AUSTRALIAN CAPITAL TERRITORY GOVERNMENT

SUBMISSION TO THE LEGISLATIVE ASSEMBLY INQUIRY ON ACT GREENHOUSE GAS REDUCTION TARGETS

MAY 2009

EXECUTIVE SUMMARY

The Government has adopted a visionary goal of zero net greenhouse gas (GHG) emissions for the ACT. Zero net emissions means reducing emissions to every extent possible, and offsetting residual emissions by investing in carbon offset projects such as carbon sequestration.

The latest scientific evidence demonstrates the reality of climate change and the need for urgent action. Recent scientific observations show that emissions are growing at a faster than predicted rate and the 'worst case scenarios' from the Intergovernmental Panel on Climate Change's (IPCC's) Fourth Assessment Report Climate Change (2007) are already being realised. The IPCC also found that human-induced global warming is likely to continue for centuries even if GHG concentrations are stabilised.

The Garnaut Climate Change Review, released in September 2008, projected annual average rainfall for the Australian Capital Territory (ACT) would fall 2.8% by 2030, 10.3% by 2070 and 15.2% by 2100. Bushfire seasons were also projected to start earlier, end slightly later, and be more intense, with changes directly observable by 2020.

As a result, there are significant risks to our local environment including threats to biological diversity in the Namadgi National Park and Tidbinbilla National Park, reduced water availability and decreases in water quality. Climate change will also have social equity and health impacts.

The ACT emitted over 4 million tonnes of GHGs in 2005, which equates to approximately 13.7 tonnes per person. Recent analysis of the ACT's GHG emissions[1] indicates that ACT emissions have grown at an average rate of 2.6% per year since the year 2000 and that emissions in 2006 are 15% above 2000 levels. The immediate challenge will be to arrest the increase in the ACT's GHG emissions. The ACT's emissions currently stem from: consumption of stationary energy (72.2% of ACT emissions), including electricity and gas to heat, cool and light buildings; and transport (22.8% of ACT emissions).

The earth's atmosphere is an environmental public good for which individuals have not been required to pay the social cost of its use. Many of the benefits from GHG emitting activities are enjoyed over a short period of time (eg, turning on a heater to generate warmth), whereas the impacts of climate change are persistent and long term, impacting on future generations. There is a clear role for governments to correct this market failure.

While the cost of these impacts is difficult to measure, the marginal cost of carbon pollution has been estimated by different economists as between $US 13 per tonne and $US 314 per tonne. The benefit of addressing climate change is averting these costs.

Benefits associated with reduced carbon emissions accrue globally, while the cost of reducing those emissions is borne by the jurisdiction that reduces them. The ACT Government strongly believes it is necessary to think globally and for the ACT to play its part in the global effort in combating climate change.

Australian jurisdictions are setting and implementing targets including through legislation. South Australia and Tasmania have legislated to reduce GHG emissions by 60% by 2050, based on reduction from 1990 levels. To underpin the proposed Carbon Pollution Reduction Scheme (CPRS)

[1] Based on preliminary unpublished data from Pitt & Sherry (2009) *The ACT Greenhouse Gas Inventory 2006*, prepared for the ACT Department of Environment Climate Change Energy and Water.

the Australian Government has a target to reduce Australia's emissions by between 5 to 15 per cent below 2000 levels by 2020, and by 60% by 2050.

The ACT's current targets of limiting 2025 GHG emissions to 2000 levels and a 60% reduction in 2050 GHG emissions over 2000 levels will be reviewed. The ACT Government notes that the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (CoP) in Bali and the IPCC recommended in its Fourth Assessment Report that interim targets should be in the range of 25% to 40% below 1990 levels by 2020. The ACT Government will consider the appropriate level for a target, taking into account this recommendation, further deliberations by the UNFCCC CoP to be held in Copenhagen later this year, the findings of the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets, and further scientific findings.

Zero net ACT emissions will ensure the Territory does not add to carbon pollution. However, constraining carbon emissions through the economy will involve costs. Consequently, the process by which carbon pollution is brought under control will need to be carefully managed and will involve interim transitional targets. Government decision making will need to be undertaken in consultation with the community to successfully plan and transition towards a carbon-constrained economy.

Decisions on measures to reduce GHG emissions must be taken in an economically and socially responsible way. The local economic impact of actions, such as increased business input prices, higher consumer prices, and ACT budgetary implications, will need to be weighed up against the benefits of the ACT contributing to reducing climate change globally. The regulatory and compliance costs for activities such as information collection, reporting monitoring, compliance and enforcement will also need to be minimised.

In considering interim targets and measures to achieve reductions in emissions, the Department of the Environment, Climate Change, Energy and Water (DECCEW) will employ specialist climate change expertise to provide high-level and technical advice for future policy and program development including comprehensive cost-benefit analysis.

GHG emission reduction targets for the ACT will need to be complemented by a detailed plan. In developing the Government's response to the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets and formulating future climate change policy and targets, the second Action Plan for Weathering the Change, currently scheduled for 2012-16, will be brought forward and focus on the pathway to achieving the targets.

The ACT Government is already engaged heavily in improving energy efficiency and exploring the appropriateness of low emission and renewable technology. The ACT Government is preparing an Energy Strategy for the ACT that will reflect the ACT Government's long term zero net emissions policy goal. Following consultation with the community on the draft and the completion of any further analysis required to ensure that the most appropriate and cost-effective strategy is developed, the Energy Strategy will be finalised.

Emissions will be reduced through a combination of abatement, mitigation and offsets.

Actions to reduce GHG emissions such as retrofitting our buildings, installing more energy efficient infrastructure, and improved transport systems also create potential growth for 'green industries' to develop locally. The ACT has a number of sectors with considerable green growth potential including renewable energy, energy efficiency, and waste and recycling.

The ACT Government has considerable concerns about the Australian Government's CPRS, including that the CPRS cap is not tight enough to help properly reign in Australia's emission levels to a long term sustainable level and that the CPRS could impede the ability of the ACT Government to reduce ACT emission levels. The ACT Government acknowledges the political impost of the CPRS on its policies and actions and has raised its concerns with the Australian Government.

INTRODUCTION

The ACT Government welcomes the opportunity to make a submission to the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets.

The ACT Government believes there is a need to show leadership in setting an ambitious target for GHG emissions and to move quickly in managing climate change. This submission sets out the Government's views on the urgency with which climate change must now be addressed and its decision to adopt a visionary goal of zero net GHG emissions for the ACT. Zero net emissions (otherwise known as carbon neutrality) means reducing emissions to every extent possible, and offsetting residual emissions by investing in carbon offset projects such as carbon sequestration.

Scientific evidence shows that human activity is changing the Earth's climate. We cannot be complacent about the urgent action that is needed to manage climate change. The global scientific understanding of climate change is clearly setting out the magnitude of the problem. Many of the previously estimated worst-case scenarios for climate change are already beginning to be realised, and we are now facing the significant risk of a future abrupt, or irreversible climatic shift.[2]

There is the temptation to let economic fluctuations and shocks, such as the global financial crisis, to stand in the way of addressing long term policy goals, such as reducing GHG emissions. While these shocks can have a substantial impact on the economy, we should not delay our efforts on climate change as making decisions now will better position the ACT in the long term, and help avoid the rapid and large adjustments that will otherwise be needed to reduce the ACT's emissions.

Even as the threat is being clarified, Australia is increasing its output of GHG emissions by 2% per year.[3] As a government, and as a territory, we have already decided to take action, under the initial program of *Weathering the Change - The ACT Climate Change Strategy* 2007-2025 (*Weathering the Change*). We are now faced with the question of whether to accelerate our action, or wait and hope that we have the chance to act later. The ACT Government recognises that this is a difficult to decision to make, involving uncertainty and imprecision. Resources will be needed, behaviours will need to change and there will be winners and losers, who will need to be supported.

It is the ACT Government's view that a responsible government has no choice other than to act. This is not purely an economic decision, and must also be weighed against need for the ACT to embrace the challenges that lie ahead, seriously commit to managing climate change, and show leadership in Australia. The risks of inaction and the reality that unchecked climate change imposes unparalleled change are too great.

Embracing the long term goal of zero net emissions will focus the efforts of the Government, businesses and the people of the ACT and provide a clear beacon to strive towards. If we embrace this challenge, and take advantage of the ACT's uniquely tertiary-based economy, we will achieve this goal. We are not alone in making this decision. Several governments and private organisations around the world have already adopted a goal of zero net emissions.[4] The City of Sydney achieved zero net emissions for its operations last year, while countries such as New Zealand and Norway, cities such as Copenhagen, and companies such as Disney and News Corporation have also committed to a zero net emissions goal.

[2] Further information is available from http://climatecongress.ku.dk/newsroom/congress_key_messages/
[3] Climate Change Science in Australia Scientific Update Issue No.1, CSIRO & Bureau of Meteorology, 2009
[4] www.theclimategroup.org and www.climateneutral.unep.org

The ACT Government believes that legislating a GHG reduction target, or targets, can be important in helping the ACT move towards this goal. This underpins our decision last year to make a commitment in the Parliamentary Agreement with the ACT Greens to legislate an emissions target for the ACT.[5] The Government is currently examining options for a legislative model that will support the achievement of the agreed targets and be appropriate to the ACT's unique circumstances.

The ACT Government is developing a road map of how to achieve the goal of zero net emissions and acknowledges that achieving this goal will be a considerable task. We will ensure that all opportunities are explored and that the benefits of moving to a sustainable economy are fully realised. We will not make decisions in isolation and will actively engage the community and industry.

The development of the road map will be an iterative process that accounts for policy changes at a national and international level and the evolving scientific understanding of climate change and its implications. The road map must be informed by evidence, commitment to equity and least cost pathways designed for the ACT's circumstances. Those circumstances include:

- patterns of energy use dictated by previous decisions regarding our built form;
- opportunities for new standards in new developments;
- high average income;
- high education levels;
- a concentration in tertiary industry-based on public administration across two levels of government;
- a lack of heavy industry;
- potentially mobile light industry and service sectors;
- aging buildings and scope for new competing office space; and
- a significant proportion of disadvantaged households and growth in the number needing assistance as well as the level of assistance needed.

The ACT Government will shortly commence a review of *Weathering the Change* Action Plan 1 and, in light of the recommendations by the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets, will bring forward development of a second Climate Change Action Plan. The ACT Government will consult stakeholders to develop new strategies and approaches under this plan as we move along the path towards zero net emissions.

The immediate challenge for this Government, and for all Canberrans, is to arrest our continued growth in GHG emissions. The ACT Government acknowledges that the benefits in acting to manage climate change need to be responsibly balanced against the associated costs. The process by which carbon pollution is brought under control will need to be carefully managed and involve interim transitional targets that do not totally eliminate net GHG emissions.

Closely integrated with the ACT's climate change agenda is the development of the ACT's Energy Strategy. Key objectives of this strategy will be to ensure energy security, improve energy efficiency and encourage the development of renewable and economically efficient low emission energy supplies for the ACT.

[5] http://www.actlabor.com.au/Documents/Documents/alp-greens-agreement.pdf

STRUCTURE OF THE REPORT

This submission is divided into three sections.

Section 1 describes the nature of climate change drawing on latest science data on ACT's GHG emissions profile and work on the local environmental, social equity and health impacts of climate change.

Section 2 covers issues relating to why and how the ACT should and can address climate change. The role of governments in correcting the market failures that have resulted in climate change, Australian jurisdictional targets, and approaches for achieving an emissions target are discussed.

Section 3 considers the issues surrounding the practical implementation of a GHG reduction target. The nature and enforceability of legislated targets, relationship of an ACT target with the Australian Government's Carbon Pollution Reduction Scheme (CPRS), and monitoring, reporting and review processes are key issues.

Attachment A highlights key ACT Government's actions in moving to a low carbon economy, undertaken as part of Weathering the Change – Action Plan 1 (2007-2011). Attachments B and C respond to requests from the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets for information related to the Sustainable Transport Plan and green building initiatives.

SECTION 1 THE NATURE OF CLIMATE CHANGE

Climate change – a recognised global problem

In *Weathering the Change*, the ACT Government accepted the scientific evidence with respect to anthropogenic climate change. It is, however, useful to recap on the major scientific evidence and subsequent reports, as this provides context for national GHG reduction targets and the appropriate targets for the ACT.

The most renowned appraisals of the scientific, technical and socio-economic literature on climate change have been the Assessment Reports of the IPCC. The IPCC's reports have informed international negotiations leading to the establishment of the UNFCCC[6] in 1992 and the Kyoto Protocol[7] in 1997.

The key conclusions of the IPCC's *Fourth Assessment Report Climate Change* (2007) were that: there has been an undisputed warming of the earth's atmosphere since the mid 20th century; and the most likely cause of this warming has been increased concentrations of GHGs in the earth's atmosphere as a result of human activities, such as the burning of fossil fuels, land clearing and agriculture.[8]

The IPCC rated the probability of the recent warming events being due to natural climatic processes as less than 10%. The IPCC also found that human-induced global warming is likely to continue for centuries even if GHG concentrations are stabilised.

The *Stern Review* in the United Kingdom, completed in 2006, calculated that the concentration of GHGs in the atmosphere is equivalent to around 430 parts per million (ppm) CO_2e[9], compared with only 280ppm prior to industrialisation. Stern stated:

> These concentrations have already caused the world to warm by more than half a degree Celsius and will lead to at least a further half degree warming over the next few decades, because of the inertia in the climate system. Even if the annual flow of emissions did not increase beyond today's rate, the stock of greenhouse gases in the atmosphere would reach double pre-industrial levels by 2050 - that is 550ppm CO_2e - and would continue growing thereafter…At this level there is at least a 77% chance - and perhaps up to a 99% chance, depending on the climate model used - of a global average temperature rise exceeding 2°C.[10]

The impact of such warming includes: melting glaciers, leading to increased risk of rising sea levels followed by water shortages; declining crop yields leading to food shortages; more intense droughts; heavy rainfall events; an increased frequency of extreme weather events; and the potential extinction of 15-40% of species. Increases in the concentration levels of GHGs in the atmosphere above 550ppm CO_2e are predicted to risk irreversible damage to the climate system and the world as we know it.

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[6] The United Nations Framework Convention on Climate Change is an international environmental treaty aimed at stabilising GHG concentrations in the atmosphere at a level that would prevent damaging human induced interference with the climate system. Countries that are signatories to the UNFCCC meet in an annual Conference of the Parties.

[7] The Kyoto Protocol is an update to the UNFCCC and sets legally binding commitments on industrialised nations to reduce six GHGs: carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, perflourocarbons and hydroflourocarbons.

[8] Intergovernmental Panel on Climate Change (2007) *Fourth Assessment Report Climate Change 2007: Summary for Policy Makers*, Cambridge University Press, United Kingdom

[9] CO_2e is the equivalent carbon dioxide that would cause the same level of radiative forcing (induced change to the energy balance of the atmosphere) as a given type and concentration of GHG.

[10] Stern, N. (2006) *The Stern Review: The Economics of Climate Change*, commissioned by Her Majesty's Treasury, Cambridge University Press, United Kingdom, p. iii

The IPCC has modelled a range of scenarios and projects that there will be a warming of 0.2°C per decade for the next two decades. The modelling indicates that even if the concentrations of all GHGs and aerosols were kept constant at year 2000 levels, there would be a warming of 0.1°C per decade. The IPCC also estimates that a doubling of carbon dioxide compared with pre-industrialisation levels (to 560ppm) is likely to increase temperatures by between 2 - 4.5°C by the end of the 21st century, compared to the end of the 20th century.[11]

The IPCC advised that for Australia, climate change will by:

- 2020, cause significant loss of biodiversity;
- 2030, cause water security problems to intensify in southern and eastern Australia;
- 2030, cause a decline in production from agriculture and forestry over much of southern and eastern Australia; and
- 2050, cause increasing sea levels and increases in the severity and frequency of storms and coastal flooding. This will exacerbate the risks for coastal developments and population growth in some areas of Australia.

Recent scientific observations indicate that emissions are growing at a faster than predicted rate and the 'worst case scenarios' from the IPCC's *Fourth Assessment Report* are already being realised. As a result, these previous climate change projections may be understated.

Ahead of the United Nations Climate Change Conference scheduled for the end of 2009, the International Scientific Congress held a meeting on climate change in Copenhagen in March 2009, which was attended by approximately 2500 scientists and others. The concluding communication from the congress stated that:

> For many key parameters, the climate system is already moving beyond the patterns of natural variability within which our society and economy have developed and thrived. These parameters include global mean surface temperature, sea-level rise, ocean and ice sheet dynamics, ocean acidification, and extreme climatic events. There is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts.[12]

[11] Intergovernmental Panel on Climate Change (2007), *Fourth Assessment Report Climate Change 2007: Synthesis Report*, Cambridge University Press, Cambridge, chapters 2 and 3

[12] The key messages from the congress can be viewed at http://climatecongress.ku.dk/newsroom/congress_key_messages/

Projected climate change in the ACT

The Garnaut Climate Change Review was released in September 2008 and represents the most comprehensive assessment and economic analysis of climate change undertaken to date within Australia. The Garnaut Review provides the following projected median climate impacts for the ACT, based on a no-mitigation scenario and compared to 1990 levels:

- Annual average temperatures over Australia will increase by approximately 1°C, with inland areas expected to experience greater warming than coastal areas.
- Heatwaves will become more common, with a strong increase in the frequency of hot days and warm nights. For the ACT, the number of days over 35°C is expected to increase from 5 currently, to 8 by 2030, 21 by 2070 and 32 by 2100.
- Annual average rainfall for the ACT is projected to fall by 2.8% by 2030, by 10.3% in 2070 and by 15.2% by 2100.
- There is expected to be an increase in the intensity of rainfall events in some areas, suggesting longer dry spells broken by heavier rainfall events.
- Bushfire seasons will start earlier, end slightly later, and be more intense, with changes directly observable by 2020. [13]

It should be noted that these projections are sensitive to changes in assumptions and inputs and are the median point from a range of potential outcomes.

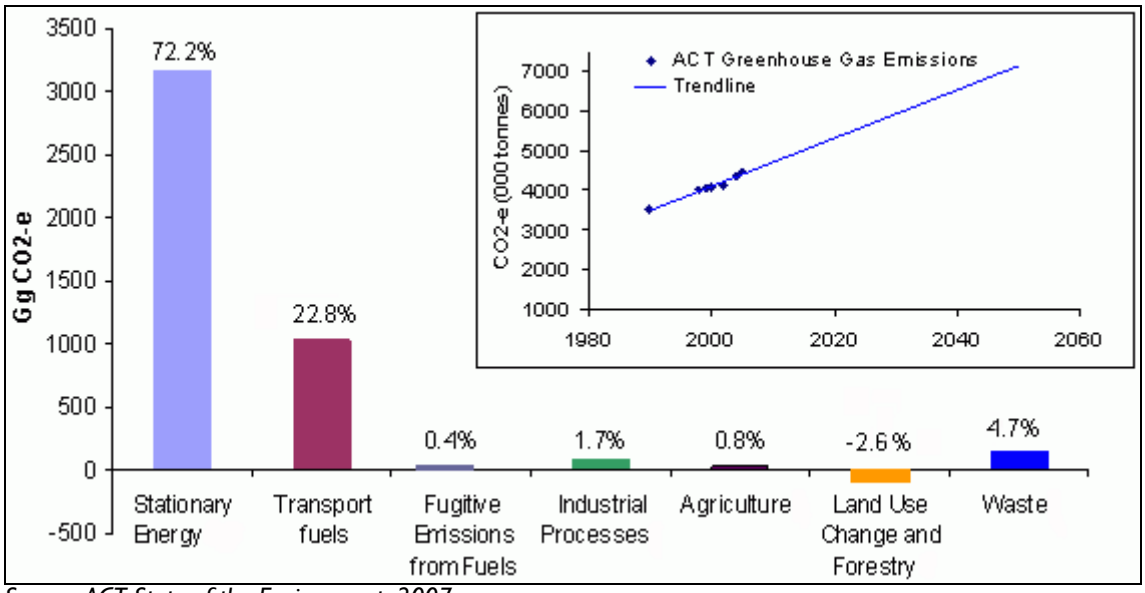
Greenhouse gas emissions in the ACT

The most recent publicly available inventory for the ACT was published in *Weathering the Change* in 2007. *Weathering the Change* stated that the ACT emitted approximately 4.45 million tonnes of GHGs in 2004-05. Per capita emissions were approximately 13.7 tonnes per person, an increase of 10% over around the preceding 15 years.[14]

Drawing on the *State of the Environment Report 2007-08*, Figure 1 shows a breakdown of the major sources of GHG emissions within the ACT. The consumption of stationary energy (72.2% of ACT emissions), including electricity and gas to heat, cool and light buildings; and transport (22.8% of ACT emissions), account for the majority of the ACT's emissions. The trend line in this graph is a simple linear extrapolation of annual ACT emissions, and does not account for the impact of the recent significant policy changes (ie *Weathering the Change*, or CPRS).[15]

[13] Garnaut, R. (2008) *The Garnaut Climate Change Review: Final report*, Commonwealth of Australia, pp. 113 – 118
[14] ACT Government (2007) *Weathering the Change – The ACT Climate Change Strategy 2007-25*, ACT Government, p. 14
[15] These estimates rely on data from other sources, particularly the Independent Competition and Regulatory Commission, to obtain a figure for the amount of energy used in the ACT. This information is then used, along with other data such as retail fuel sales, and applying appropriate conversion factors, to calculate an overall greenhouse gas profile for the ACT.

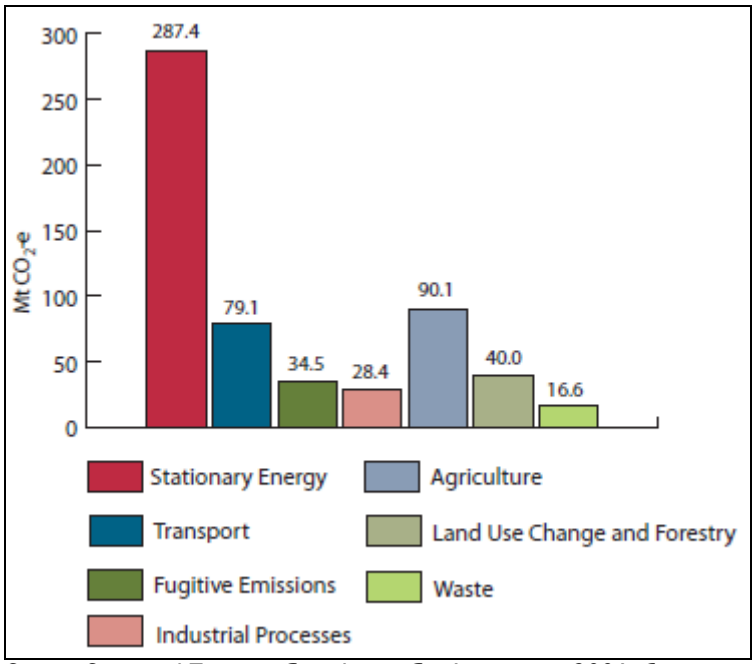
Figure1: ACT emissions profile



Source: ACT State of the Environment, 2007

Figure 1 shows the main sources of ACT GHG emissions. The ACT's emission profile is distinctly different from the national emissions profile, as shown in Figure 2 below, largely due to the fact that there is no significant heavy industry or intensive agriculture within the ACT. As a result, stationary emissions represent a significantly greater proportion of total emissions in the ACT (72.2%) than is the case nationally (50%). Agricultural emissions are negligible for the ACT, while being the second largest source of emissions nationally (16%).

Figure 2 Composition of National Emissions[16]

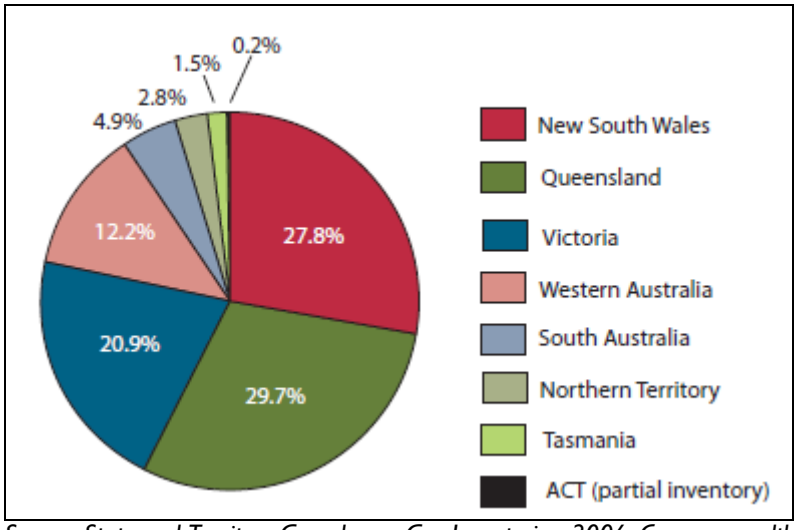


Source: State and Territory Greenhouse Gas Inventories, 2006, Commonwealth of Australia

[16] The figures presented in Figure 2 are calculated on a different basis from those shown in Figure 1. Figure 1 includes the stationary energy emissions attributable to the ACT, while in Figure 2, those emissions are attributed largely to NSW.

Figure 3 below, shows that the ACT's emissions are a small proportion of the national total. This figure underestimates the ACT's share of emissions because the data from which it is derived does not include the ACT's stationary energy emissions and instead attributes these emissions to NSW.

Figure 3 State and Territory Shares of National Emissions



Source: State and Territory Greenhouse Gas Inventories, 2006, Commonwealth of Australia

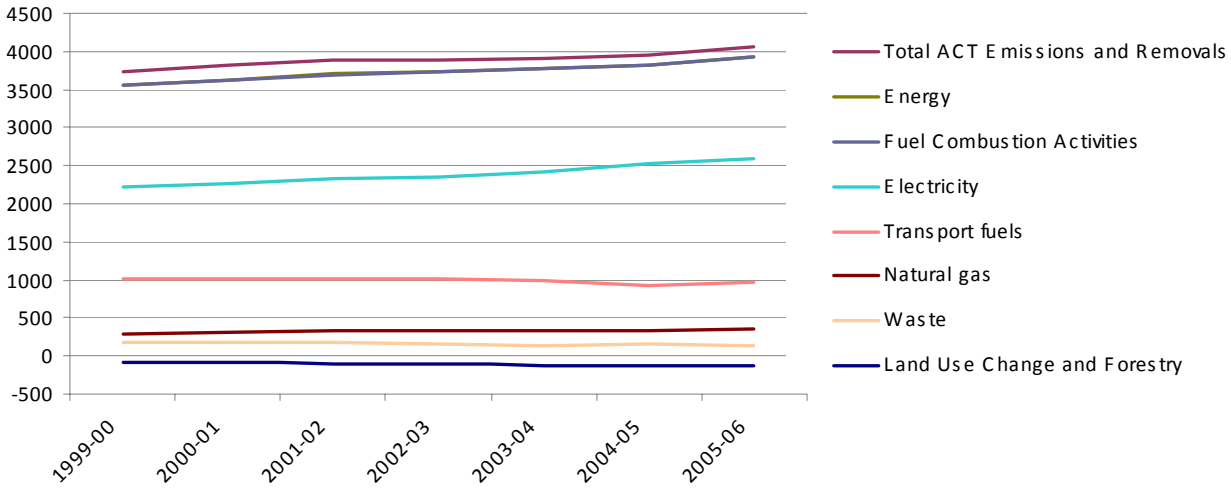
DECCEW has engaged Pitt & Sherry as a consultant to produce GHG emission estimates for 2005-06, 2006-07 and 2007-08. This work will encompass the recalculation of historic emissions, so as to incorporate new methodologies and produce a consistent time series of ACT emissions.[17] The 2005-06 GHG inventory report is expected to be concluded by mid-2009 and the 2006-07 inventory may be available later in 2009.

Early preliminary analysis on the draft 2005-06 ACT GHG inventory indicates that GHG emissions rose by approximately 2.4% from 2004-2005 with the proportion of sectorial GHG emissions remaining similar to 2004-05.

Figure 4 shows the preliminary results from Pitt & Sherry's time series analysis of the ACT's GHG emissions. The methodology used to calculate this data includes the removal of carbon from the atmosphere through carbon sinks. These preliminary results indicate that ACT emissions have grown at an average rate of 2.6% per year since the year 2000 and that emissions in 2006 are 15% above 2000 levels.

[17] A separate ACT GHG Inventory is necessary because the state and territory inventories produced by the Australian Government Department of Climate Change do not include energy combustion (stationary energy and transport), which is the main emissions source in the ACT.

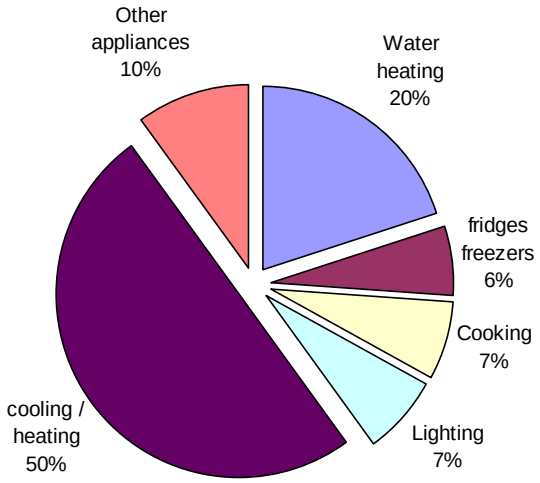
Figure 4: ACT emissions and removals



Source: Preliminary unpublished data prepared by Pitt & Sherry for the *ACT Greenhouse Gas Inventory 2006*

Since emissions from electricity combustion are the major emissions source in the ACT, it is necessary to have an understanding of the major electricity use in the ACT. Non-residential electricity consumption represents approximately 59% of total electricity consumed in the ACT. This is partly explained by the fact that residential consumption over the last five years has averaged between 8.5 and 8.8 megawatt hours per customer, while average non-residential consumption increased from 109.6 megawatt hours per customer in 2001–02 to 142.8 megawatt hours in 2005-06.[18] Figure 5 shows a breakdown of the electricity use pattern for residential consumers.

Figure 5: Estimated electricity use in a typical ACT home[19]



[18] Licensed Electricity, Gas and Water and Sewerage Utilities Performance Report for 2005–06, Independent Competition and Regulatory Commission 2008

[19] Preliminary unpublished data prepared by Pitt & Sherry for the *ACT Greenhouse Gas Inventory 2006*

Typical residential electricity use in the ACT differs from that in other jurisdictions. For example, a typical ACT household consumes 8,000 KWh per annum compared to a typical New South Wales household which uses 5,600 KWh per annum.[20] The drivers underpinning the relatively higher levels of per capita energy consumption in the ACT need to be carefully investigated and may include the ACT's climate and higher than average per capita income levels, which can lead to increased consumption.

Impacts of projected climate change in the ACT

Climate impacts

The effects of climate change, such as rising temperatures, increasing droughts and an extended bushfire season could have negative impacts on the biological diversity in the Namadgi National Park and Tidbinbilla National Park, which form part of the nationally significant ecological areas of the Australian Alps.

Reduced rainfall and higher evaporation from overall temperature increases will lead to less water being available for consumption both by the community and the natural environment. Decreases in water quality are also expected as a result.

Research by the CSIRO indicates that the southern Murray-Darling Basin, including the ACT and surrounding region, is and will be subject to climate change particularly with respect to reduced rainfall and stream inflows coupled with higher evaporation. (*Climate Change in Australia*, 2007, CSIRO) Research has identified the ACT region as being one of the worst affected regions in the Murray-Darling Basin. In particular, the last seven years' average inflow is worse than the CSIRO 2030 worst-case prediction made in 2007, and the last three years' average is worse than the CSIRO 2070 worst-case prediction.

Climate change is likely to increase the stress on rivers already under pressure from salinity, over-allocation and declining water quality. The CSIRO Murray-Darling Basin Sustainable Yields project provides a good indication of how a future impacted by climate change may be for the ACT.[21] The Water Availability in the Murrumbidgee Report, released in June 2008, states that by 2030 climate change could reduce average surface water availability by 9%. The worst dry case scenario is for a 31% reduction.

Droughts are likely to become more frequent and more severe. Climate change projections for Southeast NSW indicate there is a tendency toward an increase in droughts, especially in winter and spring. The impact of prolonged dry periods will be: land degradation; reduced ability of soils to absorb moisture, leading to more run-off and reduced flows into groundwater; increased risk of fires in bushland and grasslands in and around the ACT.

Experience since 2001 demonstrates that the ACT and region is in a sustained drought, however the extent to which it is attributable to human induced climate change is uncertain. The experience of the current drought highlights the ongoing need for demand and supply management strategies including the development of new infrastructure, which take account of climate change scenarios.

[20] Independent Competition and Regulatory Commission *Draft Decision – Retail Prices for non-contestable electricity customers* 2009-10, page 59

[21] www.csiro.au/files/files/pled.pdf

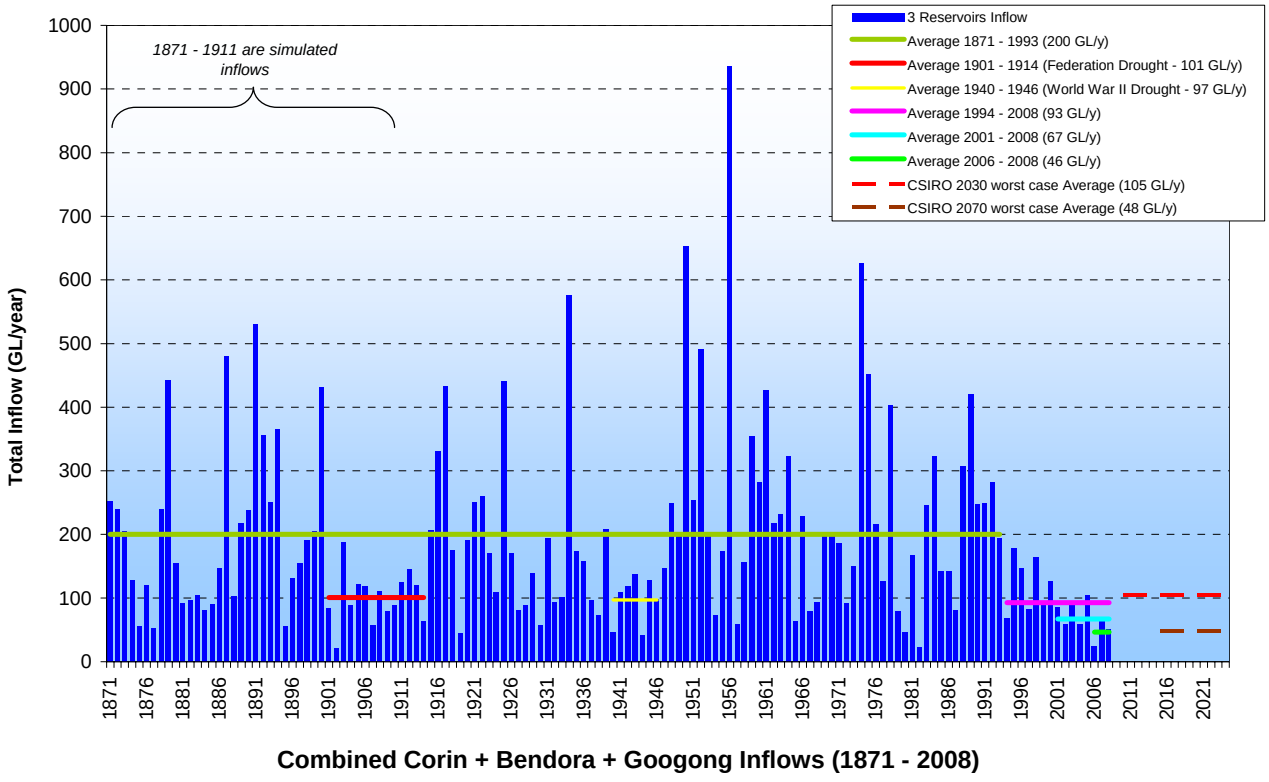
Although rainfall is expected to decline, rain and wind intensity will increase and could cause damage and disruptions to infrastructure, such as power supplies and transport networks, affecting businesses, homes and the ACT community.

Research into climate variability and potential climate change in our region has been carried out by major research institutions such as the CSIRO, the Murray-Darling Basin Authority, and the Centre for Australian Weather and Climate (a CSIRO and Bureau of Meteorology partnership). ACTEW used CSIRO modelling its formulating its 2005 *Future Water Options* and its 2007 *Water to Water* reports. The ACT Government continues to rely on information from all these sources in guiding ACT water planning.

Strong research and modelling indications appear to demonstrate that the persistent decline in rainfall is part of, or at least the onset of, a regional climate change shift. For the ACT region the crucial question often raised is whether the decline in rainfall is an extreme climatic event or actually a significant climatic shift. The recognised critical factor in addressing water planning is not just rainfall but stream inflows. ACT stream inflows have declined more rapidly than rainfall in recent years.

A 'step change' in rainfall patterns over the south-eastern corner of the Murray-Darling Basin has been identified in the last fifteen years of regional rainfall and stream inflows as forecast by CSIRO modelling of climate change ('step change' refers to a permanent reduction in our rainfall and possibly a change in its pattern of fall). Such a step change occurred in Perth and southern Western Australia where an identifiable climatic shift in rainfall patterns occurred since the 1970s and where there is a very real prospect that another step change is under way.

Figure 6: Inflows



Social equity impacts

Action 29 of the *Weathering the Change - Action Plan 1 2007-2011* commits the ACT Government and the Community Inclusion Board to undertaking a social impact analysis of the effects of climate change on low income, disadvantaged and vulnerable residents.

The report *Social Impacts of Climate Change in the ACT Final Report*[22] found that low income households will be the least able to cope with the social impacts of climate change. This is because the price of essential goods and services are expected to increase due to climate change and associated policy responses and that low income households have little income they are able to reallocate towards the additional cost of these goods and services. The study noted that nearly all goods and services will become more expensive with the introduction of a price on carbon due to the pervasiveness of carbon-based inputs.

The study concluded that the largest mitigation effects are expected to come from minor capital investments and programs that drive changes in household behaviour to reduce their consumption. These could include increased education, the retrofitting of public housing stock to improve energy efficiency, investment in sustainable transport to improve transport efficiency, and rebates to replace inefficient home appliances. Such expenditures were considered to be more efficient than ongoing direct and indirect financial support. Examples of support currently provided by the ACT Government under *Weathering the Change - Action Plan 1* include: a grants program for community groups to increase the energy efficiency of their own offices and promote the benefits of energy efficiency to their wider member base (Action 27); assisting schools to become carbon neutral (Action 11); and increasing the energy efficiency of government housing stock (Action 8).

The ACT Government's current support programs include:

- Community Service Obligation – electricity/gas rebate up to $194.87 per annum;
  - The take up rate of the energy rebate was approximately 22,000 households per month (electricity and gas) in August 2008.
- Access to energy reduction programs (such as Act EnergyWise, HEAT, and Climate Change Community Grants); and
- $2m per annum funding to ACT Housing for energy-efficient retrofits under the Climate Change Strategy.

The Government will review the adequacy of concessions in the future to help low income households accommodate cost-of-living increases due to climate change. The cost impacts of measures to achieve GHG reductions will also need to account for the negative impacts they have on the cost of living for households. The ACT Government recognises that the Australian Government has committed to increase support for low income households to fully meet the overall increase in living costs due to the introduction of the CPRS.[23] The ACT Government is also examining enhancing programs that reduce demand, or enhance energy efficiency.

In the current economic climate, a new category of financially stressed household is emerging. The discussion paper *The Impact of the Global Financial Crisis on Social Services in Australia* [24] noted that social welfare agencies have started to see middle income and high-income earners facing severe financial stress. This trend was also noted in the *Social Impacts of Climate Change in the ACT,* which found that vulnerable households include middle to high income households facing a short term financial crisis, as well as low to middle income households who are 'just getting by'.

[22] SGS Economics and Planning (2008) *Social Impacts of Climate Change in the ACT Final Report*, commissioned for the ACT Chief Ministers Department
[23] http://www.treasury.gov.au/cprs/html/cprs_page2.asp
[24] Access Economics (2008) *The Impact of the Global Financial Crisis on Social Services in Australia*

Evidence of the fact that households in the ACT are experiencing hardship is that the amount of debt discharged under the *Utilities Act 2000* doubled from 2005-06 to 2007-08. The Energy and Water Consumer Council is established under the Utilities Act 2000 with a number of responsibilities including, as far as practicable, to ensure the continuation of utility services for persons suffering financial hardship.

Health impacts

The implications of climate change for health are extensive with all populations at risk from reduced health outcomes. In April 2007, the Council of Australian Governments (COAG) endorsed a National Climate Change Adaptation Framework, which will provide the basis for governments in Australia to adapt to climate change. Under this framework a Climate Change Adaptation Plan for Human Health will be developed for COAG consideration by around the end of 2009.

Key health impacts associated with climate change are being considered by the Australian Health Minister's Advisory Council.[25] Populations vulnerable to climate change include the elderly, children, people with pre-existing medical conditions and disabilities, homeless people, and low income households. Climate change will increase demand for primary care, mental health and emergency services and place greater stress on the Australian health system generally.

Health risks associated are summarised below.

- Increased mortality and morbidity - more frequent and severe heatwaves, intense weather events (ie including storm surges, cyclones and bushfires), and increased air pollution will place people at increased risk.
- Respiratory and cardiac illness - exposure to ground-level ozone and other air pollutants (eg nitrogen oxides, and particulate matter) and aeroallergens such as pollens will place people with pre-existing illness at increased risk.
- Vector borne infectious diseases – such diseases are likely to increase due to changing conditions favouring diseased carried by hosts. Geographic ranges of some diseases are likely to change, putting new populations at risk, (eg dengue fever moving southwards in Queensland).
- Food and water borne - disease outbreaks are likely to increase, including, for example, diarrhoeal disease following floods and increased temperature-sensitive food-borne diseases such as salmonellosis. Algal blooms that cause human disease are also likely to increase.
- Food availability - water availability is likely to decline and reduce food production, particularly of fresh fruit and vegetables.
- Population migration - internal migration and immigration, particularly from neighbouring island countries, is likely to increase, most likely from coastal areas that are inundated by sea-level rise. This will place health systems in these regions under additional stress.

[25] Australian Government (2009) *National Climate Change Adaptation Action Plan for Human Health,* Commonwealth of Australia

SECTION 2 ADDRESSING CLIMATE CHANGE

The role of governments in correcting market failures

The earth's atmosphere is an environmental public good. It is not possible to exclude parties from consuming it (eg breathing it in the case of households or emitting into it in the case of industry and government). Also, one party's consumption of the atmosphere does not affect another party's right to consume it - that is, the use of the atmosphere is non-rival.

As with all public goods, a market for atmospheric consumption has not naturally developed in which individuals are required to pay the social cost of their use. This contrasts to properly functioning markets, in which the price mechanism ensures the efficient allocation of resources.

All households, companies and governments are consumers of the atmosphere. These groups have not incorporated the environmental and social costs associated with their use of the atmosphere into their consumption and production decisions. For example, consumers, in making their decisions about whether to drive a car or walk, have not generally paid for the consequential environmental impact of these decisions. Likewise, businesses and industries making investment and production decisions and deciding sustainability practices have largely ignored the cost of the GHG emissions that are consequential to their actions.

There is an intergenerational aspect to climate change that results in a further market failure. Many of the benefits from GHG emitting activities are enjoyed over a short period of time (eg turning on a heater to generate warmth), whereas the impacts of climate change are persistent and aggregate over time.[26] As a result, those benefiting now from the activities that produce GHGs are not necessarily the same people who will bear the consequences in the future.

There is a role for governments to correct the market failure that has to date resulted in the unsustainable overconsumption of the Earth's atmosphere, which has been treated as an insatiable carbon sink. In economic terms, government action will need to be targeted towards ensuring that the social cost of consumption of the atmosphere is fully accounted for by everyone who uses it. That is, the short-term social marginal benefits of atmospheric consumption need to balance the full social marginal costs, including those that aggregate over long periods of time.

A policy of zero net ACT emissions will reinforce action to remove the market failures associated with GHG pollution. The uncertainties surrounding the science of climate change and the implications of climate change, which are largely yet to be experienced, are also uncertain.
The potentially significant consequences of climate change suggest that governments should adopt a precautionary approach to prevent the large social and economic costs that could otherwise be experienced by subsequent generations. Lack of full scientific certainty should not be used as a reason for postponing Government action but it should direct action to the least cost options being undertaken first and options that leave open the scope for technological innovation.

Constraining carbon emissions throughout the economy will initially involve increased costs to: governments in terms of outlays and program management; businesses, through higher direct costs and input prices; and households, which will be subject to higher prices. Consequently, the process by which carbon pollution is brought under control will need to be carefully managed and involve interim transitional targets that do not totally eliminate net GHG emissions.

[26] Stern, N. (2006) *The Stern Review: The Economics of Climate Change*, commissioned by Her Majesty's Treasury, Cambridge University Press, United Kingdom, p. 52

Garnaut recognised that the benefits of acting to manage climate change need to be balanced against the associated cost, stating that:

> The more ambitious the extent and speed of reductions in emissions, the higher the costs of mitigation will be. The costs of mitigation will be lower the more efficient the instruments chosen to give effect to policy.[27]

Further work is needed in the ACT context to quantify the costs of responding to climate change (refer to 'The Benefits and Costs of Climate Change below'). The costs of inaction, however, are likely to be far greater. Garnaut describes the temperature increases associated with unmitigated climate change as causing catastrophic impacts on human civilisations and most ecosystems. [28]

Government decision making will need to be undertaken in consultation with the community and be well communicated, thereby giving the economy the information it needs to successfully plan and transition towards a carbon-constrained economy.

Joint action

A key issue to take into account in estimating long term benefits is the extent to which the global economy pursues united GHG emissions reductions. This will require multilateral agreement by countries worldwide. Where such action is outside the parameters of the ACT Government, the Government supports the Australian Government in undertaking this action.

There have been some promising developments in this direction in recent years, but the world is a long way off a united global front focussed on tackling climate change. Consequently, both short-term and long term targets may be appropriate, which cater for further developments. Any short-term goal adopted should be consistent with the adopted long term goal, and provide the economy with certainty about future emissions reductions and costs.

There is a balance to be achieved in deciding the optimum time for government intervention. Early action spreads adjustment costs over a longer period of time, potentially reducing the overall level of adjustment. A risk however, is that early action may lock-in the use of current technologies and create a disincentive for better options from being developed over time. Later action supports stronger short-term economic growth, thereby allowing economic capacity to build, with which to fight economic change later, but at the same time allows the problem to build before it is addressed.

There are some advantages to the ACT from moving early to constrain carbon emissions, if it is expected that global will is building to constrain carbon emissions. Acting sooner, rather than later particularly on least cost achievable reductions to mitigate climate change effects will reduce the total level of adjustment costs compared to a trajectory that delays action. In the short to medium term, however, inappropriate early action risks imposing a relatively higher cost for little or no benefit.

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[27] Stern, N. (2006) *The Stern Review: The Economics of Climate Change*, commissioned by Her Majesty's Treasury, Cambridge University Press, United Kingdom, p. 6

[28] Stern, N. (2006) *The Stern Review: The Economics of Climate Change*, commissioned by Her Majesty's Treasury, Cambridge University Press, United Kingdom, p. 263

The benefits and costs of addressing climate change

While it is beyond dispute that the climate changes resulting from GHG emissions will impose significant social and environmental costs, which will impact on future generations, it is difficult to quantify in economic terms what these costs will be.

Numerical estimates have been provided by a number of economists. Tol[29] surveyed 88 separate estimates produced around the world of the marginal cost of carbon pollution and concludes that a reasonable figure is somewhere in the vicinity of $US 50 to $US 104 per tonne. The extremes are Dasgupta[30] citing a low bound of $US 13 per tonne, and the Stern Review $US 314 per tonne. The key message is that climate change imposes significant costs on the economy, environment and society. The benefit of addressing climate change stems from averting these costs.

The question is whether any individual jurisdiction should act independently or act early to reduce GHG emissions. The crux of the problem is that the benefits associated with reduced carbon emissions accrue globally, while the cost of reducing those emissions is borne by the jurisdiction that reduces them.

From a jurisdictional perspective the benefit achieved through reducing emissions will be shared with the rest of the world. This creates a disjunction between the jurisdiction bearing the cost of reducing the emissions and those who enjoy the associated benefits. As such, no individual country or local jurisdiction has an incentive to act to reduce their emissions as the cost they incur is likely to exceed the direct benefit they receive. This is particularly the case for economies such as Australia and its jurisdictions, which are relatively small players at a global level.

This situation is described as insidious by Garnaut and results in a dilemma where it is in no individual country's or local jurisdiction's interest to reduce emissions. It is in the immediate interests of a jurisdiction to free-ride and not act regardless of any other country's actions.

Garnaut put the problem as follows:

> 'each country benefits from a national point of view if it does less of the mitigation itself, and others do more. If all countries act on this basis, without forethought, communication and cooperation, there will be no resolution of the dilemma. Future generations will judge the outcome to have been insufficient and unsatisfactory.'[31]

The real question about whether or not to respond to climate change, then becomes one of whether to adopt a global, or jurisdictional perspective. All jurisdictions acting on the basis of their self interest alone may never act. Unfortunately, it has been thinking along these lines that has resulted in climate change becoming the seemingly insurmountable challenge that we are facing today. The ACT Government is no different from any other jurisdiction in being faced by this question. The difference, however, is that we strongly believe it is necessary to think globally and for the ACT to play its part in the global effort in combating climate change.

A further consideration to the ACT introducing targets more ambitious targets than other Australian jurisdictions is that the ACT may become a comparatively more expensive place in which to live or do business. Should carbon pollution costs, and hence business and consumption costs become higher in the ACT compared with the other states and territory, it is possible that ACT business or population growth may be dampened. This will not be the case, however, should the other states and territory, or the Commonwealth, adopt comparable targets.

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[29] Tol (2003) *The Marginal Costs of Carbon Dioxide Emissions: An Assessment of the Uncertainties*
[30] Dasgupta (2006) *Comments on the Stern Review's Economics of Climate Change*
[31] Garnaut, R. (2008) *The Garnaut Climate Change Review: Final report*, Commonwealth of Australia, p. xviii

At this point in time it is not clear how strongly or quickly climate change policy will move in the other Australian jurisdictions. It is clear, however, that the recognition of climate change as a significant problem is growing and that governments are now actively considering how to reduce emissions.

Decisions on measures to reduce GHG emissions must be taken in an economically responsible way. The local economic impact of actions, such as increased business input prices, higher consumer prices, and ACT budgetary implications, would need to be weighed up against the benefits of the ACT contributing to reducing climate change globally. The regulatory and compliance costs for activities such as information collection, reporting monitoring, compliance and enforcement would also need to be minimised.

A decision by the ACT Government to legislate a target will need to be backed by a rigorous cost-benefit analysis. DECCEW will draw on expertise to provide high-level and technical advice on future policy and program development and to undertake cost-benefit analysis.

GHG emission reduction targets for the ACT will need to be complemented by a detailed plan or road map. In developing the Government's response to the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets and formulating future climate change policy and targets, the second Action Plan for *Weathering the Change*, currently scheduled for 2012-16, will be brought forward and focus on the pathway to achieving the targets.

GHG reduction targets

The Kyoto Protocol established legally binding emissions targets for industrialised nations for the period 2008 - 2012. The specific target set for Australia was to stabilise emissions at 108% of 1990 levels by 2012.

International negotiations surrounding a replacement or extension of the Kyoto Protocol are underway, however, there is yet to be an agreement on new emission reduction targets. The 13th UNFCCC CoP held in Bali in December 2007, recognised the IPCC's advice that developed countries need to reduce GHG emissions in the range of 25-40 percent below 1990 levels by 2020 in order to keep the earth's temperature from rising 2°C.

The *Stern Review* advises that 'current evidence suggests aiming for stabilisation somewhere within the range of 450 – 550 ppm CO_2-e'. This is on the basis that a higher stabilisation level would increase the risks of harmful climate change-related impacts while a lower, more stringent target (below 450 – 550 ppm CO_2e) would result in high adjustment costs in the short term for relatively small gains.[32]

Likewise, the *Garnaut Review* stated that Australia should express its willingness to play its full, proportionate part in an effective international agreement to stabilise GHG concentration levels to either 450 or 550ppm. Stabilising emissions at this level is, on best estimates, likely to lead to a 1.5-2°C increase in global temperatures above 1990 levels.

Garnaut recognised the difficulties in reaching a 450ppm CO_2e stabilisation level and advised that, while it should be pursued as an objective, there was a much greater chance of achieving an effective international agreement based on 550ppm CO_2e.

[32] Stern, N. (2006) *The Stern Review: The Economics of Climate Change*, commissioned by Her Majesty's Treasury, Cambridge University Press, United Kingdom, p. 284

A stabilisation level of 450ppm would require Australia to reduce GHG emissions by 90 percent from 2000 levels by 2050, with a suggested interim target reduction of 25% below 2000 levels by 2020.

A stabilisation level of 550ppm would require Australia to reduce GHG emissions by 80% from 2000 levels by 2050, with a suggested interim target reduction of 10% below 2000 levels by 2020.

In the absence of an international agreement to 550ppm CO_2e, Garnaut recommended that the Australian Government should only commit to an interim target of 5% below 2000 levels by 2020.

There is considerable uncertainty about the long term global average temperature increases that any atmospheric GHG level will cause and the broader global environmental, economic and social impacts that would follow. Over recent years, the environmental impacts projected by climate change scientists have often quickly proved too conservative, as evidenced by reduced ACT water inflows and the contraction of summer Arctic ice cover decades before it had been previously predicted.

The possibility of 'runaway climate change' is now recognised as real risk. Spratt and Sutton[33] argue that current atmospheric carbon levels will already lead to unacceptable long term global changes and that global strategies are immediately needed. Within this context, it is now less clear whether the 550 ppm CO_2e target discussed by Stern and Garnaut is a sufficiently tight emissions target to adequately manage climate change.

The ACT Government's targets and strategies

Current targets

In July 2007, the ACT Government released *Weathering the Change*, which committed the Government to long term and interim GHG emission reduction targets. These current targets are a 60% reduction in 2050 GHG emissions over 2000 levels and an interim target limiting 2025 GHG emissions to 2000 levels.

Since 2007, there have been a number of advances in climate science and developments in both domestic and international government policies that need to be considered in reviewing the adequacy of the ACT's targets. In particular, there is an emerging range of views on the appropriate trajectory towards the 2050 target. For instance, the interim targets espoused by Garnaut and adopted by the Australian Government in 2008 are more stringent than the ACT's current interim target, yet are widely considered to be inadequate.

In addition, the terms of reference for the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets specifically noted the emission reduction targets set out at the UNFCCC meeting in Bali (25-40% below 1990 levels) and stated that the ACT Climate Change Strategy should be responsive to the best available scientific knowledge and experience.

[33] Spratt and Sutton (2008) *Climate Code Red: the Case for Emergency Action*

Zero Net Emissions

The ACT Government has a vision of working collaboratively with government agencies, businesses, community groups and individuals within the ACT to encourage all parties to take full responsibility for our impact on the environment by reducing our net GHG emissions to zero.

Zero net emissions means reducing emissions to every extent possible, and offsetting the residual emissions by investing in carbon offset projects such as carbon sequestration. There are four main components to achieving zero net emissions, which in order of priority are as follows:

1. Drive behavioural changes that avoid or reduce the consumption of energy. For example, by walking or cycling instead of using transportation, turning off lights and equipment when not in use, and making consumption choices in favour of goods and services that do not use energy or minimise energy consumption.

2. Promote and adopt energy efficient technology and measures in all aspects of the economy. This may include transportation systems, appliances, and the design of solar passive/ energy efficient buildings that reduce the need for heating, cooling and lighting.

3. Increase the ACT's reliance on renewable energy sources. This issue is discussed further in this submission and is being considered as part of the ACT's Energy Strategy.

4. Recognise that it will not be possible nor economically feasible to completely eliminate all sources of GHG emissions and that the achievement of zero net emissions will require the offsetting of residual emissions. Carbon offsets can be made through a range of accredited providers that invest in sequestration activities, such as tree planting and renewable energy generation.

There are an increasing number of government and private organisations around the world that are committed to achieving zero net emissions. In 2008, the City of Sydney became the first Australian government to achieve carbon neutrality for the council's operations. The New South Wales and South Australian Governments have commitments to achieve carbon neutrality for their own operations by 2020 and the Brisbane City Council is aiming for its operations to be carbon neutral by 2026.

Several local governments within Victoria have adopted broader policies – aiming for carbon neutrality within the community rather than just government operations. For example, the Maribyrnong Council has set a target for its organisation to become carbon neutral by 2015 and for the wider Maribyrnong community to become carbon neutral by 2020. The Hobson's Bay City Council has a plan to achieve carbon neutrality for its operations by 2020 and to help its community become carbon neutral by 2030.

In the international arena, the Climate Neutral Network (CN Net), supported by the United Nations Environment Program, is a group of governments (from various levels), businesses and communities that are committed to carbon neutrality and share best practise ideas for achieving this goal. CN Net participants include New Zealand, Costa Rica, Iceland, Monaco, Norway, Copenhagen, and the Sydney and Brisbane city councils.

The New Zealand Government has signalled its aspiration for New Zealand to become carbon neutral over time. As interim steps, the New Zealand Government has adopted the following goals:

- carbon neutral in the electricity sector by 2025;

- carbon neutral in the stationary energy sector by 2030;
- carbon neutral in the transport sector by 2040; and
- carbon neutral in the total energy sector by 2040.

Copenhagen is aiming to be the world's first carbon neutral city by 2025 and has circulated a climate plan for consultation. The plan sets out specific initiatives to reduce emissions, such as: increasing power generated by wind turbines from 13 to 100%; electric and hydrogen powered cars, which park for free and can be recharged on street corners; mini-parks throughout the city; and refurbishment of schools and institutions.

The main argument underlying the ACT Government's visionary goal of zero net emissions is that it will encourage entities within the ACT to completely internalise the broad social and environmental costs associated with emitting GHGs. In addition, there is a need to reduce our dependence on fossil fuels, which are not only damaging to the environment but will become increasingly scarce and generally increase in price over time.

A long term vision of zero net emissions and associated action plans will signal the ACT Government's commitment to address climate change issues and provide impetus for innovation and behavioural change lifestyle, consumption and the structure of the ACT economy. Such a response was clearly evident in the resource recovery sector following the adoption of the ACT Government's No Waste Strategy. Resource recovery and recycling levels increased from 42% of wast generated in 1995-96 to 74% in 2007-08, the highest level of resource recovery across all Australian States and Territories.

The ACT Government acknowledges that there are risks associated with setting specific timelines to visionary goals and that achieving zero net emissions is not achievable in the short to medium term. The ACT Government will consult widely with the ACT community and take into account the report of the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets before setting new timelines for GHG targets.

The ACT Government acknowledges that the achievement of zero net emissions is a considerable task. As part of the Government's ongoing actions to tackle climate change, DECCEW will draw on expertise to analyse the opportunities, costs and benefits of emissions reductions within the ACT.

The ACT Government is about to commence a review of *Weathering the Change* Action Plan 1 and in light of the recommendations by the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets will bring forward development of a second Climate Change Action Plan. The ACT Government will consult stakeholders to develop new strategies and approaches under this plan as we move along the path towards zero net emissions. Another important aspect will be the continued development of adaptation strategies to cope with the climate change that is already projected to occur as a result of past activities and increases in GHG concentration levels.

Interim steps – the role of specific GHG targets

The immediate challenge for this Government, and for all businesses and residents within the ACT, is to arrest our continued growth in GHG emissions. The ACT Government acknowledges that the benefits in acting to manage climate change need to be responsibly balanced against the associated costs. The process by which carbon pollution is brought under control will need to be carefully managed and involve interim transitional targets that do not totally eliminate net GHG emissions.

The ACT Government made clear its commitment to legislative GHG reduction targets in the Parliamentary Agreement that it signed with the ACT Greens. As part of the process of developing

legislative targets, the ACT Government welcomes views from the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets on the appropriate level and timing of specific GHG reduction targets and form of the legislation. The issues surrounding the design of legislative targets are discussed in Section 3 of this submission.

The IPCC in its *Fourth Assessment Report* and the UNFCCC CoP in Bali recommended that GHG reduction targets should be in the range of 25 – 40% below 1990 levels by 2020. However, due to the lack of data available for the ACT, the year 2000 has been used as the base year. To frame a target in terms of 1990 levels for the ACT would involve extrapolating later year data (ie 2000) back to the year 1990. This approach would reduce the accuracy of measuring changes in the ACT's emissions. We note that CPRS targets are presented in terms of year 2000 emissions. Since year 2000 would be a higher baseline level of emissions it would be necessary to choose a target towards the higher end of this range in order to achieve the same desired result.

The transition to a low-carbon economy will need to harness the gains that are potentially achievable through replacing aging electricity generation and transmission infrastructure with more modern equipment that will better complements ongoing technological developments, such as in the areas of gas, geosequestration, and coal. These issues will need to be considered at a national level.

The adoption of effective targets for the ACT would provide leadership domestically and signal the inherent limitation of the emissions reduction targets implicitly adopted under the CPRS. The ACT Government recognises that the largely tertiary-based ACT economy, without a heavy industry base, may present unique opportunities for the ACT Government to explore GHG future reduction policies.

The choice of low emissions technologies adopted by the ACT economy will be affected by the trajectory by which the economy is guided towards the 2020 and 2050 ACT targets. For instance, the greater emissions reduction required in the short-term, the more reliance will be placed on emission reduction technologies that are already developed and tested, thereby potentially crowding out other technologies that are only in a development phase. Conversely, an easing into emissions reductions, by starting at a lower level of reduction and building up to a higher level, will allow time for the market to respond and innovate with alternative emission reduction technologies.

Jurisdictional GHG reduction targets

Table 1 sets out the emission reduction targets of the Australian, State and Territory Governments.

Table 1: Emissions reduction targets

	2020	2025	2050
Australian Government	5% - 15% below 2000 levels		60% below 2000 levels
States/ Territories			
ACT*		limit to 2000 levels	60% below 2000 levels
South Australia**			60% below 1990 levels
Tasmania**			60% below 1990 levels
New South Wales		limit to 2000 levels	60% below 2000 levels
Queensland			60% below 2000 levels

*This target was set out in *Weathering the Change (2007)*

**Emission targets have been legislated in South Australia and Tasmania

Australian Government targets

In December 2008, the Australian Government released its white paper outlining the proposed form of the CPRS and setting Australia's long term and interim GHG reduction targets. The Australian Government accepted the findings of the *Garnaut Review* "that a fair and effective global agreement delivering deep cuts in emissions consistent with stabilising concentrations of greenhouse gases around 450 parts per million or lower would be in Australia's interests."[34]

The Australian Government has committed to a long term target reduction of 60% from 2000 levels by 2050, which does not meet either the 450ppm or 550ppm stabilisation levels. However, the Australian Government has indicated that if an international agreement around 450ppm CO_2e emerges, it will consider increasing its 2050 target reduction beyond 60%.

In its white paper, the Australian Government also set out an interim target, committing to an unconditional 5% reduction in carbon pollution below 2000 levels by 2020 and a 15% reduction in the context of a global agreement by all major economies to substantially restrain emissions to 450ppm CO_2e.

The Australian Government believes it has made a trade off between short-term economic impacts and its ability to respond to technological or scientific developments and to new information, particularly at the international level.[35] The fact remains, however, that for the reasons outlined in this submission, the targets adopted by the Australian Government are highly conservative and do not go far enough to stem GHG emissions.

State and Territory Government targets

South Australia and Tasmania have legislated to reduce GHG emissions by 60% by 2050. These targets are based on reduction from 1990 levels rather than 2000 levels, and hence are not directly comparable to the ACT targets.

The South Australian *Climate Change and Greenhouse Emissions Reduction Act 2007* allows the Minister to set interim targets and voluntary sector specific targets. While the Minister has not yet determined interim targets for South Australia, the strategy document, *Tackling Climate Change South Australia Strategy 2007-2020* states that one of South Australia's key goals is meeting the targets set out in the Kyoto Protocol.

Similarly, the Tasmanian *Climate Change (State Action) Act 2008 (No. 36 of 2008)* does not establish interim targets or a trajectory to the 2050 targets, instead allowing for regulations to be made that prescribe interim and sector specific targets. The Tasmanian Government has made a commitment to introduce interim and sector-based targets in 2009, and to inform this process has sought expert advice to: develop an emissions profile for Tasmanian; determine opportunities to reduce emissions; and determine the impact of the CPRS on the Tasmanian economy.

[34] Australian Government (2008) *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future White paper Summary Report*, Commonwealth of Australia, p. 5
[35] Australian Government (2008) *Carbon Pollution Reduction Scheme Green Paper*, Commonwealth of Australia, p. 170

Approaches for achieving an emissions target

Abatement, mitigation and offsets[36]

An economy and community can achieve an emissions target through:

- Abatement - activities that lead to a reduction in GHG emissions.
- Mitigation - a reduction in the source of GHGs or enhancement to GHG sinks.
- Offsets – reductions or removals of GHG emissions that are used to counterbalance emissions elsewhere in the economy.

Abatement requires householders, businesses or governments to cease activities, or reduce activities that involve the generation of carbon emissions.

Mitigation requires changes to current emissions generating processes or activities to avoid the generation of GHGs. A simple example is addressing the inefficiencies in energy consumption in residential and commercial properties. The design and orientation as well as use of insulation reduces heating and cooling energy requirements, and therefore reduces the amount of GHG emissions associated with the reduction in energy use.

Abatement and mitigation measures all impose current costs on the economy. The *Garnaut Review* recognises that the imposition of a carbon trading scheme would impose greater costs on industries that produce relatively high emissions (eg coal-fired power stations) with less impact on industries that produce relatively few emissions (ie renewable energy producers). Industries considered most likely to be affected by an emissions price are those with high emissions intensity, limited capacity to reduce their emissions, or those with limited capacity to pass through an emissions price onto consumers.[37] The structural change required to achieve reduced emissions will impose indirect costs on the ACT.

A supportive mechanism to facilitate abatement and mitigation is the offsetting of GHG emissions. An example is the ability for travellers to purchase offsets when taking airplane journeys to negate the carbon emissions from their plane trip. Unlike abatement and mitigation actions, offsets do not result in a reduction in emissions. Rather, offsets result in an activity being neutral of carbon emissions generated through the undertaking of a separate carbon reducing activity. There are an abundance of offset program providers available and the price to purchase offsets is readily available in the public domain. Offsets should reflect the best use of currently available technology and would also need to meet internationally recognised standards, for example, they would need to be emission reduction technologies and carbon sequestration projects that would not have otherwise occurred.

In reality, the imposition of a target would be likely to involve a combination of abatement, mitigation and offsetting, with the least cost combination being optimal.

Relationship between climate change and energy strategies

Approximately 72 per cent of the ACT's emissions are from electricity consumption. As such, there is a strong link between the ACT's Climate Change Strategy and the development of an ACT

[36] Definitions taken from Garnaut, R. (2008) *The Garnaut Climate Change Review: Final report*, Commonwealth of Australia, pp. 608, 612, 613

[37] Garnaut, R. (2008) *The Garnaut Climate Change Review: Final report*, Commonwealth of Australia, p. 390

Energy Strategy. The ACT Energy Strategy will provide a road map for how the ACT community as a whole will address the relationship between its energy use and the subsequent climate change impacts.

The ACT Government is preparing an Energy Strategy for the ACT that will reflect the ACT Government's zero-net emissions policy goal. Following consultation with the community on the draft and the completion of any further analysis required to ensure that the most appropriate and cost effective strategy is developed, the Energy Strategy will be finalised.

A key goal of the Energy Strategy will be to explore ways in which the ACT can reduce its emissions from energy use. A reduction in emissions can be achieved in several ways. Improvements in the energy efficiency of appliances and buildings can reduce the need for energy consumption and therefore reduce the production of GHGs. Emissions can also be reduced via the increased use of low emission and fully renewable (no emission) technology.

It is likely that the most appropriate approach to reducing emissions will consist of a combination of both of these approaches. In developing the most effective mix of approaches, it is necessary that detailed analysis of the benefits in terms of overall reductions in emissions from particular approaches be balanced with any costs that will be imposed on customers and businesses.

The ACT Government is already engaged heavily in improving energy efficiency and exploring the appropriateness of low emission and renewable technology. These matters will be addressed in additional detail in the Energy Strategy and are discussed below.

Energy Efficiency

The ACT Government, in tandem with its Commonwealth and jurisdictional counterparts, is working to significantly increase energy efficiency requirements for all new commercial and residential constructions as well as the requirement to disclose the energy-efficiency ratings for all commercial leases and sales.

In October 2008, COAG agreed to develop a National Strategy for Energy Efficiency to accelerate energy efficiency efforts across governments including streamlined roles and responsibilities.

An intergovernmental agreement is currently being developed that is likely to propose accelerating significant energy-efficiency requirements for new constructions, which include:

- significantly increasing energy-efficiency requirements for all classes of commercial buildings in the Building Code of Australia;
- phasing-in mandatory disclosure of the energy efficiency of commercial buildings and tenancies; and
- working with the Australian Building Codes Board and COAG to increase energy-efficiency requirements for new residential buildings, including units, to six stars from May 2010.

The ACT is also implementing energy efficiency policies through the National Framework for Energy Efficiency established through the Ministerial Council on Energy. This Framework covers a range of policy measures designed to overcome the barriers and challenges that prevent the market delivering the actual economic potential of energy-efficient practices.

The States and Territories in cooperation with the Commonwealth are currently working to expand and enhance the minimum performance standards for electrical appliances and equipment,

and phase out incandescent lighting. This work will also see government leadership through green leasing of buildings and developing national strategies for high-efficiency heating, ventilation and air conditioning systems, a program to promote the phase-out of inefficient lighting systems and the development of a National Hot Water Strategy, which will provide a national approach to promote the installation of solar hot water systems.

Low emission and renewable energy generation

On the supply side, renewable energy technology is continually evolving and this evolution will be further stimulated across Australia with the introduction of the CPRS and expanded renewable energy target. The ACT Government is committed to greater use of renewable generation to meet our electricity needs and to supporting industry in developing commercially viable renewable energy technologies in the ACT. Box 1 highlights some of the existing low emission energy initiatives being undertaken in the ACT.

The ACT's size and location make some forms of renewable energy currently impractical with available technology, including and geothermal generation, medium or large scale wind generation. There are, however, several other low emission electricity generation options being investigated for the ACT, such as solar technologies, and gasification of waste and other organic material, such as wood.

As part of the Energy Strategy, analysis of the benefits and cost of a move towards having additional generation capacity in the ACT, and subsequently increased self-sufficiency in energy supply, will be explored. This is expected to include an analysis of the feasibility of approaches such as embedded and decentralised generation and renewable energy.
There is significant potential to increase the ACT's usage of renewable energy, through both the investment in infrastructure in the ACT and drawing on renewable energy generated outside the ACT. The ACT Government will continue to monitor low emission generation technologies and alternative energy supply arrangements.

A further way of reducing overall emissions is through offsetting those emissions which are generated. This can be done in a variety of ways including via carbon sinks (such as tree plantations) and possible through geosequestration should the technology develop to a sufficient level.

Box 1: Low emission energy initiatives in the ACT

ACT Electricity Feed-in Tariff Scheme

The ACT Electricity Feed-in Tariff Scheme commenced on 1 March 2009. The Scheme rewards ACT households and businesses that install renewable energy generation technology by paying a Premium Price for the electricity they generate. The Premium is paid for each unit of renewable energy generated and is greater than the retail price usually paid to buy the same amount of energy. From commencement of the Scheme on 1 March 2009 until 30 June 2010 the Premium Price will be 50.05 cents per kWh generated for systems up to 10kW. For systems between 10kW and 30kW a rate of 40.04 cents per kWh will be paid. At present the Premium is only paid on systems up to 30kW in size.

Solar Farm

A feasibility study conducted in early 2008 has confirmed that the ACT is a suitable location for larger scale solar energy and that a solar power facility would be feasible for the ACT. To that end, the ACT Government has committed $30 million towards the construction of a large-scale solar power facility by the private sector for the ACT capable of powering a minimum of 10,000 homes.

Landfill

Canberra has one operational landfill at Mugga Lane. A company called Energy Developments extracts methane from the Mugga Lane landfill and then burns it in an internal combustion engine to produce electricity. Energy Developments estimates that the methane extracted from the Mugga Lane landfill in 2007-08 was approximately 167,000 tonnes CO_2e (net).

Greening the ACT economy

Actions to reduce GHG emissions such as retrofitting our buildings, installing more energy efficient infrastructure, and improved transport systems also create potential growth for 'green industries' to develop locally. The ACT has a number of sectors with considerable green growth potential including renewable energy, energy efficiency, and waste and recycling.

The ACT educational sector will derive significant support from and contribute to the developing 'green economy' The ACT has a competitive advantage, with its highly educated population, and state of the art research that is built on the foundation of the ANU and CSIRO. Continuing diversification of the ACT's economic base will be enhanced through integration between the scientific and business communities for development of new green technologies that can be applied locally, nationally and globally.

An objective of the Energy Policy will be to further develop the green economy. Work is currently underway across Government to develop a detailed analysis of the ACT's strengths and opportunities in this area.

Other ACT Government initiatives

Attachments A, B and C of this submission provide details on other initiatives that the ACT is undertaking to move towards a green economy in the ACT. These include actions undertaken as part of *Weathering the Change Action Plan 1* (2007-2011) as well as initiatives in the areas of transport and building.

As part of its ongoing actions to tackle climate change, the ACT Government will analyse the opportunities for emissions reduction within the ACT and, in consultation with key stakeholders, develop new strategies and actions to lead the ACT towards a visionary goal of zero net emissions. Waste policy is being review with an objective of further reducing landfill and minimising or diminishing methane gas emission.

Another important aspect will be the continued development of adaptation strategies to cope with the climate change that is already projected to occur as a result of past activities and increases in GHG concentration levels. For example, adaptation activities need to be undertaken within the health sector and this will be the focus of the National Climate Change Adaptation Action Plan for Human Health (to be developed through the Australian Health Ministers' Conference).

The form of additional programs will, in part, depend on whether the CPRS includes mechanisms that enable state and territory jurisdictions to reduce emission levels through their own mitigation measures and the timing of its introduction.

SECTION 3 IMPLEMENTING ACT GHG REDUCTION TARGETS

Relationship between the ACT's GHG reduction targets and the Australian CPRS

The CPRS is the current major mechanism by which the Australia Government is planning to reduce Australia's GHG emissions. National annual emissions will be limited by a GHG cap that applies to all sectors covered by the scheme.[38] The Australian Government will issue a set number of permits (in accordance with the cap), which will allow permit holders to emit a certain volume of GHGs. Therefore, the limit on the number of permits issued will limit the production of GHGs. The market will trade these permits to establish a price for emissions.

The CPRS will provide an incentive for the market to choose low emission goods, services, technologies and processes, if the price of those is lower than the price of permits. If, however, the cost of mitigation and abatement is higher than the cost of the permits, parties will choose to purchase permits to allow them to emit at a higher rate. This increased demand for permits will increase their price and in turn will provide an incentive for the market to invest in lower emission technologies.

Careful consideration needs to be given to how legislated targets in the ACT would interact with the Australian CPRS. In particular, under the current CPRS design the level the ACT Government sets for its emission targets will not achieve additional environmental benefits above those generated by the CPRS.

There will effectively be a 'floor' below which emissions cannot fall, as a result of the fixed number of tradeable permits that will be allocated by the Australian Government under the CPRS. Consequently, if the ACT Government were to set more stringent GHG reduction targets than in place nationally, this will result in a substitution in emissions out of the ACT, rather than a reduction in total Australian emission levels. For example, should the ACT encourage lower consumption of energy, the demand for electricity generation will decline and so will the demand for permits. This in turn would reduce the price of permits, also making them available for use by industry in other states.

The ACT Government has raised concerns associated with the effective floor in the CPRS and has written (refer: www.aph.gov.au/) to the:

- Senate Standing Committee on Economics, which is reviewing exposure drafts of the legislation to implement the Carbon Pollution Reduction Scheme;
- Senate Select Committee on Fuel and Energy currently looking at the impacts of emission trading on the fuel and energy industry; and
- Senate Select Committee on Climate Policy looking at the choice of an emission trading scheme as the central policy to reduce emissions in Australia.

[38] The CPRS will initially cover stationary energy, transport, fugitive emissions, industrial processes and waste sectors.

Due to the source and volume of emissions in the ACT, there is only expected to be a small number of entities that are directly covered by the CPRS and so will need to purchase permits. The main effect on the ACT economy will be indirect, through increases in the prices business pay on their inputs input prices and the prices paid by households.

Without binding regulation mandating emissions reductions there would be no incentive for ACT businesses to reduce their emissions by more than required under the CPRS. This view was presented in the *Garnaut Review*, which stated that:

> '…no useful purpose is served by other policies that have as their rationale the reduction of emissions from sectors covered by the trading scheme.'[39]

The ACT Government does not consider that the CPRS cap announced by the Commonwealth Government is tight enough to help properly reign in Australia's emission levels to a long term sustainable level. Failing a decision by the Commonwealth to tighten its cap to a level acceptable to the state and territories, the ACT Government considers that it is important to enable state and territory jurisdictions to reduce emission levels through their own mitigation measures.
One mechanism would be for the Australian Government to recognise additional reductions in emissions achieved by state and territory jurisdictions below the CPRS cap and then to remove permits equivalent to this reduction from the CPRS scheme.

In changes to the CPRS announced by the Australian Government on 4 May 2009, additional GreenPower purchases above 2009 levels will be directly recognised when the Government sets caps under the CPRS. Additional GreenPower purchases will be measured annually and future caps tightened accordingly.[40]

Another option through which the ACT Government could achieve more stringent targets than in place nationally is by purchasing and holding permits in perpetuity, thereby reducing the number of permits available to emitters, and hence reducing the overall level of emissions. However, the budgetary impact of such an option would need careful consideration.

Another possible way forward may be for the ACT to engage the other states and territory with a view to seeking unified state/territory agreement to adopt legislation that is in effect more stringent than that enacted by the Commonwealth. Such an approach would not be dependent on further Commonwealth action.

Consideration needs to be given to the risk that the adoption of ACT targets more stringent than those under the CPRS or the other jurisdictions may cause businesses which are not geographically bound within the ACT to migrate across the border. This risk will need to be considered in setting a legislated ACT target and in implementing measures to reduce GHG emissions that could impose a cost on business. The ACT Government will consider the best way to manage this risk in light of the recommendations by the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets.

Designing a legislative target

The Parliamentary Agreement signed between the ACT Greens and the ACT Government foreshadows the embedding of targets in legislation. The ACT Government is now considering the

[39] *Garnaut Climate Change Review* (2008), Commonwealth of Australia, p xxxii.
[40] Australian Government Media Release of 4 May 2009, accessed from www.climatechange.gov.au

appropriate form and nature of a legislated target and in particular whether legislative interim targets should be enforceable, or an embodiment of the Government's vision.

The Government recognises that there are a number of other complex legal and policy issues surrounding the embodiment of targets in legislation. For example, the design of the legislative scheme for reducing GHG emissions will be influenced by the Constitution and Commonwealth and State and Territory legislation. The establishment of a non-binding target would effectively avoid these considerations.

Enforceable legislative targets would require the development of an enforcement mechanism and penalties for failing to meet specific targets. Specific entities would need to be held legally accountable for progress against targets, against which progress and enforcement action can be measured. An alternative approach would involve capping ACT emissions and establishment a local emissions trading scheme. Each approach has relative advantages and disadvantages.

It is anticipated that both of these approaches to enforceable targets could involve significant costs and impose a high regulatory burden. However, enforceable targets have been adopted both here in Australia (in the form of the CPRS) and by overseas national and state governments to help reduce GHG emissions.

South Australia and Tasmania have legislated non-binding GHG emissions targets. The stated intent of the South Australian *Climate Change and Greenhouse Emissions Reduction Act 2007* is to establish voluntary mechanisms to encourage and support GHG reductions and increase the use of renewable energy. It does not contain enforcement mechanisms. After a four year review, the South Australian Government will consider whether further action is required to force government, business and the community to meet the targets, for example, through minimum performance standards or other mandatory requirements.[41]

The South Australian Government is able to enter into agreements with sectors of the South Australian economy under which participants are expected to commit to reducing GHG emissions and to track their progress to meeting their agreed goals. Goals can relate to emissions reductions, reductions in energy consumption, improvements in energy efficiency, and the promotion of the use of renewable energy. Agreements can be entered into with businesses and industry groups, state and local governments and individuals. These agreements are non-binding and there are no penalties for underperformance.

The Tasmanian legislated targets appear in reality to be aspirational, with no formal enforcement of the target, or imposition of penalties should it not be met.

The ACT Government welcomes and will take into consideration the views of the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets. It is also committed to working collaboratively with the community to halt the current increase in emissions and to achieve targeted emissions reductions. This approach will build on the high value that several segments of the community place on taking action to combat climate change and ensure a healthy and sustainable environment.

[41] South Australian Government (2006) *The Climate Change and Greenhouse Emissions Reduction Bill 2006: explanatory paper and request for comments*

The ACT Government believes that a cooperative, community based approach to interim targets may also reduce at this stage the need for establishing an enforceable target. This approach would encourage the community to adopt and embrace the legislated GHG reduction targets and move more freely towards those goals in a spirit of cooperation and collaboration rather than of penalty and prescription.

In addition to these issues, and the practical constraints that may be imposed by the CPRS, there are some further issues surrounding legislative targets that the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets and the ACT Government will need to consider. These include:

- how the targets will accommodate changes in ACT population - the role of per capita and total ACT emissions targets;
- whether there is a need to legislate other related targets, such as increasing the proportion of renewable electricity generated and/or consumed in the ACT;
  - This decision will be informed by COAG consideration of whether or not a national scheme should be adopted.
- the scope of emissions to be covered by a legislated target, such as whether emissions relation to stationary energy should be covered;
- the need for flexibility to respond to changing circumstances, such as new scientific evidence on the rate of climate change and major changes in national or international policy settings;
- how will the community be encouraged to adopt the targets; and
- establishment of a road map – a legislated target will need to be complemented by a detailed implementation plan.

Monitoring, reporting and review processes

Effective monitoring, evaluation and enforcement of legislated targets will require the establishment of an accepted and manageable methodology for reporting and monitoring GHG emissions. Currently there are different methodologies, developed for different purposes and based on varying rules, which deliver vastly different results. For example, according to the approach adopted in the Kyoto Protocol, the ACT's GHG emissions total only 1.1 million tonnes (derived mainly from transport) with no accounting for emissions associated with the consumption of electricity, compared to the 4.45 million tonnes as calculated for *Weathering the Change*.

As part of the COAG Expert Working Group on Greenhouse and Emissions Reporting, the ACT has been involved in the development of a National Greenhouse and Energy Reporting System (NGERS) in partnership with the Commonwealth Department of Climate Change and other the states and territory. GHGs data from NGERS will underpin the CPRS, and all participating parties will be required to report their emissions to a regulator. Data from NGERS is intended to provide a streamlined national reporting point for GHG emissions and energy datasets to assist Commonwealth, State and Territory government programs and activities.

The Online System for Comprehensive Activity Reporting (OSCAR) will be the application that is used by corporations to report their GHG emissions and energy use under the *National Greenhouse*

and Energy Reporting (NGER) Act 2007.[42] OSCAR is a web-based data collection tool for recording energy, waste and GHG data, which allows organisations to monitor their GHG footprint. OSCAR calculates GHG emissions based on energy consumption figures. It is intended to standardise the calculation of GHG emissions to produce comparable datasets on environmental performance for whole industry and government sectors.

Most ACT Government agencies have commenced reporting their emissions using OSCAR. The adequacy of the data captured by this system will need to be assessed against the data that would be needed to enable the monitoring, reporting and enforcement of a legislated ACT target. Consideration should be given to whether the legislation should cover the method for calculating emissions, including the establishment of a baseline and the reporting requirements for government and industry. The decision to collect additional information will need to be balanced against the compliance costs imposed on business and governments in providing this information. Clearly, there are efficiencies in utilising existing systems and information sources.

One identified limitation with OSCAR that will need to be addressed should a legislated target be adopted is that OSCAR has been developed for the purpose of supporting the CPRS and hence does not capture stationary energy emissions relating to the ACT, as these emissions occur physically in other states.

An assessment will need to be undertaken to determine the adequacy of emissions data either currently collected by, or available to the ACT Government. Depending on the nature of the legislated target, additional data collection requirements may needed to be mandated, where sufficient justification is provided. However, such a decision would need to be balanced against the consideration of whether it is reasonable for the ACT to set up its own reporting system, given the ongoing costs involved, and potential duplication with systems already in place at the national level (ie OSCAR).

Review process

Climate change science is a highly dynamic field, with ongoing scientific research about the sources and consequences of long term changes to the world climate. Consequently, it will be important to ensure that a target and associated legislation can be updated in light of new knowledge and information. The need for flexibility will need to be balanced against the need to provide long term certainty to industry about the level of emissions reduction being sought by the Government.

With respect to national targets and the CPRS, the Australian Government has committed to a target for 2020, and will only consider changes to the longer term target for 2050. The trajectory for emissions reductions between these points in time is only indicative. The Australian Government will fix the CPRS caps at least five years in advance. If the long term target changes, the Australian Government will not change the scheme caps. It will instead purchase international offsets to make up the difference. The CPRS will have gateways of 10 years, which represents a period after the scheme caps are set, during which the Government will give an indication of the range in which future scheme caps will be set.

CONCLUSION AND NEXT STEPS

[42] http://www.climatechange.gov.au/oscar/index.html

The ACT Government showed leadership in recognising and responding to Climate Change by releasing in 2007 the ACT climate change strategy, *Weathering the Change*, and the associated plan *Action Plan 1 2001-2011*.

This submission summarises the latest national and international scientific research into climate change and its likely impact on the ACT. The latest science shows that the magnitude of climate change is growing, as is the urgency with which it must be addressed. Many of the previously estimated worst-case scenarios for climate change are already beginning to be realised as is the risk of a future irreversible climatic shift.

The ACT Government considers that urgent action is needed to bring the ACT's GHG emissions under control and believes that as a government concerned about how the decisions we are making now will affect life in the future, the visionary goal of zero-net emissions should be adopted by the ACT. We acknowledge that interim targets will be needed that do not fully eliminate the ACT's GHG emissions.

The Government recognises that a detailed road map to achieve the goal needs to be developed, accounting for national and international policy changes and for the evolving scientific understanding of climate change. The economic and equity impacts of the plan will need to be fully identified and we will need new measures and programs, informed by the best available expertise, to help us achieve the zero net emissions goal. Decisions on measures to reduce GHG emissions will be taken in an economically responsible way. We will also draw on the lessons we have learned under *Weathering the Change* by reviewing Action Plan 1 and, in light of the recommendations by the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets, will bring forward development of Action Plan 2.

The terms of reference for the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets require it to table its report in the Legislative Assembly by 31 July 2009. The ACT Government will consider the nature and form of a legislated GHG emissions targets for the ACT in light of the recommendations made by the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets.

The Government is required to table its response to the Legislative Assembly Inquiry on ACT Greenhouse Gas Reduction Targets within six months of the report being tabled, at which time it will provide its views on new GHG emissions targets for the ACT and the road map by which they can be achieved.

Attachment A: Weathering the Change

In July 2007, the ACT Government launched *Weathering the Change – The ACT Climate Change Strategy 2007-2025,* which builds on the *ACT Greenhouse Strategy 2000* and outlines how the community, with strong leadership from the Government, will address climate change between then and 2025.

The Strategy has four objectives:

1. to be smarter in how we use resources;
2. to design and plan our city to be more sustainable;
3. to build our capacity to adapt to and manage the changes to climate that we are now beginning to face, and possible future changes; and
4. to improve our understanding of climate change, its causes and effects, and how we need to respond

In preparing the Strategy, consultation was undertaken with all ACT departments. Discussions were also held with interest groups such as the Conservation Council of the South East Region and Canberra and the ACT Business Council, who indicated general support.

The Strategy will be implemented through a series of four Action Plans, which contain the actions to be pursued up until 2025. *Action Plan 1 2007-2011* outlines the Government's immediate responses to climate change with 43 actions, most with target deadlines for implementation in the first three years. The actions under *Weathering the Change* are being undertaken by various departments.

Box A1 gives some further detail of some of the actions that the ACT Government is implementing as part of *Weathering the Change*. Some of the actions have a direct impact on GHG emissions reduction, while others have an indirect impact by educating the community about measures that will assist them to reduce their emissions.

Box A1: *Weathering the Change Case Studies*

Action 13:	**Undertake energy efficient street light replacement** *(completed)* The ACT Government has allocated $1.1 million towards replacing public street lights around Canberra with more efficient lamps. This resulted in 1,763 lights being replaced on various arterial and suburban roads around the ACT, mostly in Tuggeranong and Belconnen. The replacement has already led to savings of 1,136 tonnes of GHGs. Further funding has been provided to extend streetlight replacement program for 2008-09, providing an additional five thousand new lights.
Action 2:	**Pursue Carbon Neutrality in Government** *(in progress)* All ACT Government agencies (including schools, hospitals, shopfronts and other Government facilities) are working towards becoming carbon neutral ie. to generate no net emissions from their activities. This action will address emissions arising from energy use, water, waste and travel by staff and will require agencies to undertake projects to offset their remaining emissions. The initiative is being introduced in stages, to allow for training and learning. Energy and water audits have been undertaken on a number of Government buildings and Departmental Resource Management Plans are the next step.

	Resource Management Plans are being developed by ACT Government agencies to identify cost-saving opportunities, help agencies monitor energy, water use and waste production, and implement emission-reduction activities. Agencies will report annually on their progress.
Action 11:	**Assist schools become carbon neutral** *(ongoing)* Climate change will have an impact on all schools in the ACT. The ACT Government will assist schools become carbon neutral by 2017. All schools will develop a School Environmental Management Plan and will conduct energy audits and develop emission reduction and energy efficiency initiatives in line with that Plan. Working together with all ACT schools to become carbon neutral will complement and demonstrate practical application of sustainability curriculum. 96 of 144 ACT schools are involved in AuSSI program. So far, 8 schools have had energy audits and 30 have environmental management plans in place as part of Australian Sustainable Schools Initiative (AuSSI), which addresses energy consumption through the curriculum and school operations. AuSSI ACT in partnership with the Home Energy Advice Team (HEAT) is conducting energy audits in schools. The energy consumption of each school is recorded on a central database and schools receive accreditation based on their reduction in energy consumption. Some schools have recorded a 25% reduction in energy use since their audit. The next round of audits has commenced. Newsletters on energy use are produced and distributed to all ACT schools.
Action 7:	**Offer stamp duty concessions for low emissions vehicles** *(completed)* Transport is estimated to produce about a quarter of all GHG emissions in the ACT. Purchasing decisions made now will influence environmental outcomes over the lifetime of the vehicle. The *Green Vehicles Duty Scheme,* which commenced on 3 September 2008, is an Australian first. It introduces differential stamp duty costs for new vehicles based on their "Green Vehicle Rating", a measure of vehicle environmental performance. This will provide an incentive for the purchase of low emission vehicles and a disincentive for the purchase of cars with poor environmental performance. Feedback from the public and the motor vehicle industry has been supportive, and a number of other jurisdictions are currently exploring the introduction of schemes similar to the ACT model.
Action 39:	**Showcase renewable and energy efficient technologies** *(in progress)* The Government has developed partnerships with local companies and research institutions to showcase to the community low-emission or renewable energy technologies. This serves as an example of how individuals, property owners and businesses can adapt older buildings to reduce their energy impacts or incorporate these technologies into new buildings. To demonstrate renewable technology in the ACT, a number of high-profile sites have been selected for Showcase projects. • ACT Government's Macarthur House car park where lights have been replaced with a combination of LED (50% more efficient) and solar lighting - completed in August 2008. • Erindale bus interchange smart lighting controls project completed in September 2008. • Tidbinbilla Visitors Centre where a 3.3kW solar photovoltaic array has been installed - completed in October 2008. An interactive public display for the Visitor's Centre is being built to raise awareness of green energy generation at Tidbinbilla. • Solar shades are being built at the Canberra Stadium. This will provide shade to ticket holders, generate clean electricity into the grid and promote the benefits of renewable energy to the Canberra community. • Canberra Institute of Technology's (CIT) Bruce Campus has installed solar gas boosted hot water systems, a co-generation engine, energy efficient lighting and a large solar energy collection facility. CIT's new Horticulture Facility at Bruce (2010) will also demonstrate renewable energy technologies.

Up to December 2008, 11 actions have been completed, 11 are ongoing, 21 are yet to be completed. A summary of progress of actions is provided in Table A1.

Table A1: Progress report for *Weathering the Change – Action Plan 1* 2007-2011

Completed actions	
Action 5	Green Power legislation passed in early 2009. All new electricity customers are now offered Green Power. The ACT Government supports the national accreditation of GreenPower as the preferred Green energy product.
Action 7	Differential stamp duty for low emissions vehicles has been implemented providing an incentive for the purchase of low emissions vehicles and a disincentive for the purchase of cars with poor environmental performance.
Action 12	ACTION Compressed Natural Gas Bus Fleet Replacement is complete. The Government will also respond to research and evidence relating to the comparative merits of all fuel and technological alternatives.
Action 13	Energy efficient street light replacement completed, resulting in the replacement of 1,763 lights and a saving of 1.136 tonnes of GHGs annually.
Action 14	The ACT Government has introduced free bus travel for bicycle riders. The ACT Government is committed to the promotion of sustainable transport as a viable long term option for personal transport needs.
Action 16	A network and service design plan for buses has been developed. This plan will deliver immediate improvements to services and also ensure that the bus network becomes and remains as efficient and effective as possible.
Action 18	The *Electricity Feed-in (Renewable Energy Premium) Act 2008* was amended in February 2009 and the Scheme commenced on 1 March 2009. The Scheme requires electricity retailers to pay a premium tariff to ACT customers with a renewable energy system under 30kW in size for each unit of electricity produced.
Action 23	New home owner's allowance of $110 towards to trees and shrubs in gardens has been doubled. This will promote the planting of species that are better suited to a changing climate and which contribute to improve performance of our buildings.
Action 29	The ACT Government, along with the Community Inclusion Board, delivered a social impact analysis of the effects of climate change on low incomes, disadvantaged, and vulnerable ACT residents in 2008.
Action 32	An assessment of climate change impacts on our urban areas has been undertaken. This will improve our understanding of climate change impacts, in combination with other key variables, on urban systems in the ACT and surrounding local government areas.
Action 42	The ACT Government has collected fuel sales data for emissions monitoring in the 2007-08 financial period. New legislation, which was passed in the ACT Legislative Assembly in 2007, provided for the collection of this data from June 2008 and will allow for an accurate calculation of GHG emissions contributed by the transport sector.
Action 43	A carbon sequestration audit has been undertaken with a view to informing ACT Government tree-planting and eco-system management plans.
Ongoing actions	
Action 3	A $1million Energy Efficiency Fund for ACT Government Agencies has been established. The loan fund gives agencies access to funds for energy efficiency improvements, subject to an audit and business case.
Action 4	The development and implementation of the Park-and-Ride Strategy is ongoing. Park & Ride usage has significant potential for growth and for reducing GHG emissions.

Action 8	Energy efficiency improvements in government housing are being implemented by DHCS. The ACT Government is committed to making public housing properties more energy efficient and importantly, more affordable for tenants to live in.
Action 9	A solar hot rebate is being provided to ACT residents based on the recommendations of a comprehensive energy audit. This program, implemented through ACT Energywise Energy and the HEAT team, creates a genuine incentive for the community to purchase solar hot water heaters.
Action 11	The ACT Government is assisting schools to become carbon neutral by 2017. All schools are developing a School Environmental Management Plan and will conduct energy audits and develop emission reduction and energy efficiency initiatives in line with that Plan. To date 8 schools have completed energy audits and 30 have environmental management plans in place.
Action 21	The development of integrated land use and transport planning requires that all new dwellings incorporate greenhouse-friendly appliances and technologies form a list of options including solar hot water and gas hot water systems.
Action 22	Environmentally sustainable design features are being integrated into all new public schools. The inclusion of Environmentally Sustainable design features will be mandatory for all new schools constructed by the ACT Government.
Action 25	The ACT Government is undertaking an Urban Forest Renewal Program. Canberra has well over a million trees in its urban forest, including more than 600,000 trees managed by the ACT Government. In order to maintain the quality and quantity of our urban forest, maintenance and replacement is necessary.
Action 26	East Lake is being established as a showcase for urban development. The ACT Government has partnered with the CSIRO in designing the East Lake area so that it becomes a national example of best practice in sustainable urban development.
Action 31	The ACT Government is actively supporting the development of a National Adaption Framework, being developed under the auspices of COAG.
Action 38	The Implementation of sustainability in schools is ongoing. A step by step Best-Practice Guide covers the areas of waste, energy, water, biodiversity and curriculum. The guide provides actions a school can take to become sustainable.
In progress actions	
Action 1	The continued development of an ACT Energy Policy will complement the Climate Change Strategy and provide a clear direction for our energy future.
Action 2	Carbon Neutrality is being pursued in Government Buildings. Resource Management Plans are being developed by all ACT Government agencies to identify cost-saving opportunities, help agencies monitor energy use and implement energy efficiency activities. environmental resource efficiency and greenhouse gas emissions are reported in Departmental Annual Reports report.
Action 6	The Government legislation of Renewable Energy Target (RET) is currently on hold pending the outcome of the position of COAG on a national scheme.
Action 10	The ACT participates in the NSW Greenhouse Gas Abatement Scheme (GGAS). GGAS will remain in place until the CPRS commences.
Action 15	Investment in transport improvements will build on the $16.445 million in capital funding and the $2.0 million in new recurrent funding for ACTION allocated in the 2007/08 Budget. Among other things this will deliver an $8 million replacement ticketing system that will allow better monitoring and review of services.

Action 17	DECCEW will investigate travelling to work options in the future depending upon outcomes from Climate Change Strategy review process. Options include increased use of public transport and cycling, car pooling and more flexible working arrangements, such as increased working from home options.
Action 19	The pursuit of energy efficiency ratings for all buildings is currently on hold. Where practical, the ACT Government will extend the residential Energy Rating Scheme to include commercial and rental properties and will introduce legislation implementing agreed national outcomes.
Action 20	The ACT Government will require all new dwellings to incorporate greenhouse-friendly appliances and technologies form a list of options including solar hot water and gas hot water systems.
Action 24	The ACT Government will report on tender assessment criteria as well as requirements for land to be released through a triple bottom line assessed tender process rather than an auction process.
Action 27	The ACT Government is in the process of establishing a $1 million fund to enable grants to be made to community and not-for-profit groups to assess and improve the energy performance of buildings they occupy and to promote energy efficiency to their stakeholders.
Action 28	All ACT Government agencies will conduct Vulnerability Assessments, reviews their operations and infrastructure, to identify climate change-related impacts/risks and develop strategies to address them.
Action 30	In partnership with NSW, the ACT Government is developing a vulnerability assessment of the ACT and surrounding region, with an emphasis on the natural environment.
Action 33	As part of the implementation of the woodland and grassland action plans, the ACT Government is identifying and protecting areas of high conservation value and remnant habitats to minimise human impact, particularly those impacts likely to be heightened by climate change.
Action 34	The development of an ecosystem connectivity map will allow the ACT to undertake actions to improve connectivity and ecosystem resilience. A final map will be produced by 2009.
Action 35	The Sphagnum Bog Mapping and Recovery Plan in currently underway. The sphagnum bogs exhibit intrinsic ecological values and are also an important part of our ground-water storage systems.
Action 36	The ACT Government is in the process of planting one million new trees. Trees play a major role in stabilising ground-soil and improving drainage. As such tree management is an important aspect of water catchment management.
Action 37	A community education program is underway to ensure that all Canberrans are aware of the potential impacts of climate change and how together we can meet this challenge head-on.
Action 39	The ACT Government is in the process of showcasing renewable and energy efficiency technologies at Tidbinbilla Visitor's Centre, Canberra Stadium and the Canberra Institute of Technology. This provides examples of how we can adapt older buildings to reduce energy impacts and incorporate new technology into new buildings. CIT also relies on these technologies for training purposes.
Action 40	A Climate Change Business Academia Roundtable to facilitate partnerships to address climate change impacts has been established and has met 4 times. The Roundtable provides advice and undertakes actions to focus on issues facing business and the options they have to address risk and reduce emissions.
Action 41	The ACT Government is in the process of established partnerships with key institutions to encourage research into climate change predictions, impacts and solutions.

Attachment B: *Sustainable Transport Plan* and other transport initiatives

This attachment contains a response to a request from the Committee to Minister Stanhope for information related to the ACT Government's *Sustainable Transport Plan*. In addition, this attachment also provides information on other transport initiatives undertaken by the ACT Government.

The Sustainable Transport Plan

The Sustainable Transport Plan for the ACT aims to reduce the overall cost of the transport system while maintaining high levels of accessibility. Providing convenient alternatives to private cars will shift transport patterns towards more use of walking, cycling and public transport. This in turn will:

- reduce traffic congestion;
- provide health benefits such as reduced road accidents;
- provide environmental benefits such as reduced air pollution;
- provide the community with more transport options; and
- reduce the cost of building and maintaining transport infrastructure.

Table B1: Progress report on key short term priorities within the *Sustainable Transport Plan*

PROJECT	DESCRIPTION	PROGRESS
Belconnen to Civic Bus Way	Construction of bus way, bus priority measures and stops. This project will connect the major activity nodes along this key route.	Completed Preliminary Assessment for a bus way system between Belconnen and City. Constructed bus priority measured at the ramp intersections of Gungahlin Drive Extension and Belconnen Way. Undertaken investigation and preliminary design of two intersections along Belconnen Way.
Gungahlin to Civic Bus Way	Construction of bus ways, bus priority measures and stations on Flemington Road and Northbourne Avenue. This will encourage land use development along the route and bus use by new residents of Gungahlin and inner north Canberra.	Constructed bus lane along Flemington Road between Sandford Street and Federal Highway. Completed feasibility study for transit lane along Northbourne Avenue.
Woden to Civic Bus Priority Measures	Measures to improve bus priority and travel times along this key route.	Undertaken feasibility investigation of bus priority measures on this corridor.
Tuggeranong to Woden Bus Priority Measures	Measures to improve bus priority and travel times along the route.	
Other Bus Priority Measures	Measures to improve bus priority at key 'choke points' throughout Canberra.	
Traffic signal management co-ordination	Active management of traffic signals during peak periods to optimise traffic flow and reduce congestion.	
Belconnen Interchange	Integration of new bus interchange into town centre retail development to	Progressing with the implementation of far side terminus concept providing four bus stations and one

Upgrade	improve passenger comfort and security.	of them integrated with retail development. Reached agreement with Westfield and $16.5 million allocated for the construction.
Woden Interchange Upgrade	Integration of new bus interchange into town centre retail development to improve passenger comfort and security.	Progressing with the implementation of the concept that integrates bus station with the retail development. Negotiation with Westfield has been well advanced to implement the scheme.
Gungahlin Bus Interchange	On-street interchange and stops in Gungahlin Town Centre.	Developed concept for on-street interchanges and stations.
Pensioner Concessions	Extend existing off-peak pensioner concessions to peak periods.	Providing concession travel for seniors on the new ACTION bus network with the funding commitment of $1.773 million.
Additional Bus Services	Additional services, peak and off-peak, to meet demand and achieve The Sustainable Transport Plan targets.	Implementing additional services in the new ACTION network with funding commitment of $38.15 million.
Accessible Public Transport	Continued transport infrastructure improvements to meet accessible transport standards.	Progressively upgrading the bus fleet to meet disability standards with the funding commitment of $49.5 million.
Real time information	Implementation of a real-time information system for public transport. This will improve passenger information and encourage use by new and infrequent public transport users. Real-time information systems will be incorporated into new and existing interchanges and major stops. Customer access to the information will be through displays at stops and interchanges and also through the web and via SMS and WAP technology.	Completed conceptual design for the implementation of a real time information system. This project is now contingent on the implementation of new bus ticketing system.
SmartCard Ticketing	Use of smart card technology for public transport ticketing.	Replacing bus ticketing system with the funding commitment of $ 8 million.
SMS text messaging service	Use SMS technology for accessing information on public transport services.	Implemented.
Trunk Cycle Network Improvements	Construct cycle and walking paths identified as 'missing links' in the network. Further on-road cycle lanes will be provided on all new and upgraded arterial roads.	Completed a Ten Year Master Plan. Constructed cycle path facilities ($350,000 per annum) as part of the Capital Upgrade program. Improving Cotter Road on-road cycle connections Budget 08 provided $2.338 million. Completing Jerrabomberra wetlands cycling and walking path $0.9 million in 2008-09. Improving cycling and walking path networks with $0.638 million additional funds. As part of the 2nd appropriation further $2.5m was provided for the maintenance of the community path network and works on this are progressing.
Suburban Cycle and Path Networks	Ensure new suburbs have safe, direct walking and cycling routes for local, district and trunk trips.	Developed cycle master plan for Gungahlin for the new suburbs of Gungahlin have safe, direct walking and cycling routes for local, district and trunk trips.
Walking Strategy	Develop a walking strategy for Canberra including transport, urban design, physical activity and recreation components.	
Bike Racks on Buses	Install bike racks on buses on some services to encourage cycling and use of public transport.	Installed bike racks on buses and implementing an initiative of free bus travel for users.
Mode Shift Initiatives	Implement TravelSmart and Pedestrian Access Plans for households, workplaces and schools. Related to new public transport, walking and cycling initiatives. A new cycling map	Implemented large scale travelsmart program in Belconnen targeting about 11,000 households.

	will be produced and further investment will be made in promoting cycling.	
Road Safety Initiatives	Investments will be made to eliminate hazardous roadside objects, with highest priority given to road accident blackspots.	Continue to investing in road safety initiatives. As part of the recent Nation Building Program additional funds for the Black Spot program have been allocated for 2009/10 with some $1.8m provided on top of the annual $966,000. Projects have been identified and work will be progressing over the next 8 months.
Taxi and Hire Car Reform	Complete the reform of the taxi and hire car industries to remove barriers to entry and exit, increase competition, provide greater choice for customers and reduce the cost of services.	Completed the taxi licence release program of 40 licences released in 2006 and 2007and an additional 50 taxi licences being released in 2008 which now brings the number of taxis per capita in the ACT into line with taxi numbers in other Australian capital cities. The ACT has two taxi networks.
Transport needs of the aging population	Investigate the transport needs of the aging population including private, public and community-based transport.	Providing concession travel for seniors on the new ACTION bus network with the funding commitment of $1.773 million.
Parking Requirements	Revise the guidelines for parking requirements associated with development in Civic and the town centres to achieve sustainable transport goals as well as to support accessibility and the viability of centres.	Developed draft parking strategy within the framework of the Sustainable Transport Plan.
Bus patronage data	Survey of bus patronage to determine passenger loadings on specific sections of routes to facilitate better service planning.	Undertaken a comprehensive survey as part of the development of new bus network. Considering the capability of capturing bus usage data as part of the new smart ticketing system project.
Park and ride	Implementation of park and ride facilities to support bus ways and key public transport routes.	Completed a study on park & ride. Implementing park & ride and bike and ride facilities along Athllon Drive at the cost of $0.53 million. Feasibility investigations for additional facilities have been planned.
Other projects	Investigation and implementation of demand responsive feeder services. Improved Park and Ride opportunities.	An investigation was undertaken by Booz Allen & Hamilton and lead to the implementation of flexi bus services. Further investigation on "opportunity driven" park & ride facilities that make best use of under utilised car parks for park & ride purpose is being planned.

Table B2: ACTION buses and *Sustainable Transport Plan*: progress on key recommendations

RECOMMENDATION		RESPONSIBILITY	PROGRESS
4	The Committee recommends that the ACT Government continue to support the delivery of TravelSmart or equivalent programs in Canberra.	Office of Transport (OOT)	The ACT Government has completed Travelsmart programs involving 11,000 households, more than 6,000 employees and some 30 schools. The effectiveness of the Travelsmart household program has been evaluated by an independent consultant. The evaluation indicated an approximate 12.7% reduction in car travel in the targeted areas. Future programs will be considered in the context of competing priorities.
16	The Committee recommends that pay parking be introduced in all major employment areas in the ACT, with restrictions on long stay parking in nearby	OOT	Currently pay parking is in place in all the major town centres. The ACT Government has a "3 for Free" scheme operating in a number of ACT Government car parks which encourages multi-occupant vehicles.

	areas, but with incentives provided for multi-occupant vehicles. Where the Australian Government is responsible for pay parking policy, the Committee recommends that the ACT Government encourage the implementation of a pay parking regime.		The ACT has also been encouraging the Commonwealth to introduce pay parking in employment precincts that it controls through consultation and initiatives which may influence the Commonwealth on this issue.
26	The Committee recommends that the ACT Government's strategic policy documents better engage with and more explicitly address the challenges likely to arise from declining supplies of fossil fuels.	OOT	The ACT Government's Sustainable Transport Plan (STP) recognises the need to encourage higher use of sustainable transport modes. Future strategic transport planning will be undertaken in a way which ensures flexibility to adopt transport technologies which are less reliant on fossil fuels.
27	The Committee recommends that Park 'n Ride services be extended to new sites as a priority action under the Sustainable Transport Plan.	OOT	Work has been undertaken to identify potential sites for Park & Ride facilities and Bike and Ride facilities. A new Park & Ride and Bike & Ride facility is being constructed along the Athllon Drive transport corridor, near Mawson and is expected to be complete by late 2009.
33	The Committee recommends that the Sustainable Transportation Contribution Fund proposed in the ACT Government's 2007 Draft ACT Parking Strategy be progressed.	TaMS and Treasury	This is being considered as part of finalising the ACT Parking Strategy.
42	The Committee recommends that the Sustainable Transport Plan not be substantially amended in relation to its references to bus ways.	OOT	Agree. No amendment has been made to the Sustainable Transport Plan.
45	The Committee recommends that the ACT Government assess the Adelaide, Melbourne and Sydney initiatives on inner-city cycling as part of an assessment of a possible trial of a free bike hire service for Canberra's town centres and universities.	OOT	This will be considered in the context of competing priorities.

Linking transport infrastructure and urban development

One of the objectives of *Weathering the Change* is to design and plan our city to be more sustainable. Being sustainable in how we design our suburbs and infrastructure can help reduce our GHGs and our reliance on private vehicles.

The Canberra Spatial Plan is the key strategic planning document for managing urban growth and change and promotes the key principles of residential intensification within a 7.5 kilometre radius of

the city centre, location of new residential areas close to transport routes and provision of employment opportunities close to residential areas and transport routes.

An outcome of increased population density along transport routes is the potential for financially viable upgrading of public transport services with higher frequency and reliability of service.

Through the Sustainable Future Program, the ACT Planning and Land Authority will implement revisions to the Territory Plan which promote residential density and best service commuting modes along strategic transport routes ensuring downward pressure on per capita fuel consumption and emissions from commuting.

Other transport initiatives

- The ACT Government is committed to the adoption of low-emission motor vehicles and will work to adapt its fleet accordingly. This will include investigating how the percentage of hybrid cars in the ACT Government car fleet can be increased from 3.5% to 5%.
- The Government will continue to work with other jurisdictions to develop vehicle fuel-efficiency standards and measures which are appropriate for the ACT.
- ACTION will continue to purchase buses with advanced engine technologies that will contribute to the overall fuel efficiency of the fleet.
- The ACT Government will investigate how it can encourage businesses to innovate and improve their business systems to reduce their energy consumption.
- The ACT will encourage industry introducing commercially-viable alternatives to petrol fuel.
- The implementation of the Government's Integrated Transport Framework will include exploring options for a light rail system, making our road networks as efficient and effective as possible to reduce congestion and improving our public transport, cycling and walking networks to encourage greater use of these alternative modes of transport.
- The Government will work with the Commonwealth and industry to investigate options for increasing the use of rail for freight. In addition, the Government will examine the feasibility of establishing a freight handling facility in the ACT.
- Working towards carbon neutrality will require the ACT Government to continually assess ways to improve the use of energy for transportation and offset remaining emissions.

Attachment C: Green building initiatives

This attachment contains a response to a request from the Committee to Minister Barr for a comparison of the ACT's planning and sustainability legislation, policies and practices with green building initiatives announced recently by the Queensland Premier. The attachment also contains information about the Green Lease initiative undertaken jointly with the Australian and other State and Territory Governments.

Table C1: Comparison of ACT and Qld green building initiatives

ACT Law, Policy and Practice	Queensland initiatives
Through its involvement in the Australian Building Codes Board and the energy efficiency working groups under COAG, the ACT is pursuing an increase in the energy efficiency performance requirements for all residential buildings, including units, to 6 star or equivalent in the 2010 Building Code of Australia (BCA). It is anticipated that these changes will come into effect on 1 May 2010, which is the standard implementation date for the BCA. Should these changes not be included in the 2010 BCA the ACT will consider implementing these requirements separately. It should also be noted that while the ACT moved to 5 Star for Class 1 buildings in 2006 when it was first introduced through the BCA, Queensland did not call up this provision until 1 March 2009.	New residential dwellings (except units) required to meet six star or equivalent energy efficiency standards by the end of 2010. New units required to meet five star or equivalent energy efficiency standards by the end of 2010.
Major renovations in the ACT are required to comply with the BCA, including energy efficiency provisions. A general move to 6 Star or equivalent will capture major renovations.	Major renovations required to meet six star or equivalent energy efficiency standards by the end of 2010.
ACT legislation plumbing regulation prescribes requirements for all new installations, rather than delineating between requirements for new or existing residences. In 1994, the ACT brought in requirements for all new toilet suites regardless of whether installed in a new or existing residence to have a reduced flushing capacity (6/3L), and other water-efficiency requirements for replacement of system components. These	New houses and units are required to have: 4-star water efficiency and labelling scheme (WELS) rated toilets; 3-star WELS rated tap-ware; energy efficiency lighting for 80% of fixed internal lights.

provisions are being reviewed to remove unnecessary clauses resulting from changes in the minimum water efficiency standards, which the ACT legislation pre-empted, and incorporation of new technologies. Any new requirements will be developed in consideration of the effect of reducing flushing volumes on drainage infrastructure. The Water and Sewerage Regulation 2000 was amended in 2005 to require minimum flow capacities for new and replacement shower roses and taps that mandated the equivalent of AAA water efficiency standards. The regulation does not require specific provisions for reduction in pressure as compliance with the legislation can only be achieved in high pressure areas by installing pressure-limiting devices as per AS/NZS 3500. Provisions for hot water systems are being investigated. The statement on lighting is very broad. Through the National Framework for Energy Efficiency, a phase-out of inefficient incandescent lights is already underway. Imports of a number of types of lights was implemented in February 2009 and it is anticipated that proposed minimum energy performance standards for incandescent lamps, compact fluorescent lamps and voltage converters will be agreed to shortly, with an anticipated implementation date of November 2009. This may negate the requirement for specific regulation as inefficient lighting. In addition the 80% requirement does not address the issue of lighting density in new homes, which is a significant influence on energy use. The ACT is exploring the restriction of lighting intensity in residential buildings in line with current provisions for commercial buildings.	From 1 March all new houses must have water efficient AAA-rated shower roses and pressure-limiting devices in areas with high water pressure, and greenhouse efficient hot water systems (solar, heat pump or gas hot water).
Sub-metering in office buildings has been raised, particularly in relation to mandatory disclosure of energy efficiency performance, which may encourage sub-metering as part of the most cost-effective method of compliance. At present there are no specific sub-metering requirements as there is a difficulty in applying blanket metering rules when commercial tenancies may cover part or a number of floors in a building.	New units and office buildings will be required to provide electricity sub-metering by the end of 2009.
ACT Energy Wise and the Home Energy Advisory Team (HEAT) provide advisory services, audits and rebates (of up to $500 per household). Not for profit community groups will be able to apply for a grant of up to $20,000 per establishment to improve energy efficiency. The current solar hot water rebate will be improved.	The Qld climate smart home service will provide energy reduction advice to 260,000 homes by 2010.
An assessment of the efficiency of light bulbs and the need for energy efficient replacements is incorporated in the audits/ rebates provided by ACT Energy Wise and HEAT.	One-million energy saving light bulbs will be provided to households across Qld
The ACT Government is currently investigating options for a business plan for the bulk purchase of solar electric systems. Some private bulk purchase arrangements exist in the ACT, such as through SEE-Change and New Energy.	Qld solar homes will provide 1000 homes with discounted solar panels following a government bulk purchase.
The ACT notes, with interest, the Queensland election commitment. The ACT is examining an option of establishing a major projects unit within ACTPLA to facilitate the assessment of development applications. This however does not take into account the Queensland 'Green Door' proposal.	Fast tracking for high quality eco-friendly developments by Ministerial direction, facilitated by 'green' case managers and following consideration of advice from a green door advisory committee.
The changes that have been made as part of the ACT's new	Sustainable development case

planning system aim to ensure the close coordination of agency input to development assessment. Regular agency meetings are held to ensure that this is a continuing improvement process.	managers' to be appointed in the Dept of Infrastructure and Planning as single point of entry contacts for all major sustainable developments. These officers will improve the coordination of state agency approvals and advice; liaise with councils and clear impediments.
The Canberra institute of Technology (CIT) and the Department of Territory and Municipal Services (TAMS) are jointly developing training options for plumbing apprentices as a response to the increased demand for skilled solar energy trade people. The proposed program will be a national first.	A partnership involving the Queensland Government, Green Building Council of Australia and Housing Industry Australia to deliver accredited Green building training courses. A Green Buildings Skills fund to create 3000 training places over four years, supported with a 50 per cent course fee subsidy for each participant.

Green Lease

The Commonwealth Government has recognised that there is a market failure associated with encouraging the efficient use of commercial offices and rented residential accommodation. Generally the landlord/owner of a building incurs the costs associated with energy use for the base building (eg the capital and maintenance costs associated with heating/air conditioning a building) while the tenant pays the recurrent costs associated with heating/ cooling, lighting and running appliances. Where the tenant and landlord are different entities, there is not necessarily an efficient outcome in terms of minimising energy use, eg the tenant and not the landlord could gain the savings from an investment in more efficient heating/air conditioning. As a result, there may be insufficient incentive for a landlord to undertake an investment that primarily benefits a tenant.

The ACT Government is contributing to a joint project with other jurisdictions including the Commonwealth to develop a Green Lease template for Government office buildings. One of the aims of this project is to ensure environmental issues are incorporated into new lease arrangements for office buildings. A Green Lease can specify the expected energy performance of a building based on both landlord and tenant contributions.

The ACT Government is also working with the Government Property Group (GPG) (all jurisdictions are members of the GPG) to develop a National Framework for Sustainable Government Offices. At present, 97% of all office buildings are existing stock. One aim of the Framework is to encourage jurisdictions to upgrade their existing portfolios, where economic, rather than purchase new stock to improve overall energy efficiency. The demolition and construction of a building can create more carbon emissions than the net saving in emissions from utilisation of a new building.

The Commonwealth Government currently occupies around 65% of office accommodation in the ACT. Successful cooperation with the Commonwealth Government through activities such as the development of a Green Lease Policy and participation in the GPG represent major opportunities to reduce carbon emissions in the ACT.

The GPG at the request of COAG is developing a Government Office Buildings Sustainability Rating Policy. When agreed by COAG, the policy is likely to specify a minimum of 4 or 5 Green Star

ratings for all new and existing buildings with a Net Lettable Area over 2,000 m^2. The policy is also likely to include a minimum of 4.5 Stars NABERS for energy use.