusion of Article 3.4 sinks in the CPRS if there was a scientifically accepted estimation method agreed to by all jurisdictions. The Commonwealth Government should consider disaggregating individual components of Article 3.4 sinks, so that those components can be separately assessed.

## Appendix 4: Forestry

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The Western Australian Government supports the treatment of forestry in the CPRS proposed in the Green Paper. Specifically, it supports the inclusion of forestry on an opt in basis from the start of the scheme in 2010.

The Western Australian Government recognises that reforestation produces significant environmental and economic benefits. This is particularly important to Western Australia where widespread salinisation and erosion threatens the sustainability of agricultural lands and water supplies. In some locations, these problems can be rectified by reforestation.

The Western Australian Government also supports other aspects of the CPRS, specifically:

- Using a Kyoto-compatible framework, with the potential for future Joint Implementation investment;
- Allowing reforestation established between 1990 and 2010 to be included in the scheme on a voluntary opt-in basis;
- Advocating the recognition of carbon stored in harvested wood products in the CPRS; and
- The initial exclusion of Kyoto Article 3.4 forest management from the CPRS. The Western Australian Government recognises that significant emissions accounting research will be required prior to the inclusion of this sector and advocates a co-ordinated national approach on this issue.

Additional economic and carbon mitigation benefits can be obtained through the use of forest harvest residues and purpose-grown crops for bio-energy. The Western Australian Government urges the Commonwealth Government to remove any impediments to the use of these materials. Moreover, the Government supports active investment in the development of technologies that produce liquid biofuels from woody crop materials and agricultural wastes.

For landholders, tools such as the National Carbon Accounting Toolbox (NCAT) are complex and should be simplified if they are to be used for reporting purposes. The forest industry should also be granted the option to use alternative tools to NCAT for carbon prediction, monitoring, reporting and measurement. This option to use alternative carbon accounting tools is consistent with requests from the forestry industry for more accurate tools, which integrate high resolution remote sensing data with land titling information and digital mapping.

The Western Australian Government also supports annual reporting of carbon balances in forests with permit acquittal occurring on a similar cycle. This reporting could proceed using verified carbon accounting models with more detailed occurring inventory at five yearly intervals.

Furthermore, the Western Australian Government recognises that the attractiveness of reforestation as a mitigation option will depend to a large extent on the design rules. A detailed response will be submitted to the supplementary discussion paper, '*Detailed Design Issues Relating to Coverage of Reforestation*'. The Western Australian Government has undertaken considerable work on the development of reforestation as a climate change mitigation option and would like to participate in the drafting of detailed design rules and regulations covering forestry in the CPRS.

