



Government of South Australia

Department of the Premier
and Cabinet

*South Australian Government Submission
to the Department of Climate Change
Carbon Pollution Reduction Scheme
Green Paper*

**Department of the Premier and Cabinet
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1. Key messages

1. South Australia welcomes and fully supports the Commonwealth's introduction of a cap and trade emissions trading scheme. In principle, all sectors in which emissions can be measured with sufficient precision and without large transactions costs should be covered by the scheme, unless it can be demonstrated that other approaches will deliver lower cost abatement.
2. There is a need to ensure a smooth transition to a carbon-constrained future. This should be delivered in part by selecting appropriate annual caps. The Commonwealth should provide clarity around the annual caps and trajectory at the earliest opportunity so as to provide the greatest opportunity for the market to respond.
3. As the Carbon Pollution Reduction Scheme will impose higher costs for necessities, low-income households should be supported through tax relief and increases in benefit payments as well as through complementary energy efficiency measures.
4. The introduction of the Carbon Pollution Reduction Scheme will significantly affect the electricity sector and measures will be required to ensure a transition for this sector that ensures the security of electricity supply in the short term. The South Australian Government supports the principle that any direct assistance to generators should be once off and be consistent with a smooth transformation of the electricity generation sector to less carbon intensive energy supply infrastructure.
5. The South Australian Government supports assistance for emissions-intensive trade-exposed industries to prevent carbon leakage. This will ensure the ongoing viability of regions, such as Whyalla in South Australia, which are dependent on emissions-intensive firms that are vulnerable to competition from non-carbon constrained competitors.
6. The thresholds for assistance for emissions-intensive trade-exposed industries proposed in the Green Paper do not reflect the overall carbon price sensitivity of companies or their trade-exposure. As such, it will be important that trade exposed industries below the proposed assistance thresholds which are highly carbon price sensitive are assisted to adjust. A mechanism for this adjustment could be the Climate Change Action Fund.
7. Low-emissions technologies will assist to smooth the transition to a low carbon economy. As such, establishing a strong research and development framework that supports sustainability and the development and commercialisation of low emissions technologies should be a priority at a national level.
8. The coverage of waste raises a number of challenges. Legacy emissions from landfill should not be included in the scheme for intergenerational equity reasons. For equity reasons and reasons of scheme simplicity, operators of open landfills should be allowed to acquire permits for lifetime emissions for a unit of landfill at the time of disposal.
9. The inclusion of diesel fuel and electricity in the Carbon Pollution Reduction Scheme will increase the cost of public transport. The Commonwealth should not allow the introduction of the Carbon Pollution Reduction Scheme to discourage public transport use. In implementing the scheme, the Commonwealth needs to avoid or ameliorate any negative effects on public transport, including electrified and diesel trains and trams.

10. South Australian Government notes and supports the current review of the federal taxation system and encourages the review to consider reforming tax concessions that are at odds with the objective of reducing national emissions.
11. In implementing the Carbon Pollution Reduction Scheme, the Commonwealth needs to have regard to the interactions of this scheme with other legislation at other levels of government. The drafting of the legislation needs to reflect the existence of legislation across all of the areas which are affected by emissions trading, including but not limited to other environmental policies implemented by State and Territory Governments.
12. The South Australian Government will maintain its leadership in tackling climate change, by promoting renewable energy, encouraging energy efficiency, assisting with adaptation and continuing to address climate change in areas of State Government responsibility.

2. Introduction

The South Australian Government is committed to tackling climate change and reducing greenhouse gas emissions. The South Australia Government views tackling climate change as an essential part of its environmental sustainability agenda, documented in South Australia's Strategic Plan, South Australia's Greenhouse Strategy and the *Climate Change and Greenhouse Emissions Reduction Act 2007*.

Regional climate change impact studies illustrate that South Australia's interest in addressing climate change is significant. South Australia will be the state most heavily affected by climate change in, arguably, the most heavily affected developed country in the world (Garnaut, 2008a).

South Australia is already becoming warmer, with average temperatures increasing by 0.96°C in the last century, compared to a 0.89°C increase for Australia (CSIRO, 2006). Climate projections for South Australia under a range of global emissions scenarios project that regions within South Australia will warm by between 0.5°C and 5.5°C by 2070 (CSIRO and Bureau of Meteorology, 2007).

These changes to the climate are likely to have health and mortality impacts. There is also likely to be a greater frequency and severity of drought and significantly decreased flows into water supply catchments, increased flood risk, reduced viability of crops and biodiversity and increased numbers of bushfires and coastal hazards (AGO, 2005, CSIRO, 2003, Garnaut, 2008a). The economic impact of these changes should not be underestimated. Former National Water Commissioner, the late Professor Peter Cullen, described the impact of climate change, existing drought conditions and reduced rainfall as a crisis which may affect South Australia's very economic survival (Cullen, 2007).

These potential impacts demonstrate the urgency of addressing the problem of climate change. The South Australian Government has long recognised that a broad-based cap and trade emissions trading scheme is a key element of Australia's mitigation strategy. Introducing a cap and trade emissions trading scheme will allow Australia to integrate with the international emissions reduction architecture. It will also introduce a domestic carbon price, which will encourage Australia's transition to a low emissions economy and ensure that emissions are reduced at least cost. South Australia welcomes and fully supports the Commonwealth's introduction of a cap and trade emissions trading scheme.

However, there is no doubt that the limiting and pricing of carbon emissions will be one of the most significant economic reforms in Australia's history. As such, it is critical that this transition is accompanied by sufficient assistance to strongly affected households, regions and businesses to ensure a smooth transition to a low carbon economy. It will also be important that the Carbon Pollution Reduction Scheme, as announced in the Commonwealth Government's 16 July 2008 Green Paper, is accompanied by a range of cost-effective complementary measures aimed at correcting market failures that the scheme does not address.

This submission will address the areas of the Commonwealth's Carbon Pollution Reduction Scheme Green Paper which the South Australian Government views as critically important to the impact of the scheme. One of these issues is the transition path to a low-carbon economy that is implied by the proposed design of the scheme. In this context, the submission will provide the South Australian Government's views on transitional impacts on affected households and businesses. The submission will also discuss the critical role for research and development in encouraging low emissions technologies in order to smooth the transition.

While the scheme will impose an overall adjustment path for the economy, sectoral impacts will vary widely. Given the proposed broad coverage of the scheme, the submission will focus in particular on the impacts on the forestry, waste and transport sectors. The treatment of the agriculture sector will also be discussed.

In conclusion, the submission will discuss the respective roles of jurisdictions in the climate change response and will outline the importance of ensuring clarity about the hierarchy of environmental legislation. The submission will then outline the role that the South Australian Government will have in the presence of the Commonwealth's Carbon Pollution Reduction Scheme. In doing so, it will outline some of the important complementary measures that can be implemented by State and Territory Governments in the presence of a fully functioning market for emissions permits.

3. Assistance with the transition to a low carbon economy

Many elements of the scheme will impact on the speed of transition and determine the extent of the adjustment burden. The most important elements in this regard are the annual caps and the trajectory of the scheme. As the Green Paper does not provide information about the levels of these parameters, this submission cannot make definitive statements about the transition to a low carbon economy implied by the design of the Carbon Pollution Reduction Scheme.

However, the Green Paper does elaborate on some of the elements of the scheme which will determine the impact of the transition, in particular assistance for households and businesses. The proposed compensation for strongly affected industries, such as electricity generators, will determine the transition path for the energy sector. The nature of assistance provided to emissions-intensive, trade-exposed industries will determine whether impacted firms relocate their production to some extent or outsource certain operations. The South Australian Government position on these issues is discussed below. The Premier's Climate Change Council, the Premier's independent advisory body on climate change, has been consulting with South Australian industry and will be making its own submission to the Green Paper, largely focusing on the industry impacts of the scheme.

3.1 Assistance for households

The South Australian Government is aware of the potential impacts on households from climate change and from the introduction of The Carbon Pollution Reduction Scheme. Any emissions trading scheme has the potential to adversely impact low-income households in particular, as noted in the Green Paper and in the Garnaut Review Draft Report (Garnaut, 2008a). This is because the higher proportion of income spent on energy by low-income households leaves them especially vulnerable to increased costs. In addition, many low-income households live in suburbs with more limited public transport services, increasing their reliance on more carbon intensive private vehicles (Dodson and Sipe, 2006).

Low-income households should be supported to adjust to higher energy prices and other prices in a manner which does not stifle the energy efficiency, fuel switching and behavioural change required to adjust to a carbon constrained environment. Given that the Commonwealth Government will receive any income from the auction of permits, it is appropriate that the Commonwealth Government be largely responsible for funding the equity implications of emissions trading.

The South Australian Government therefore welcomes the Commonwealth Government's commitment to assisting households manage the transition to a carbon constrained economy. Assistance with tax relief and increases in benefit payments will be critical to ensuring that the scheme does not have a regressive impact. In addition, complementary energy efficiency measures by governments can deliver enduring financial benefits to households and low cost abatement opportunities while maintaining the higher relative prices of carbon-intensive goods, which is important for behaviour change.

In addition to being a cost-effective way of mitigating impacts on households, government led incentives, information provision, training and regulation can also play an important role in overcoming market failures that can prevent the uptake of energy efficiency improvements, even in the presence of a price on carbon and subsequently higher electricity prices.

There is evidence from South Australia that increases in energy prices may not lead to greater uptake of cost-effective energy efficiency by households. Accompanying the introduction of full retail contestability for electricity in South Australia in 2003, household electricity tariffs increased by around 25 per cent. Whilst an immediate reduction in energy use was observed, this was not sustained. It is also noteworthy that the immediate reduction was small, despite the presence of significant media attention and public and private sector education.

There are two key areas in which governments can use improvements in energy efficiency as a means of mitigating impacts on households. Firstly, governments can assist with overcoming information barriers by establishing a nationally coordinated program of household sustainability assessments and advice targeting households in greatest need. This will provide households with the information that they need to reduce their energy use should they wish to.

Secondly, governments can directly assist households to invest in energy saving technologies that will reduce their reliance on emissions-intensive products. This support could be used to improve the energy efficiency of rental properties occupied by low-income households. Energy efficiency improvements to public housing would improve the circumstances of some of the most vulnerable people in society. Governments could provide financial support to assist households convert from high emission to low-emission technologies or could provide low- or no-interest loans for the purchase of low-emissions technologies.

The South Australian Government will assist low income households through the Residential Energy Efficiency Scheme which is due to commence on 1 January 2009. This program places an obligation on energy retailers to perform energy efficiency audits and assist households in increasing their energy efficiency through the provision of energy saving measures such as ceiling insulation, draught proofing, and more efficient appliances.

As discussed above, for the benefit of all households, there is also the need for regulation, information and training programs that target improved household energy efficiency. This is discussed further in Section 7.2 of this submission.

In addition to direct support for households, the South Australian Government is supportive of the provision of structural adjustment for workers, communities and regions which are particularly adversely impacted by the Carbon Pollution Reduction Scheme. This can apply to workers in both traded and non-traded industries. It will be important that this assistance is aimed at assisting adjustment, rather than supporting unsustainably emissions-intensive industries.

3.2 The energy transition

The Green Paper outlines a range of measures for addressing the adjustment needs of strongly affected industries, such as the electricity generation sector. The South Australian Government recognises that the introduction of the Carbon Pollution Reduction Scheme will significantly affect the electricity sector and that measures will be required to ensure a smooth transition for this sector.

With regard to coal fired electricity generators, the Commonwealth has indicated it will provide assistance with carbon capture and storage. South Australia, as the home of the future carbon capture and storage projects such as those in the Cooper Basin, is supportive of this. This is an area of research and development which reflects Australia's comparative advantage, given we are a coal-producing nation (Garnaut 2008a). Some public support for this technology is justified on the grounds of correcting market failures related to early mover disadvantage and knowledge spillovers. In addition, support is warranted because carbon capture and storage technologies will have benefits not just for Australia, but will have global spillover benefits, particularly for developing countries which are heavily reliant on coal. While there is a justification for some public intervention, it will be important for the industry itself to also support these developments.

The South Australian Government supports the provision of assistance to regional communities which are heavily reliant on coal fired electricity generators as a major source of income. These communities will need to be assisted with the transition of the energy sector with structural adjustment assistance.

The Green Paper notes that direct assistance of some form will also be provided to coal fired generators. The South Australian Government supports the principle that assistance, if provided, should be once off and be consistent with a smooth transformation of the electricity generation sector to low carbon intensity energy supply infrastructure.

In providing assistance, the Commonwealth needs to be reasonably confident that the form of assistance it chooses will adequately address concerns over the security of electricity supply. Recent modelling commissioned by the Energy Supply Association of Australia suggests that South Australia, along with Victoria, would be most heavily affected by the closure of coal-fired generators under certain emissions reductions scenarios (ESAA, 2008). As such, the South Australian Government is supportive of measures to maintain the security and reliability of electricity supply while the generation industry adjusts to a low emissions future.

Providing assistance to generators in the form of permits has the benefit of enabling conditions to be placed on them, which could be designed to encourage generators to continue to maintain available capacity. By providing an incentive for generators to continue to maintain capacity until lower emissions technologies become available, the security of supply risk is diminished. As this step would delay abatement from this sector, such a measure should only be used in the short term.

3.3 Emissions-intensive trade-exposed industries

The South Australian Government supports assistance for emissions-intensive trade-exposed industries to prevent carbon leakage. This will ensure the ongoing viability of regions, such as Whyalla in South Australia, which are dependent on emissions-intensive firms that are vulnerable to competition from non-carbon constrained competitors.

The Green Paper proposes a two-tiered system of compensation for emissions-intensive, trade-exposed industries. Because of the impracticality of determining trade-exposure, thresholds for eligibility are based on direct emissions and electricity use. Recognising the difficulty of determining trade-exposure, the South Australian Government is of the view that assistance should not be provided solely on the basis of emissions intensity, attempts should be made as much as possible to determine trade exposed status.

The South Australian Government is of the view that trade-exposed and emissions-intensive industries should be compensated for increases in their direct and indirect costs arising from emissions trading, regardless of whether they are directly liable parties under the Carbon Pollution Reduction Scheme. The thresholds for assessing assistance should take into account the broadest range of emissions-related costs possible to reflect the overall carbon-price sensitivity of the firm.

Under the thresholds for assistance proposed in the Green Paper, some of South Australia's emissions-intensive export industries would not be eligible for assistance. The most important export categories in South Australia are metals and metal manufacturing (valued at \$2 billion in 2007/08), minerals (\$2.0 billion), wine (\$1.9 billion), and road vehicles, parts and accessories (\$1.5 billion). Manufacturing, which comprises the latter categories with exception to minerals, contributed 14.5% to GSP in 2006-07. The South Australian mining industry contributed 4.3% to GSP in 2006-07 (DTED, 2008).

Given that the methodology proposed in the Green Paper does not reflect trade exposure or overall carbon price sensitivity and consists of two arbitrary thresholds for assistance which exclude some of the activities in these sectors, it will be important that other trade exposed industries which are highly carbon price sensitive are assisted to adjust. This will be especially important for industries such as the glass industry which is unlikely to meet the proposed thresholds and provides a crucial input into South Australia's wine export industry.

A mechanism for this adjustment could be the Climate Change Action Fund proposed in the Green Paper. The South Australian Government is supportive of the proposals to use CCAF for industrial energy efficiency measures and investment in low emissions processes. Priority should be given to those industries which are highly carbon price sensitive and are especially constrained in their ability to adapt to the introduction of a carbon price because of their trade exposed status or their role in the supply chain of other export industries.

4. Low emissions research and development

Another area that will critically influence the transition to a low-carbon economy is the availability of cost effective and commercially viable low-emissions technologies. Public support for research and development for these technologies is warranted on a range of grounds (Garnaut, 2008b, Foxon, 2003)

Low emissions energy supply is an area of particular importance, although technologies within this sector are at varying stages of development and as such will require varying degrees of support. This support may come in the form of reduced network externalities in electricity transmission within a consistent national framework. This would allow renewable technologies that need to be located in remote parts of Australia an opportunity to compete with those already in the marketplace. It could also be provided as broad and technology-neutral assistance for low emissions technology or in the form of targeted, technology specific research and development assistance.

Establishing a strong research and development framework that supports sustainability and the development and commercialisation of low emissions technologies should be a priority at a national level. This will help support Australia's mitigation transition and will also be of international benefit.

As noted by the Garnaut Review, there is a balance to be struck between providing technology neutral and technology specific support. There is also a need to balance capturing increasing returns to scale from one technology and maintaining the option value on a range of technologies (Garnaut, 2008c). While the responsibility for a coherent and balanced research and development package lies with the Federal Government, States and Territories can play a role to ensure Australia develops a range of low-emissions technologies that help meet Australia's future needs at the lowest possible cost. The issue of how different jurisdictions can contribute to this process is discussed below, in Section 5.3.

The importance of research and development led the Garnaut Review to recommend that 20 per cent of total permit revenue be used as part of an international effort to support emerging low emissions technologies (Garnaut, 2008a). The Green Paper does not focus on research and development, other than for carbon capture and storage, or possibly in the Climate Change Action Fund.

Acknowledging that research and development does not have to be funded explicitly from auction revenue, it is nonetheless important for the Commonwealth to commit to significant funding for research and development for low emissions technologies, particularly renewable energy. The Renewable Energy Fund announced in the 2008-09 Budget could go some way to meeting this objective, depending on its implementation.

The expanded Renewable Energy Target (RET) will also assist in the development of renewable energy. The South Australian Government is very supportive of the expanded RET. The existing target has made it possible for companies to raise investment capital to apply to providing Australia with a cleaner and more secure energy future. The ongoing development of renewable energy has an important role to play in assisting Australia to meet the emissions reductions targets to be set for the Carbon Pollution Reduction Scheme. Deployment of new renewable energy technologies will require support from specific policy settings, not just price signals, particularly in the initial stages of the scheme. As such, the expanded RET has a critical role to play. ABARE projections of growth in energy demand show that the Federal Government's target will provide only half of that projected growth to 2020 from renewable energy, so there is still significant scope for growth in clean, conventional energy (Syed et al, 2007). The South Australian Government will continue to work with the Commonwealth to establish a design for the RET that strikes an appropriate balance given the range of renewable energy technologies in various stages of research and development.

5. Sectoral impacts

The objective of the Carbon Pollution Reduction Scheme is to deliver greenhouse gas abatement to meet an economy wide abatement target at the lowest possible cost. Given this, coverage of sectors should be as wide as possible given measurement constraints, transactions costs and the cost-effectiveness of complementary measures. Structural differences within industries mean that impacts of the scheme will vary between sectors. Some of the important issues for the forestry, waste and transport sectors are outlined below. The initial exclusion of agriculture is also discussed.

5.1 Forestry

The forestry sector should be able to receive credit for the sequestration of carbon dioxide that it achieves, regardless of whether this is done through an offsets mechanism, or through opt-in coverage of forestry, as proposed in the Green Paper. Either way, the incentive to reforest will remain. This will be important for farm-level forestry, which in addition to generating income, can assist agricultural enterprises adapt to climate change by providing shelter for livestock and reducing heat stress to crops and pasture.

While the South Australian Government is generally supportive of the inclusion of reforestation in the scheme, it raises a range of issues which will need to be addressed before the scheme is implemented.

Firstly, there is an issue relating to carbon accounting which may reduce the amount of sequestration undertaken in some regions. Carbon accounting models still require verification across many of the vegetation types in the drier parts of Australia. As such, it will be some time before a broader range of activities could accurately be accounted for and therefore be available as a recognised carbon sink. The Commonwealth Government needs to treat research in this area as a priority, so that a full range of native and mixed species environmental plantings can be recognised in the scheme. If native vegetation and mixed species environmental plantings are not adequately accounted for, it may bias the scheme away from for these types of plantings, which have multiple environmental benefits.

Secondly, there is an issue in relation to land along the Murray, much of it former citrus plantations, which has been cleared because of drought and water restrictions. Many of these sites were already forested in 1989 under Kyoto the definition, and as such they are ineligible for permit creation from reforestation under the scheme as currently proposed. The Commonwealth should consider alternative mechanisms for encouraging reforestation of these areas given that the imposition of the Kyoto baseline renders them ineligible for permit creation.

Finally, the Green Paper is supportive of recognising the sequestration of carbon in harvested wood products such as timber, wood products and paper, and acknowledges that this requires a change in the international framework. The South Australian Government encourages and supports developments in this area. It is worth noting that in the scheme design as currently proposed, there is the potential for a perverse outcome to arise in relation to wood products. If competitor industries are provided with assistance as emissions-intensive trade-exposed industries, this could result in timber and wood products being displaced by more carbon intensive products to the detriment of Australia's long-term emissions profile.

5.2 Waste

The inclusion of the waste sector in the scheme raises issues which are unique to this sector and have significant implications, particularly for the landfill sector. Firstly, as the Green Paper recognises, there are issues relating to measurement of landfill emissions, as the default methodologies used in the National Greenhouse and Energy Reporting System and proposed for use in the Carbon Pollution Reduction Scheme may not truly reflect the emissions of landfill facilities and may significantly overstate or understate them in some cases. While this acts as an incentive to improve emissions measurement, the landfill industry has concerns over the fairness of applying methodologies with such wide margins for error.

Secondly, the pass through of the carbon price in the landfill sector may happen so indirectly that it blunts the incentive for individual behaviour change. For example, if councils respond to higher costs of waste disposal by a fixed increase in all council rates, there will be no incentive for householders to change their waste disposal or recycling activity. If however, differential rates for garbage collection are imposed, or councils actively encourage separation and composting of green and kitchen waste, households will change their behaviour. All jurisdictions will need to be cognisant of the potential obstacles to generating behaviour change in this sector.

Finally, as the Green Paper acknowledges, emissions from landfill are generated over long periods of time. This raises intergenerational equity issues, as the liability for past years' waste is passed onto current landfill operators and customers. This issue becomes more pronounced in the case of closed landfills.

Imposing a liability on current owners of closed landfills for legacy emissions is inequitable and other mechanisms should be found for reducing the emissions from these sites. The generation of electricity from methane gas is one way of achieving this and this option may be pursued by the South Australian Government in collaboration with the waste industry. Such electricity may be eligible to generate Renewable Energy Certificates under the expanded Renewable Energy Target. The Commonwealth may also wish to consider allowing closed facilities to opt in to the scheme to earn credits from methane destruction. The combination of these two incentive mechanisms may be sufficient to generate significant emissions reductions from closed landfill sites and would not impose a liability on current owners or consumers.

The treatment of operating sites is also a contentious issue. Operators are able to pass the costs of legacy emissions onto existing customers. However, if closed sites are not included on equity grounds, it seems inconsistent to treat legacy emissions from operating landfills differently. Indeed, widely differing treatment may lead to distortions in this sector and the early closure of some active landfills. Large landfills close to being full will have high costs to pass on, putting upward pressure on prices in some parts of this sector and distorting prices between landfills with potentially perverse outcomes.

One method for accounting for the long emissions profile of landfills would be to charge for lifetime emissions at the time of disposal. The charge for every unit of waste received could be accompanied by a charge for the full carbon cost (in current permit prices) of the lifetime emissions of that waste. This permit could be acquitted in the year that the unit of waste is received and that unit of waste would then have no future liability associated with it. All landfill from scheme commencement onward would therefore be covered, the cost of legacy emissions would not be borne by current customers, and each subsequent generation of landfill users would pay for the emissions associated with its landfill upfront, through the acquittal of a permit (bought at current permit prices).

In addition to overcoming the issue of legacy emissions, this method also simplifies the accounting treatment of waste and ensures that future methodological changes in emissions estimation will not apply retrospectively. Landfill operators cannot be expected to anticipate changes to methodologies which alter the future emissions liabilities associated with current year waste, or to forecast the carbon price over thirty years. As such, it will be difficult for them to charge the net present value of a future stream of annual permits to their clients and it seems reasonable to allow permits for all emissions from a current unit of waste to be purchased at current permit prices even though this confers a discount to this sector.

Where methane destruction is introduced, two treatments of emissions allocation are possible. The first is for the greenhouse gas liability per unit of waste to be reduced for each unit received after destruction facilities are in place. The second is to allow methane associated with a unit of waste to generate permits upon destruction. These are similar to the approaches proposed in the Green Paper for synthetic greenhouse gas destruction.

Even in this more simplified case, the coverage of waste in the Carbon Pollution Reduction Scheme remains highly complex. A regulatory approach to methane destruction may prove less complex and more effective if emissions reduction from the landfill sector is the objective.

The South Australian Government is of the view that there should be complementary measures to increase recycling. Recycling results in the avoidance of environmental impacts and carbon pollution associated with resource extraction and materials production and manufacturing processes. Australia already recycles over 12 million tonnes of waste materials each year with greenhouse gas benefits equivalent to 8.8 mega tonnes of carbon dioxide equivalent each year, equivalent taking 1.8 million cars off the road each year (Hyder Consulting, 2008). However, there is significant potential to increase recycling rates and hence reduce carbon pollution. This should be a priority for new complementary measures.

5.3 Transport

As outlined above, the South Australian Government believes that coverage of sectors should be as wide as possible given measurement constraints, transactions costs and the cost-effectiveness of complementary measures. With fourteen percent of national emissions and low transactions costs for inclusion in the scheme, there is a strong argument for including transport in the scheme.

The Green Paper recognises this and also makes a provision for the transition of the sector through the provision of offsets in the price of petrol and diesel. While the inclusion of transport fuels in the scheme is important, there are some potentially negative outcomes that may arise in relation to public transport, which require consideration.

There are a number of barriers to the adoption of cost-effective and low-emissions transport modes in the passenger transport sector. There are a number of price barriers, beyond the lack of a carbon price, such the lack of a congestion price and some tax arrangements that encourage more car travel. There are also barriers relating to inadequate information provision and access to finance, particularly for lower income consumers. Rigid consumer preferences, inadequate public transport provision and other infrastructure, as well as town planning, can also be barriers to low-emissions transport (Garnaut, 2008d).

Given the existing barriers to the adoption of low-emissions transport, it is crucial that the Carbon Pollution Reduction Scheme does not impose an additional barrier through increasing the cost of public transport.

The inclusion of diesel fuel (and also of electricity) in the Carbon Pollution Reduction Scheme will increase the cost of providing public transport. State Governments can either bear this cost, reducing the funds available for further improvements in public transport, or they can pass the costs on to consumers, potentially diverting people away from existing public transport. Either way, uptake of public transport will not improve and it may even decline (particularly as private vehicles will be relatively less impacted by the carbon price in years two and three of the scheme).

Given the importance of readily accessible public transport in changing behaviour and shifting to lower-emissions modes of transport, the Commonwealth should not allow the introduction of the Carbon Pollution Reduction Scheme to discourage public transport use. Further, as one of the only national governments in the world not to fund public transport, the Commonwealth should shift to actively supporting this sector to offset the introduction of an effective tax on its use. One way of achieving this is to ensure that support is provided to public transport, including electrified and diesel trains and trams.

State and Territory Governments and privatised public transport operators have invested in long-lived public transport assets, and their capacity to adapt is constrained over short periods of time, without incurring significant costs. Support for this sector in the medium term would allow more time for the sector to consider replacing or upgrading its fleet to lower their annual fuel costs, and relieve the pressure on ticket price rises.

In regard to aviation, the South Australian Government supports the inclusion of domestic aviation in the proposed Carbon Pollution Reduction Scheme through obligations placed on upstream fuel suppliers, and the exclusion of international flights. However, careful consideration needs to be given to the effects of the scheme on the rural and remote aviation sector and services. The Commonwealth should consider the need for assistance to offset the impacts of the scheme for some aviation-related essential services in rural and remote areas.

It is proposed that domestic shipping will be included in the Carbon Pollution Reduction Scheme and that international shipping will be excluded, similarly to aviation. However given that international ships undertake a proportion of domestic shipping, consideration must be given to the potential impacts on the domestic shipping industry of what would be an additional price burden only applied to domestic ships when designing the scheme.

5.4 Agriculture

The South Australian Government broadly supports the approach taken by the Green Paper in relation to agriculture. Although agriculture is a significant emitter, it is too soon to include agriculture in the scheme, given the range of measurement and reporting difficulties in this sector (ABARE, 2007).

All levels of government need to commit themselves to preparing agriculture for its eventual inclusion in the scheme. Significant resources will need to be committed to overcoming measurement problems, but also identifying abatement solutions, particularly in the area of enteric fermentation. Without gains in these areas being made, the inclusion of agriculture will not be possible by 2013.

The decision made about agriculture's inclusion in the scheme in 2013 does not have to be final. This decision could be reviewed on a five yearly basis. Alternatively, some parts of the sector could be brought in when they are ready, particularly the more emissions-intensive sub-sectors. Alternatively, if coverage is unjustifiably costly, upstream or downstream liability mechanisms and/or complementary measures can be pursued instead. Other approaches, including offset creation and regulation, are viable methods of achieving emissions reductions from this sector.

Agriculture is one of the sectors that will be hardest hit by climate change and it will be important for all jurisdictions to assist this sector to mitigate, but also to adapt to climate change. All levels of government need to commit resources to funding for adaptation in this sector.

6. National climate change policy

All levels of government need to work to establish a consistent and streamlined national climate change policy framework which is consistent with other environmental protection frameworks. In implementing the Carbon Pollution Reduction Scheme, the Commonwealth should have regard to its impact on existing State and Territory legislation in other areas, such as environmental protection. There is also scope to increase the effectiveness of the scheme through the use of targeted, cost-effective complementary measures.

6.1 Interaction with State Government policies

There are clear advantages to a national emissions pricing mechanism that is implemented by the Commonwealth Government. The South Australian Government welcomes and fully supports the operation of a federally legislated Carbon Pollution Reduction Scheme as part of the nation's response to climate change.

However, in implementing the Carbon Pollution Reduction Scheme, the Commonwealth needs to have regard to the interactions of this scheme with other legislation in many areas at all levels of government. The drafting of the legislation needs to reflect the hierarchy of legislation across all of the areas which are affected by emissions trading, including but not limited to other environmental policies implemented by State and Territory Governments. The potential for perverse outcomes is high if existing State Government legislation in relation to, for example, air pollution and water and biodiversity is somehow invalidated by the Carbon Pollution Reduction Scheme legislation.

For example, the Green Paper notes that the regulator of the Carbon Pollution Reduction Scheme will not assess the natural resource implications of forest sequestration activities. The South Australian Government will continue to have responsibility for biodiversity and water within its own regulatory frameworks. Where State legislation imposes conditions that would prevent a particular development, the development will be unable to proceed, even if it is approved by the regulator of the Carbon Pollution Reduction Scheme. The legislative framework introduced by the Commonwealth needs to reflect this.

A further example is local air quality regulation. State Governments regulate the production of some substances for reasons of local air quality or environmental amenity and in some cases these substances are Kyoto-recognised greenhouse gases. It would create problems if the presence of the Carbon Pollution Reduction Scheme were seen to invalidate State attempts to regulate emissions for local air quality and other purposes. The South Australian Government will continue to regulate the emissions of some greenhouse gases, as part of its broader environmental protection agenda. As such, the Commonwealth legislation should make it clear that their legislation relates to regulating carbon concentrations in the global atmosphere, but does not exclude State regulation of emissions of greenhouse gases for other purposes. On a related note, it is critical to local pollution and air quality control that State Governments have access to data reported under the National Greenhouse and Energy Reporting System, as is being progressed through the COAG streamlining agenda.

6.2 Complementary measures

While it is clear that Australia's domestic mitigation strategy must address the need for a price on emissions, additional complementary policies will be required to correct additional market

failures which prevent the uptake of least cost abatement opportunities. Examples of these market failures can be found in the areas of research and development, energy efficiency and network infrastructure. There is also a clear need to address distributional impacts of the Carbon Pollution Reduction Scheme, as well as of climate change itself. In addition to the formidable challenges of mitigation, there are also issues of adaptation to be addressed.

Within the overall climate change policy response, there are roles for all levels of government. In addition to implementing the Carbon Pollution Reduction Scheme and funding large-scale research and development, the Commonwealth Government will have a role in addressing network externalities. This is particularly relevant for electricity transmission, which needs to be addressed within a consistent national framework, to allow new technologies an opportunity to compete with those already in the marketplace. The South Australian Government believes that investment in transmission infrastructure should be a priority for the Commonwealth's Building Australia Fund. Significant investment is required in this area so that developing renewable energy sources can be connected to the national grid. It is not appropriate that the costs of investments in transmission infrastructure that benefit the entire grid be borne by consumers in one state.

Acknowledging the important roles to be played by the Commonwealth and by local government, the remainder of this submission will focus specifically on the role of the South Australian Government in tackling climate change.

7. South Australian Government climate change policy

The South Australian Government will maintain its emphasis on achieving climate change outcomes within its areas of constitutional responsibility. Particular areas of focus will be the transport sector and the waste sector, as these are sectors covered by the Carbon Pollution Reduction Scheme which are characterised by significant barriers to emissions reduction that could be overcome through State Government intervention.

Investing in innovation in the waste sector, for example in composting, may assist in addressing some of the distortions which prevent behaviour change in the waste sector. Further investments in public transport, building on the commitments made by the South Australian Government in the 2008-09 Budget, will address some of the barriers in the transport sector.

The South Australian Government will also continue to pursue energy efficiency improvements in its own operations, through its commitments to energy efficiency in government buildings, and will pursue carbon neutrality through its Carbon Neutral Government commitment.

In addition, the South Australian Government will be involved in three key areas of the climate change response: adaptation, energy efficiency and low-emissions technology demonstration projects.

7.1 Adaptation

The Carbon Pollution Reduction Scheme is a key pillar of Australia's mitigation policy. However, given the extent of likely climate change, mitigation will not be a sufficient response. An adaptation strategy for Australia's vulnerable regions and industries is also required.

South Australia is likely to be heavily impacted by climate change and some regions and industries will require a significant adaptation response. In particular, agriculture will be affected by reduced rainfall over agricultural areas, higher average temperatures and soil erosion.

The Garnaut Review projects a hotter and drier climate in South Australia with the most significant issues being climate change-induced water scarcity and impacts on agricultural production. The whole Murray Darling Basin will also be affected. In one of the cases modelled by the Garnaut Review, water scarcity could lead to a fall in irrigated agriculture production in the Murray Darling Basin of between 92 and 97 per cent by 2100, requiring fundamental restructuring of the irrigated agriculture industry (Garnaut, 2008a). Wheat production could also be devastated if there is no effective mitigation response. In South Australia, the range of viable cropping land may be reduced as Goyder's Line moves south, possibly by 50 kilometres (Howden & Hayman, 2005).

All States and Territories will be affected by climate change. However, the likely affects of climate change will differ on a regional basis and a range of strategies for adaptation will be required. Different sectors within regions may also require different adaptation responses. Some of these responses will best be implemented by State Government, within a consistent national adaptation framework that is sufficiently resourced by all jurisdictions.

The Commonwealth, state and territory and local governments have differing and complementary roles in climate change adaptation. The South Australian Government will, consistent with a national adaptation framework, integrate climate change considerations into existing policies and establish and maintain community and essential services to deal with the impacts of climate change. The State Government will also build adaptive capacity to assist the community to manage climate change impacts. It will also manage the climate change implications for South Australian Government assets and infrastructure.

The South Australian Government is committed to an adaptation response and as a result, adaptation is a significant component of the South Australian Government's Greenhouse Strategy. It will remain an important element of the South Australian Government's overall response to climate change in the coming years.

7.2 Energy efficiency

Currently, energy efficiency plays an important role in reducing greenhouse gas emissions, lowering end-user energy costs and improving business productivity. After 2010, when the Carbon Pollution Reduction Scheme is in place, the primary role for energy efficiency will be, at a macro-level, to reduce the overall cost of achieving the greenhouse gas emission cap. At the individual firm and household level, energy efficiency will play an important role in reducing the financial impact of the price on carbon.

There is much evidence that energy efficiency can reduce energy use at a lower cost than supply side abatement alternatives such as renewable energy generation (references include Centre for International Economics, 2007 and McKinsey and Company, 2008). However, the price impact of the Carbon Pollution Reduction Scheme on downstream energy users may not necessarily result in energy efficiency improvements because of market failures, such as information asymmetries, high information costs and structurally distorted incentives for improved energy efficiency (Garnaut 2008c).

Where there are market failures preventing energy efficiency, such situations present a legitimate role for government intervention. For example, addressing information

failures in industrial energy efficiency is one way in which the Commonwealth Government can help the manufacturing and industrial processes sectors adjust to higher energy costs, and maintain their competitiveness.

In some cases, for example in the buildings sector, structurally distorted incentives for increased energy efficiency, such as differential incentives faced by property owners and tenants in rental markets, or between property developers and home buyers, may be a significant barrier to improving energy efficiency, even in the presence of a high carbon price (Foxon, 2003).

Because of the market failures outlined above, cost-effective energy efficiency improvements may not be adopted. When this is the case, State Governments should have the discretion to act to achieve reductions in energy demand within areas of State Government responsibility. For example, regulations on tenancy conditions, building standards, land-use planning and urban design are State Government responsibilities and as such states are best placed to undertake any regulatory responses to non-market barriers in these areas if required.

While these are areas of State Government responsibility, in some areas there are significant efficiency benefits to a consistent approach across jurisdictions and the South Australian Government will continue to work with other jurisdictions on these issues. A lack of such co-ordination in the past has led to individual jurisdictions introducing energy efficiency policies and programs. This has had the positive effect of allowing for innovation. It can also, in some cases, work against national harmonisation.

Examples of such innovation in South Australia include energy efficiency requirements for water heaters installed into new and established homes and the Residential Energy Efficiency Scheme. South Australia is working with other jurisdictions in implementing the REES to harmonise, where possible, the schemes. At the same time, South Australia participates, with other jurisdictions, in nationally harmonised programs under the National Framework for Energy Efficiency.

Through COAG, jurisdictions are looking for energy efficiency to be accelerated and expanded. South Australia supports this opportunity for improved national harmonisation in the lead-up to emissions trading.

As outlined above, there is a range of potential responses to the market failures that prevent energy efficiency improvements. The South Australian Government is committed to working with other jurisdictions through the Council of Australian Governments to identify the best methods of addressing the market failures that exist in relation to all areas of energy efficiency, including residential and commercial buildings, appliances and equipment, transport and industrial process efficiency.

Given that energy efficiency interventions will, however, impose costs on the community, they should be designed to ensure that these costs are justified by the benefits. Energy efficiency schemes aimed primarily at greenhouse reduction should be demonstrably as cost effective, if not more cost effective, than the Carbon Pollution Reduction Scheme in delivering abatement outcomes.

7.3 Research and development

As noted previously, while the responsibility for a coherent and balanced research and development package lies with the Federal Government, States and Territories can play a role to ensure Australia develops a range of low-emissions technologies that help meet Australia's

future needs at the lowest possible cost. Support for low-emissions technology will vary across the innovation cycle and can be delivered by different jurisdictions. Primary responsibility for large-scale early stage research and development funding clearly rests with the Commonwealth Government.

The combination of the Carbon Pollution Reduction Scheme, the expanded Mandatory Renewable Energy Target and a Commonwealth research and development package will generate significant investment in renewable energy technologies. However, a price on carbon and a target for renewable energy as well as early stage research and development may not result in the most useful development of renewable energy in the long term, given other structural barriers to commercialisation.

Some of these barriers relate to network infrastructure market failure and, as outlined above, this is a role for the Commonwealth. The role for State Governments arises in the pre-commercialisation, demonstration phase of the development cycle for renewable energy technologies. By focusing on demonstrating the viability of a pre-commercial technology, State Government projects can lower the uncertainty that surrounds these new technologies and can assist in overcoming capital market imperfections present at the demonstration phase, which result in sub-optimal support for new projects at this stage (Garnaut, 2008b).

States and Territories have different resource endowments in terms of low-emissions technology and as such will support different technologies in their demonstration phases. As such, they can contribute to the overall renewable energy policy by assisting the Commonwealth Government to identify and maintain a portfolio of technology options that will best exploit comparative advantage in the context of national and international research efforts. State Governments will also have a role in working with local government to develop solutions for localised abatement action and energy solutions.

The South Australian Government is committed to playing its part in assisting low emissions technologies develop. The South Australian Government has long recognised that South Australia has huge comparative advantages in the development of some renewable energy technologies and has been working to support these new industries. The South Australian Government's commitment to low-emissions energy is evident in its welcoming planning system for wind energy and its support for the development of geothermal energy exploration and production.

South Australia has more than 50 per cent of Australia's wind power capacity and has 37 per cent of Australia's installed grid-connected solar electricity capacity. The State Government is supporting the development of Australia's largest off-grid solar power station to be built in Coober Pedy. This \$7.1 million project will include the establishment of 26 solar dishes, each one 14 metres high and tracking the arc of the sun. When completed at the end of 2009, the solar power station will generate about 1860 megawatt hours, equivalent to 13 per cent of Coober Pedy's total electricity requirement.

South Australia also leads the nation in investment for geothermal energy exploration. Australia wide, 34 companies have applied for 284 geothermal licences with an expected work program investment of more than \$822 million from 2002 to 2013. In South Australia, 23 companies have applied for 237 geothermal licences and can be expected to invest \$686 million in the period 2002 to 2013. The South Australian Government has so far provided \$1.6 million to support several geothermal projects.

The South Australian Government will continue to support renewable energy technologies, predominantly through support for demonstration projects which reduce the risk and uncertainty around these new technologies.

8. Conclusion

The South Australian Government welcomes the announcement of the Carbon Pollution Reduction Scheme and supports easing the transition to a low-carbon economy through the provision of support to households and businesses. The orderly transition to lower emissions electricity generation is paramount to achieving the greenhouse emissions targets whilst maintaining energy security and reliability.

The principle of broad coverage within the scheme is important, however the impacts of the scheme will vary across sectors and different sectors will have unique barriers to structural change, which the implementation of the scheme must take into account. Forestry, waste and transport are all sectors in which potentially perverse outcomes may occur and structural barriers will need to be addressed.

The South Australian Government will maintain its leadership in tackling climate change, by promoting renewable energy, encouraging energy efficiency, assisting with adaptation and continuing to address climate change in areas of State Government responsibility. The South Australian Government will continue to work cooperatively with the Commonwealth and other jurisdictions to progress a streamlined and nationally consistent approach to climate change mitigation and adaptation.

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