

victorian

# greenhouse

strategy action plan update

2005

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The Bracks Government is committed to a better quality of life for current and future generations. *Growing Victoria Together* sets out the Government's vision for Victoria now and into the future. It highlights the need for a balanced approach to achieving progress and increasing the common good – equally valuing our economic, social and environmental goals.

By following this approach, we are building a prosperous, fair and environmentally sustainable State. The *Victorian Greenhouse Strategy* is a practical demonstration of how the Bracks Government is working to realise this vision.

It is now widely understood and accepted that climate change, due to the enhanced greenhouse effect, poses a serious threat to the world community. Evidence continues to mount that our climate is changing, that human activities are responsible for this change, and that the impacts on the world's environment, societies and economies will be detrimental.

Faced with such problems, governments and the communities they represent, can respond in one of two ways. They can look at the problems we face, put them in the "too hard basket" and hope either that the problems go away or that others will take on the responsibilities that they are not prepared to accept.

Alternatively, they can rise to the challenge by seeking to understand the nature of the problem and its solutions, to look for opportunities and not simply regard everything as a threat. They can identify others of a like mind who are prepared to work in partnership to build a future that sustains economic growth while protecting the global environment on which we all depend.

The Victorian Government believes this latter approach is the only choice we have. We cannot continue on a "business-as-usual" path. In addressing the challenge of climate change we need to accept that the future will be different. In itself, this should not be viewed with concern – in the history of mankind, the one constant is change.

To rise to the challenge of climate change we need an approach that couples a long-term vision with an understanding of the interim steps that will help us achieve that vision.

In line with the overwhelming weight of scientific opinion, the long-term vision accepted by many governments around the world is that we need to transition to a low carbon economy involving deep reductions in global greenhouse gas emissions by the middle of this century. The Victorian Government shares this vision.

The *Victorian Greenhouse Strategy*, released in June 2002, represented an important milestone in efforts to move this State along the path to a low carbon economy. It has achieved some real gains. Sections of industry have taken on board the challenge of achieving improved energy efficiency, while the housing industry is delivering energy efficient new housing.

The 2002 *Victorian Greenhouse Strategy* was, however, a first step. This Action Plan Update provides an important opportunity to reflect the many developments that have occurred in greenhouse policy at the State, national and international levels and, importantly, to take the next steps on the road to a low carbon future.



A handwritten signature in black ink that reads "John Thwaites". The signature is written in a cursive, flowing style.

**John Thwaites MP**  
**Minister for Environment**



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In June 2002 the Government launched the *Victorian Greenhouse Strategy* (VGS) and commenced implementation of a three year program of action. This program has been successful in advancing efforts in Victoria across a range of sectors to reduce greenhouse gas emissions. As such, it provides a strong basis for the further action set out in this Action Plan Update. Progress reports providing more detailed information on specific achievements and outcomes of action under the VGS since 2002 are available at: [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au).

The state of play regarding climate change issues has advanced significantly since 2002. At the international level, the Kyoto Protocol entered into force in February 2005 and the European Union's emissions trading scheme commenced operation on 1 January 2005.

The Victorian Government's responses to climate change have continued to evolve with significant steps being taken to develop policy with respect to the energy sector and in relation to adaptation to climate change.

There have also been major developments in the broader policy settings established by the Government with the release of an update of *Growing Victoria Together* (see boxed text).

The *Victorian Greenhouse Strategy Action Plan Update* acknowledges these recent developments in state, national and international policy settings; builds on the actions and commitments initiated by the VGS (2002); and responds to the need to advance action on both emissions abatement and adaptation.

The Action Plan Update includes a discussion of the **Strategic Setting** for the Government's greenhouse response. This provides a snapshot of the current context and high level drivers for action by Victoria, and the broad policy commitments and overarching directions being pursued by the Government in relation to climate change.

The Action Plan Update also describes the wide range of **Actions** being pursued by the Government both to reduce greenhouse gas emissions and to facilitate adaptive responses to the impacts of climate change. In doing so, a number of key Government policy and program documents which contribute to the Victorian Government's overall greenhouse response are identified, together with a suite of specific policies and programs across six activity areas that will advance Victoria's response to climate change.

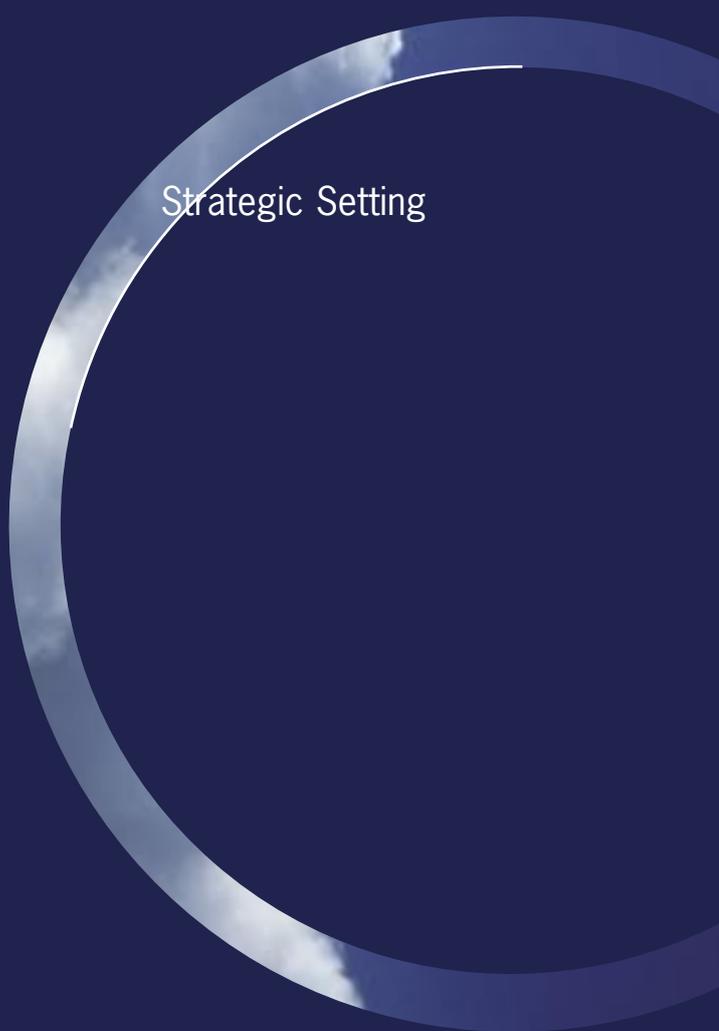
### **The broader context – Growing Victoria Together**

*Growing Victoria Together* is the Government's vision for Victoria now and into the future. It expresses a balanced approach to achieving progress and increasing the common good – equally valuing economic, social and environmental goals. *Growing Victoria Together* notes that:

*"Our most critical natural resource issues are greenhouse gas emissions, water and waste. To allow our population to grow whilst avoiding placing serious stresses on the environment, each of us needs to use less water and energy and cut down on creating non-recyclable waste. Our approach to reducing greenhouse gas emissions will focus attention on the need to move to a less greenhouse gas intensive economy over time. This is critical if Victoria is to play its part in national and global efforts to address the threat of climate change over the coming century."*

*Growing Victoria Together* includes a measure to reduce greenhouse gas emissions from the production and use of energy. It is proposed to use the following two indicators to report on this measure:

- i. total greenhouse gas emissions
- ii. stationary energy greenhouse gas emissions per \$million GSP.



Strategic Setting

### **Our climate is changing**

Climate change is now widely recognised as the most serious environmental problem facing the global community. The overwhelming majority of the world's scientists<sup>1</sup> agree that the world's climate is changing and that this is due to human activities that release greenhouse gases into the atmosphere.

The world is warming faster than at any time in the last 10,000 years. The 1990s was the warmest decade in the past millennium. Climate change will have an increasingly significant impact on Victoria's environment, communities and business.

### **Warming by 2°C - dangerous and irreversible climate change**

The United Nations Framework Convention on Climate Change (UNFCCC) has as its ultimate objective the avoidance of dangerous human interference with the climate system. There is an emerging view in the international scientific community that this will require action to limit the increase in global mean temperatures to no more than 2°C above pre-industrial levels. Warming by more than 2°C could cause irreversible damage for ecosystems throughout Australia including threatening the existence of the Great Barrier Reef.

Already, greenhouse gases emitted over the past 150 years have increased global mean temperatures by 0.6°C. Climate change projections indicate that unless global greenhouse gas emissions are significantly reduced, by 2070 Victoria's mean temperature could increase by up to 5°C<sup>2</sup>.

### **Over the long term, deep reductions in greenhouse gas emissions will be needed**

Australia's Chief Scientist, Dr Robin Batterham, has indicated that Australia has to move to a position where we accept deep reductions in CO<sub>2</sub> emissions in the order of 50% by 2050<sup>3</sup>.

Victoria's goal is to play its part in international efforts to reduce greenhouse gas emissions sufficiently to eliminate any dangerous threat to the climate. Current science suggests that this will require reductions in global emissions of at least 75% below current levels, with substantial progress in the first half of this century. To do so, major technological advances will be needed – advances that will take decades to achieve, but requiring action to begin now.

### **Victoria has an important role to play – our emissions do matter**

Victoria has an important role and responsibility. In 2002 the State's greenhouse gas emissions were 117.0 million tonnes (Mt). This is more than the total emissions of many nations, including industrialised nations with significantly higher populations such as Austria, Hungary, Portugal, Slovakia, Sweden and Switzerland.

In 2002 Victoria's per capita greenhouse gas emissions were 24 tonnes and Australia's per capita emissions were 28 tonnes. This is higher than any other developed country. Even the USA has lower per capita emissions.

<sup>1</sup> In its Third Assessment Report (2001) the UN Intergovernmental Panel on Climate Change, which involves around 3,500 scientists worldwide, concluded that human activities are changing the Earth's climate – see [www.ipcc.ch](http://www.ipcc.ch)

<sup>2</sup> Source: CSIRO – see Understanding Climate Change, available on the web at [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)

<sup>3</sup> Australian Financial Review, 9/9/2004

## The challenges for Victoria

The challenges facing Victoria are to:

- take steps to set our economy on a low carbon path and to work with other jurisdictions to reduce emissions globally so as to avoid dangerous levels of climate change – to date, Victoria has only taken the first steps down this path
- prepare for and adapt to the impacts of climate change.

These challenges need to be taken up by businesses and communities across Victoria – with the support and guidance of government.

The actions contained in the *Victorian Greenhouse Strategy Action Plan Update* will contribute directly to emissions reductions. The Action Plan Update also provides the framework through which the Government will seek to engage the community in the task of achieving emissions reductions in the short term and to raise awareness of the challenges that lie ahead.

There is potential to achieve significant reductions in greenhouse gas emissions using existing technologies and practices – particularly in relation to less greenhouse gas intensive means of energy production and consumption. The adoption of such technologies and practices would provide a strong basis for the shift to a low carbon economy.

Ultimately, new technologies will also be required to deliver emissions reductions in the order of 75% that are needed to avoid dangerous climate change. Research and development of such technologies is critical, particularly as Victoria will continue to depend on fossil fuels for energy for several decades at least. The Action Plan Update will also seek to direct climate change research towards developing a better understanding of the adaptive responses that will be required in Victoria to mitigate the disruptive impacts of climate change.

## Positioning Victoria's economy for a low carbon future

A reduction in greenhouse gas emissions is already urgent, particularly at a time when energy demand and greenhouse gas emissions are increasing. The earlier that action is taken, the more orderly will be the transition to a low carbon future.

As the international community moves to limit emissions of greenhouse gases it is inevitable that Australia and Victoria will face increasingly stringent emissions constraints over time. In particular, there will be a financial cost associated with the use of greenhouse gas-emitting fossil fuels as a result of the introduction of domestic and international emissions trading schemes. Emissions trading is recognised as one of the most efficient means of reducing emissions. Market analysts forecast that the value of the global emissions trading market is likely to reach \$US 44 billion in 2010<sup>4</sup>.

Economic analysis by the Allen Consulting Group has shown that Victoria's economy will benefit if early action is taken to position the economy for these inevitable developments. By acting early on climate change, Victoria can capture new opportunities and avoid higher costs in future. Planning and investment decisions made now will affect our greenhouse gas emissions profile for decades to come. Consequently, a key to reducing future costs will be ensuring that decisions taken now do not lock us into costly emissions over the long term or make emissions reduction more difficult in the future.

In seeking to position Victoria for a low carbon future, the Government will work in partnership with business and pursue policies and measures which:

- deliver multiple benefits – by seeking outcomes that deliver overall economic, social and environmental benefits to the Victorian community
- minimise costs and adjustment burdens and take advantage of business opportunities – by pursuing adjustment paths that take account of the State's circumstances and competitive strengths.

<sup>4</sup> See [www.pointcarbon.com](http://www.pointcarbon.com)

### Dealing with unavoidable impacts

Reducing greenhouse gas emissions must remain a priority for all governments if the impacts of climate change are to be minimised. However, the concentration of greenhouse gases already in the atmosphere, and the projected further increase in these concentrations, means that some level of climate change is inevitable. Consequently, it is important to prepare for, and adapt to, the consequences of climate change.

Decisions made today – for example, in the creation of new infrastructure or other assets – need to occur in a way which ensures that the outcomes of those decisions are robust enough to cope with, or adapt to, changing climatic conditions in the future.

By planning for adaptation to a changing climate, the costs of future impacts can be minimised and any opportunities exploited.

### Global engagement: developing solutions with other governments

Climate change is a global issue, requiring a global response. Victoria supports ratification of the Kyoto Protocol, international emissions trading and the need for continued international action beyond the first commitment period (2008-2012) of the Kyoto Protocol.

The Victorian Government is continuing to work with other States and Territories and the Commonwealth Government to progress action where national responses are required to efficiently and effectively achieve emissions abatement and adaptation.

Victoria is also engaging on greenhouse issues at an international level through its membership of the Climate Group – a non-profit organisation working to build a leadership coalition of governments and private sector organisations committed to reducing their greenhouse gas emissions (see [www.theclimategroup.org](http://www.theclimategroup.org)) – and through bodies that are seeking to develop technologies to achieve greenhouse gas abatement, such as the international Carbon Sequestration Leadership Forum.

#### Trends in Victoria's greenhouse gas emissions

The most recent greenhouse gas emissions data for Victoria is contained in the Victorian Greenhouse Gas Inventory (available at [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)).

The Inventory shows that Victoria's total net emissions in 2002 were 117.0 Mt – an increase of 10.5 Mt or 9.9% over 1990 levels.

The sources of Victoria's emissions include:

- Stationary energy: 79.7 Mt in 2002 (increase of 15.5 Mt or 24.1% from 1990 levels) – within the stationary energy sector, emissions from electricity generation increased by 16.2 Mt or 37% from 1990 levels
- Transport: 19.3 Mt in 2002 (increase of 2.9 Mt or 17.4% from 1990 levels)
- Industrial processes: 2.2 Mt in 2002 (reduction of 1.2 Mt or 33.4% from 1990 levels)

- Agriculture: 15.8 Mt in 2002 (increase of 1 Mt or 7.2% from 1990 levels)
- Land use, land use change and forestry: minus 2.4 Mt in 2002 (ie. this sector is both a source of and a sink for greenhouse gas emissions – see further discussion in Section 5)
- Waste: 2.4 Mt in 2002 (reduction of 0.1 Mt or 4.9% from 1990 levels)



Actions

The *Victorian Greenhouse Strategy Action Plan Update* includes specific policies and programs within six action areas:

- 1. Positioning Victoria's economy for a low carbon future**
- 2. Communities shaping their future through action on abatement and adaptation**
- 3. Transforming urban areas for sustainability**
- 4. Adapting to a changing climate**
- 5. Reducing net emissions from land management in rural Victoria**
- 6. Government leadership**

These actions are directed towards achieving the following objectives:

- Continue the efforts of the 2002 *Victorian Greenhouse Strategy* to promote actions that deliver reductions in net greenhouse gas emissions in the short term.
- Take further steps to position Victoria to prosper in a low carbon economy.
- Consolidate our understanding of the potential impacts of climate change and progressively shift the focus of research towards understanding the adaptive responses required to deal with those impacts.
- Increase community awareness about the actions needed to reduce emissions; the potential impacts of climate change; and the need to prepare for adaptation.

The scale of the challenge presented by climate change is great and will not be fully addressed in the short term or by government action alone. It will require a sustained effort by all Victorians. All sectors of the community need to play their part in delivering emissions reductions and planning for a low carbon future, and in dealing with the impacts of climate change.

The Action Plan Update is not a stand-alone document. In particular, the Government's *Greenhouse Challenge for Energy* position paper, launched in December 2004, outlines a package of policy commitments and sets in train processes that will yield further actions during the course of 2005. The key elements of the *Greenhouse Challenge for Energy* policy package are detailed in section 1.

The Victorian Government is also pursuing other strategic initiatives that have important implications for climate change and the potential to contribute to greenhouse gas emissions reduction. Since 2002, climate change issues have been increasingly addressed in a wide range of policies and programs across government.

This fact is reflected throughout the Action Plan Update, with cross-references to key Government strategies, programs and ongoing policy processes that will provide significant greenhouse benefits. A reference guide to all actions is provided at the end of this document.

Key policies and programs that contribute to the Victorian Government's overall greenhouse response are:

- **Greenhouse Challenge for Energy** – following the release of a position paper in December 2004, processes are under way to develop an Energy Technology and Innovation Strategy, a Victorian Renewable Energy Strategy and a Victorian Energy Efficiency Strategy for release during 2005 – see [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)
- **Sustainable energy programs** – delivered through the Sustainable Energy Authority Victoria (SEAV), to accelerate sustainable energy outcomes across the economy. Details of SEAV's programs and activities are contained in its Business Plan and Annual Report – see [www.seav.vic.gov.au](http://www.seav.vic.gov.au)
- **Linking Melbourne: Metropolitan Transport Plan** – a comprehensive 10-year plan for the management and development of Melbourne's transport system, released in November 2004 – see [www.linkingvictoria.vic.gov.au](http://www.linkingvictoria.vic.gov.au)
- **Melbourne 2030** – the keystone planning strategy for managing growth and change across metropolitan Melbourne and the surrounding region over the next 30 years – see [www.melbourne2030.vic.gov.au](http://www.melbourne2030.vic.gov.au)
- **Towards Zero Waste Strategy** – a 10-year strategy for driving improvement in solid waste management and more efficient use of resources. The Strategy is being developed in consultation with local government and other key stakeholders and is due to be finalised in the first half of 2005 – see [www.ecorecycle.vic.gov.au](http://www.ecorecycle.vic.gov.au)

Over the course of 2005 and beyond, specific policies set out in the Action Plan Update will evolve and programs will be added to and extended. The Government's greenhouse response will be reviewed and updated on a regular basis to ensure that Victoria is pursuing the most effective pathways for abatement and adaptation and to provide Victorians with an up-to-date picture of the Government's commitments and actions 'on the ground'. Key factors to be taken into account in the further development of action on climate change will be responding to national and international policy developments and taking up new opportunities arising from research and technology development.

### **Building on action to date – key new directions under the Victorian Greenhouse Strategy Action Plan Update**

- the Victorian Government's commitment to support the development and implementation of a national emissions trading scheme (see section 1)
- a commitment to engage with key stakeholders to determine the most efficient and effective approach to managing the growth in air conditioner use and the implications of this for summer peak electricity demand and greenhouse gas emissions – the aim of this process will be to introduce policy responses to take effect from summer 2005/06 (see section 1.2)
- trialling the reporting and disclosure of greenhouse gas emissions by large emitters in Victoria, as a basis for driving the implementation of similar arrangements at the national level through the National Pollutant Inventory (see section 1.5)
- engagement with Victorian Universities and TAFEs to promote greater consideration of climate change issues in curricula, and to raise the profile of climate change and sustainability issues in the operation of tertiary campuses (see section 1.7)
- launching a major communications campaign in 2005 to raise community awareness of climate change and the actions that can be taken by individuals to play their part in reducing emissions (see section 2.1)
- expanding the Government's successful community and regionally-based partnership programs to cover six regions in Victoria, and engaging with these regions to deliver stronger, targeted approaches to the delivery of household and small business energy efficiency programs and to address adaptation issues (see sections 2.1, 2.2 & 4.2)
- increasing funding for the successful CCP™ Rural Victoria program, and to support efforts by local councils across the State to implement actions with their local communities (see section 2.3)
- supporting innovative approaches to reducing travel demand, including funding for a regional TravelSmart program in Melbourne's northern suburbs and providing support for the establishment of car sharing programs in the Melbourne metropolitan area (see section 3.2)
- building on previous research into the impacts of climate change to undertake vulnerability assessments in priority areas (including water supply, fire risk, community health, biodiversity and primary industry) and where appropriate, commence the development of adaptive responses (see sections 4.1 & 4.2)
- drawing on the lessons learned from past Government funding support for the establishment of greenhouse sinks, to take steps to drive private sector capacity building and interest in investment in carbon sinks (see section 5.2)
- using the Government's purchasing power to influence the development of markets for 'greenhouse-friendly' products and services (see section 6)

## Positioning Victoria's economy for a low carbon future

The Victorian Government believes it is critical to ensure that Victoria's economy is positioned to achieve emissions reductions in a manner that protects Victoria's economic interests, minimises costs to industry, and facilitates the exploitation of domestic and export market opportunities in 'greenhouse-friendly' processes, products and technologies.

The transition to a low carbon future will inevitably take place over several decades. In the *short to medium term*, this will require a continuing effort to improve the performance of existing industries through greater efficiency in both the production and consumption of energy; and to increase the share of total energy demand that is met by renewable energy.

A smooth transition to a low carbon economy will also require government and business to make decisions with an eye to the *longer term*. In particular, it will be important for government and business to:

- support research, development, demonstration and commercialisation of technologies such as geosequestration and renewable energy that will be required if deep reductions in greenhouse gas emissions are to be achieved over the course of this century
- make decisions and investment with a view to meeting emerging domestic and export market opportunities for products that address the needs of a low carbon future, and which set Victoria on a path to reduced rather than higher greenhouse gas emissions.

The energy sector is the largest source of Victoria's emissions (68% of total emissions) and, as such, will have a major role to play in reducing the State's greenhouse gas emissions. However, the transition to a low carbon future will have important implications for all sectors of the economy – not just electricity generation. Future economic activity will need to occur with a substantially lower output of greenhouse gas emissions.

The Government released the *Greenhouse Challenge for Energy* position paper in December 2004. This paper sets out a package of new commitments and policy processes (see box) to address the Government's energy-related greenhouse policy objectives, including:

- the reduction of greenhouse gas emissions from the stationary energy sector
- facilitating Victoria's transition to a low carbon future
- protecting Victoria's economic interests by maintaining a secure, reliable and affordable supply of energy
- creating an attractive environment for investment in the energy sector and wider economy
- ensuring the Latrobe Valley's long-term future.

A central feature of the *Greenhouse Challenge for Energy* policy package relates to the role of emissions trading in achieving efficient and effective abatement of greenhouse gas emissions. The Victorian Government supports the development and implementation of a national emissions trading scheme led by the Commonwealth Government, in close consultation with all States and Territories. However, in the absence of a commitment by the Commonwealth to take the lead on this issue, Victoria is continuing to cooperate with other States and Territories to design a national emissions trading scheme that, when introduced, will address their interests.

The *Greenhouse Challenge for Energy* policy package represents a major advance in the Victorian Government's response to greenhouse policy for the energy sector and, therefore, provides important direction for the Government's efforts to position Victoria's economy for a low carbon future.

The *Victorian Greenhouse Strategy Action Plan Update* includes actions that will work in concert with the suite of policies and programs being pursued through the *Greenhouse Challenge for Energy*.

### Greenhouse Challenge for Energy policy package

The key elements of the policy package include:

- support for a national emissions trading scheme
- introduction of requirements for large emitters to report and disclose their greenhouse gas emissions
- an Energy Technology Innovation Strategy

to develop and demonstrate technologies in which Victoria has a particular advantage (ie. cleaner brown coal) and technologies relating to renewable energy and energy efficiency

- cooperation with other States and Territories to drive the growth of renewable energy – including the consideration of a State and Territory-based mandatory renewable energy target
- a Victorian Renewable Energy Strategy to deliver the Government's renewable energy targets – including increasing the share of Victoria's

electricity consumption from renewable energy sources to 10% by 2010, and facilitating the development of up to 1000 MW of wind energy in appropriate locations by 2006

- a Victorian Energy Efficiency Strategy to build on existing measures and initiate new policies and programs to drive substantial improvements in energy efficiency.

The position paper is available on the web at [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)

## 1.1 Improving the greenhouse performance of Victorian businesses

### *Greenhouse statutory policy - EPA Greenhouse Program*

The Environment Protection Authority (EPA) Greenhouse Program is the first regulatory greenhouse and energy efficiency program for industry in Australia. Under the *State environment protection policy (Air Quality Management)* businesses subject to EPA Works Approvals and Licensing are required to:

- implement best practice with respect to energy efficiency and greenhouse gas emissions for new investments; and
- conduct energy audits for existing licensed premises and implement actions that have a financial payback of up to three years.

Approximately 500 EPA licensees have conducted energy audits and delivered significant energy efficiency savings. A review of action plans that have been prepared by EPA licensees indicates that these requirements will deliver greenhouse gas emissions reductions in excess of 1 million tonnes (CO<sub>2</sub> equivalent) per annum with a net financial return to business.

\$600,000 will be provided in 2005/06 for EPA to continue its work with energy-intensive industry sectors to drive improvements in energy efficiency and resultant reductions in greenhouse gas emissions, and to continue to develop and employ appropriate statutory greenhouse tools in line with Victorian Government policy.

SEAV will continue to support the ongoing development of the energy services sector, including facilitating the accreditation of energy assessors to support statutory greenhouse programs and other energy sector services.

### *Business Energy Innovation Initiative*

The Business Energy Innovation Initiative (BEII), launched in November 2003, is delivered by SEAV in conjunction with the Australian Industry Group and the Business Council for Sustainable Energy. BEII supports Victorian businesses to identify, design and implement new and innovative applications of energy efficiency technologies that are internationally 'cutting edge', and technologies that combine energy efficiency with sustainable industry practices such as water conservation and cleaner production. The program also encourages the take-up of cogeneration – a proven technology with benefits for businesses that have high heat and power requirements.

Projects established under BEII to date are expected to reduce greenhouse gas emissions by 470,000 tonnes (CO<sub>2</sub> equivalent) per annum. An additional \$700,000 will be provided in 2005/06 to support further projects under this program. Details of BEII can be found in SEAV's Annual Report at [www.seav.vic.gov.au](http://www.seav.vic.gov.au).

### *Promoting greenhouse/energy efficiency innovation in investment facilitation activities*

By influencing new investment to adopt energy and greenhouse-friendly technology and techniques, the Government can ensure that the long-term benefits to the economy of these investments are matched by long-term environmental and sustainability benefits. \$900,000 is being provided in 2005 & 2006 for incentive funding to businesses investing in Victoria for the first time, or re-investing in Victoria, to adopt more sustainable and innovative technology and practices, especially with regard to greenhouse gas emissions.

### *Improving the sustainability of large retail chains*

This program was launched in 2004, with funding of \$300,000 through to June 2006, to promote the adoption of sustainable practices within the large retail sector. It does so by supporting pilot programs that demonstrate the benefits of sustainable and energy efficient design, construction and operation. Companies participating in the pilot program can apply lessons learnt to other sites within their chain. In addition, their efforts can inspire replication by other large retailers as well as smaller enterprises within their supply chain.

### *Considering greenhouse issues in environmental impact assessments*

The review of Victoria's *Environment Effects Act 1978* is taking into account greenhouse issues – the level of emissions and the implications of climate change – as an element in environmental impact assessments. Guidelines and supporting guidance notes will be prepared to facilitate understanding of how impact assessments should address these issues.

## 1.2 Reducing peak energy demand

*Addressing the growth in air conditioner energy use*

Victoria's average electricity consumption is growing at approximately 1.9% per annum. Summer peak electricity demand is growing at a rate of 2.8% per annum, due mainly to increasing use of air conditioners.

As part of the Victorian Energy Efficiency Strategy (to be released in the second half of 2005) the Government will convene a forum of key stakeholders and undertake analysis to develop an understanding of the policy options and economic, social and environmental challenges in managing Victoria's summer peak air conditioning demand. The aim of this process will be to introduce policy responses to take effect from summer 2005/06.

*Interval metering*

The introduction of interval meters will commence in 2006 for customers who require a new or replacement meter. Interval meters record consumption of power at the time of day it occurs, whereas existing conventional electricity meters are, typically, read infrequently (eg. quarterly) and do not convey timely information to consumers regarding their levels and patterns of electricity consumption.

The phase-in of interval meters, being managed through the Essential Services Commission (ESC), has the potential to lead to significant innovations in demand management over time, including:

- enabling consumers to better understand and manage electricity demand;
- allowing electricity retailers to offer prices that reflect variations in the cost of supplying electricity at different times of the day; and
- facilitating the introduction of new technologies such as two-way communication, remote meter reading and automated usage control options - innovations, not possible with conventional meters, which will promote improvements in electricity supply and demand management.

Information on the rollout of interval meters is available on the ESC's website at [www.esc.vic.gov.au](http://www.esc.vic.gov.au).

## 1.3 Supporting renewable energy

*Renewable Energy Support Fund*

In November 2002 the Government set a target that 10% of the State's electricity consumption would be met from renewable energy by 2010. The Renewable Energy Support Fund, launched in September 2003, contributes to meeting this commitment by supporting innovative new small to medium scale renewable energy projects in Victoria. The Fund aims to stimulate the development of the renewable energy sector by reducing the level of financial risk associated with market entry. Government funding is used to leverage private sector finance for projects. Seven projects have so far been approved with a total of \$4.5 million in Government funding. Funding of \$2.2 million is available for this program in 2005/06.

*Electricity Industry Wind Energy Development Act*

In 2004, the Victorian Government introduced the *Electricity Industry Wind Energy Development Act* to facilitate the development of Victoria's wind energy industry by removing barriers to grid connection and providing an assured buyer for power from small wind generators. The Act will ensure that the least cost network upgrade that will connect several wind farms is built, and that wind farms pay only a reasonable share of the grid upgrade cost. The Act also requires retailers to publish and offer standard buy-back rates for small wind generators, thereby providing clarity and transparency for generators who are currently less able to negotiate buy-back rates.

*Geothermal Energy Resources Bill*

Rapidly developing geothermal technology, new exploration techniques, rising energy prices and greater government and market support for clean energy means that interest in geothermal energy is rising across Australia and worldwide. In 2004, the Victorian Government introduced the Geothermal Energy Resources Bill, establishing property rights over geothermal energy and a framework to regulate large-scale exploration and extraction. This will position Victoria to attract and support commercial-scale exploration and extraction of its geothermal energy resources.

#### **1.4 Supporting cleaner energy technologies**

Brown coal will continue to play an important role in Victoria's energy mix. To do so, new technologies will need to be introduced which deliver greenhouse gas emissions intensities significantly lower than current technologies. New low-emission technologies (eg. relating to coal drying and gasification) are being developed which show promise of being competitive with current technologies within 10 years. Such technologies also have the potential to be transferred internationally to countries such as China.

Ultimately, geosequestration will be required. Geosequestration involves the combined processes of CO<sub>2</sub> capture from large point sources of emissions (eg. power stations), and transportation and geological storage of captured gas. However, based on current technologies, the capture and storage of emissions from electricity generation would result in substantially higher electricity prices than generation from gas and renewables. The relative merits of brown coal power may change substantially in coming decades if promising new technologies are further developed and commercialised.

There are still many issues to be resolved before geosequestration can be commercially deployed as a greenhouse abatement strategy. Further research is required to investigate the feasibility of geosequestration technologies, in particular whether they are safe, secure and permanent; capable of dealing with the large volumes of gas from a power station; and able to reduce greenhouse gas emissions at a reasonable economic cost.

To this end, Victoria is participating in national processes – through a working group under the Ministerial Council for Minerals and Petroleum Resources – aimed at progressing the development of geosequestration. In July 2004, all jurisdictions indicated support for the development of nationally consistent regulatory principles for geosequestration. The working group has identified seven key issues that will form the basis for broader community consultation. These issues include: access and property rights; long-term responsibilities; environmental issues; authorisation and compliance; monitoring and verification; transportation; and financial issues.

##### *CRC for Clean Power from Lignite*

This Cooperative Research Centre (CRC) is the principal research organisation addressing technologies to dry coal and increase its combustion efficiency. The Victorian Government contributes \$700,000 per annum to the CRC and is represented on its Board. The term of the CRC expires at the end of June 2006 and the Government is pursuing opportunities to continue this work.

##### *Centre for Energy and Greenhouse Technologies*

The Victorian Government has provided \$14 million to June 2006 to support the Centre for Energy and Greenhouse Technologies. The Centre's mission is to function as a source of expertise and knowledge to the energy, greenhouse gas and investment sectors and to successfully co-invest in new greenhouse gas reducing and sustainable energy technologies – including, but not limited to, technologies relating to electricity generation. The Centre will drive energy technology developments towards commercialisation across a wide spectrum of technologies.

##### *CO2CRC*

To support the development of geosequestration, the Victorian Government will invest \$750,000 over three years (from 2004/05) in the Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC). The CO2CRC is a world leader in identifying suitable geosequestration sites and in understanding the movement of CO<sub>2</sub> underground. In addition to its financial contribution, the Victorian Government is the only Government represented on the CO2CRC's Board.

The Government also supports the CO2CRC's proposal to demonstrate geosequestration, preferably in Victoria.

##### *Carbon Sequestration Leadership Forum*

Victoria is a major supporter of the Carbon Sequestration Leadership Forum (CSLF) – an international climate change initiative that aims to make geosequestration broadly available. Melbourne hosted the 2nd Ministerial Meeting of the CSLF in September 2004. The key outcomes of that meeting included acceptance of the CSLF Technical Roadmap; recognition of ten CSLF projects; release of a CSLF international regulatory report; and agreement on a CSLF stakeholder engagement strategy.

### **1.5 Public reporting and disclosure of greenhouse gas emissions**

Victoria advocates public reporting and disclosure of greenhouse gas emissions for large emitters. This is a key element of the *Greenhouse Challenge for Energy* position paper. Victoria is actively pursuing national approaches to this issue through the processes of the Environment Protection and Heritage Council and the Ministerial Council on Energy.

The reporting and disclosure of greenhouse gas emissions is a prerequisite for emissions trading and is of particular relevance to the finance sector, which faces significant exposure to risks associated with investments that may be impacted by future carbon price obligations resulting from emissions trading. The finance sector also has a significant opportunity to influence consumer, investor and institutional decision making – for example, on the energy efficiency of new equipment and assets.

The Victorian Government supports transparency and public disclosure of risk, including the risk posed to companies by climate change. As such, Victoria, together with the National Australia Bank, ING Investment Management and Phillips Fox Lawyers, has sponsored a study by Innovest Strategic Value Advisors into the carbon risk exposure and opportunities for Victorian industry. This study will provide investors and the public with an insight into the nature and extent of carbon risk for specific industry sectors.

#### *National Pollutant Inventory - Victorian greenhouse pilot*

The Victorian Government supports proposals to include greenhouse gases in the NPI. To facilitate development of these proposals, the Government will provide \$200,000 in 2005/06 for EPA to commence a Victorian greenhouse gas emissions reporting and disclosure pilot program.

The NPI, established in 1998, provides Australians with free access to information on the types and amounts of pollutants being emitted in their community. In 1995 Victoria ran a number of NPI pilots ahead of the implementation of the national system to facilitate the implementation of the Inventory.

#### *Working with the finance sector*

EPA coordinates and promotes United Nations Environment Programme (UNEP) Finance Initiatives in Australasia. In 2005/06, the Government will provide \$100,000 to support greenhouse-related initiatives with institutional investors and financial institutions.

As Secretariat to a new Investors Group on Climate Change, EPA will work with Group members (VicSuper, BT Funds, AMP, Australian Catholic Super) to deliver analysis to funds managers that demonstrates the value and practicality of building climate change assessments into funds management decision-making.

As Chair of the Australasian UNEP Finance Initiative Credit Risk Committee, EPA is working with banks and credit unions to develop an increased range of green home and car loans that provide a discount for homes and cars with lower greenhouse gas emissions.

## 1.6 Working with Victoria's automotive industry

The automotive industry plays a critical role in Victoria's economy – with three of Australia's four motor vehicle manufacturers based in the State along with numerous component producers. The success of the industry depends on its capacity to supply not only the Australian domestic market, but also to export vehicles and automotive components.

With motor vehicles contributing a significant share of total greenhouse gas emissions in Australia and overseas, demand for fuel efficient, low greenhouse gas emitting fuels and vehicles will grow. In the short term this will require increased use of currently available alternative fuels and technologies. In the medium to long term, however, technologies capable of delivering deep reductions in vehicle-related emissions will need to be deployed. The long-term sustainability of the Australian-based vehicle industry will depend on its capacity to produce vehicles utilising such technologies.

The Victorian Government will examine options for promoting the adoption of alternative fuels and vehicle technologies, and will consult closely with key industry stakeholders to ensure that policy is designed and delivered in a way that assists the automotive industry to be well-positioned to prosper in a low carbon future.

## 1.7 Education and training for the future

The University and TAFE sectors have a strategic role to play in developing a skilled and informed workforce capable of responding to the challenge of climate change and taking up the business and employment opportunities arising from a low carbon economy. To this end, the Government is providing support for the development in the TAFE sector of curriculum materials relating to climate change and sustainability. The Government is working with tertiary and TAFE institutions to raise the profile of sustainability on their campuses and in their curricula through energy and water conservation, green-purchasing, waste and biodiversity management, and travel behavioural change.

### *Knowledge and Skills for the Innovation Economy*

As part of the *Knowledge and Skills for the Innovation Economy* statement, the Government has provided around \$2 million to support the development of Specialist Centres and innovation projects across the TAFE system that focus on sustainability issues and practices. In addition to developing and delivering new training programs, TAFE institutions are working closely with industry to promote skill development in students by modelling equipment, facilities and activities that incorporate sustainable technologies and practices.

### *RMIT Sustainable Education pilot project*

The RMIT Sustainable Education pilot project will integrate climate change issues into the curricula of selected courses. The results of this pilot project will be published along with tools for climate change education development and case studies of successful programs – see [www.rmit.edu.au/ssp/belp](http://www.rmit.edu.au/ssp/belp).

### *Climate Change Roundtables for Universities and TAFEs*

Climate Change Roundtables for Universities and TAFEs will be held to provide an opportunity for discussion among tertiary education management regarding the skills required by business and industry with respect to climate change issues. The Roundtables will present case studies of successful programs and determine ongoing processes for pursuing action on climate change and sustainability in the tertiary and training sectors.

## Communities shaping their future through action on abatement and adaptation

Climate change is a global problem but also is an issue that demands action at a local level. It is important that individuals, households and local communities play their part in reducing Victoria's greenhouse gas emissions. There is potential to make a major difference to emissions through simple changes in our daily lives. In response to the recent drought, Melburnians reduced their water consumption by 19% compared to average consumption levels in the 1990s. The community needs to make a similar commitment to improve energy efficiency and reduce the State's greenhouse gas emissions.

Under the 2002 *Victorian Greenhouse Strategy* the Government supported a range of community action programs which have demonstrated the potential for greenhouse gas emissions reductions. Over 40 projects across the State have been undertaken through partnerships involving local governments and community organisations.

The experience gained from these projects has raised awareness and built capacity within local government and community organisations and provides a strong basis for further action. It has demonstrated the importance of leadership by local government in community-based abatement projects and the benefits of regional communities working together and sharing information and resources.

Climate change will have a profound impact on the lives of all Victorians over the next 50 years. In 2004 the Government launched a major community consultation process, *Adapting to Climate Change*, which highlighted that community engagement and regional partnerships will be the key to improving the State's ability to cope with the impacts of climate change. Consequently, in addition to community-based efforts to reduce emissions, addressing climate change impacts is an important new area of focus for community action under the Action Plan Update.

### 2.1 Challenging Victorians to make a difference

Household energy use is responsible for more than 20% of Victoria's greenhouse gas emissions. Residential electricity consumption is growing at over 2% each year and peak demand for electricity is growing even faster. Per capita greenhouse gas emissions from household energy use are higher in Victoria than any other Australian state. There are several reasons for this – high demand for heating energy, widespread use of electric hot water systems, use of clothes dryers, increased use of air conditioners and the fact that most Victorian electricity is produced by burning brown coal – the most greenhouse gas intensive form of energy in Australia.

On average, Victorian households spend about \$1,300 per year on energy use in the home. There are dozens of simple and easy changes that can save households hundreds of dollars on their energy bills and reduce greenhouse gas emissions.

#### *Engaging all Victorians to take action*

A major communications campaign will be conducted in 2005 to raise awareness of climate change and highlight simple actions that can be taken by all Victorians to reduce greenhouse gas emissions. This campaign will build on the Household Green Power campaign outlined below.

#### *Household purchases of Green Power – '5% Challenge'*

Householders can make a real difference by purchasing Green Power<sup>5</sup>. A significant take-up of Green Power by Victorian households will also have the benefit of stimulating the development of the renewable energy industry. The Government is aiming to get 5% of households to buy Green Power. In March 2005 the Government launched a promotional campaign with energy retailers – "The Power of Every One" – see [www.greenpower.gov.au](http://www.greenpower.gov.au).

<sup>5</sup> Green Power is a national accreditation program that sets stringent environmental and reporting standards for renewable energy products offered by electricity suppliers to households and businesses across Australia. When a government-accredited Green Power product is purchased, the energy supplier ensures that the equivalent amount of energy is produced from renewable sources, avoiding the use of fossil fuel power.

#### *Household behavioural change - regional pilot program*

Building on the experience of small-scale projects with individual households and neighbourhoods funded under the 2002 *Victorian Greenhouse Strategy's* Community Action Fund<sup>6</sup>, the Government will provide funding to roll-out a household behavioural change pilot program across a larger target audience in regional Victoria. The focus will be on reducing energy use in the home. The pilot program will focus on households in the North Central regional partnership area (see below).

#### *Small business energy efficiency - regional pilot program*

In partnership with local government, small business and an energy performance contractor, the Government will pilot new approaches to the delivery and funding of energy audits and retrofits for small businesses. This program will target a regional town with the aim of achieving high levels of engagement and take-up of energy efficiency opportunities. This project will be delivered in the South West regional partnership area (see below).

The pilot will provide a valuable demonstration of the potential of energy performance contracting to deliver energy efficiency measures for small businesses.

## **2.2 Partnerships for community action**

To date the Government has established three regional partnerships for climate change action in Victoria (North Central, South West and Westernport). These partnerships have formally brought key players together and provided coordination of activities relating to climate change in each region.

This model has been particularly successful in engaging a wide range of regional stakeholders in greenhouse abatement activities – including clusters of local governments, tertiary education institutions, community groups and Catchment Management Authorities.

Action in 2005/06 will see an extension of partnerships to a total of six regions, involving 37 local government areas. The focus of the partnerships will be on emissions abatement and a number of new regional adaptation projects. A total of \$1.2 million will be provided for these activities in 2005/06. In addition, support to individual local governments will be provided through support for the Cities for Climate Protection™ program (see section 2.3).

#### *North Central Victoria*

The Central Victorian Greenhouse Alliance (CVGA) comprises 13 local councils and 11 businesses, Catchment Management Authorities, government and community organisations. Government support for the CVGA's broad range of activities will be extended through to mid 2006.

The CVGA has set a goal to reduce its greenhouse gas emissions by 30% below 2000 levels by 2010, with a target of zero net emissions by 2020. To achieve this, the CVGA has been working with member organisations and in the community on energy efficiency, renewable energy and tree planting projects. Projects undertaken so far include the development of a Climate Friendly Schools program engaging all 167 schools in the region and a toolkit for regional carbon investment.

The CVGA's experience in community-based projects provides a strong basis for its involvement in the household behavioural change regional pilot program (see above).

In addition, the region will be the focus of a pilot project on climate change impacts and adaptation, to be managed through the North Central Catchment Management Authority (see section 4.2).

#### *South West Victoria*

The South West Sustainability Partnership (SWSP) consists of 16 groups including councils, educational institutions and water, coast and catchment authorities. In 2004 the Partnership received funding to support expansion of its activities to address local greenhouse issues. The Partnership is working on energy efficiency, tree planting and transport issues in the Glenelg-Hopkins region. As noted above, SWSP will be involved in the small business energy efficiency regional pilot program (see above).

#### *Westernport*

The Westernport Greenhouse Alliance (WPGA) – comprising the Cities of Frankston and Casey and the Shires of Bass Coast, Cardinia and Mornington – was formed in June 2004. Over the next year WPGA is planning to focus on tree planting, reducing greenhouse gas emissions from agriculture, community education, climate change adaptation and energy efficient street lighting. To assist WPGA in its adaptation work, the region will receive specific funding to undertake research into the local impacts of climate change as a basis for further work to develop regional adaptation strategies (see section 4.2).

<sup>6</sup> Details of all projects funded under the Community Action Fund (2003 - 2005) are available at [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)

#### *North East Victoria*

The Government is commencing work with a new regional grouping of councils in North East Victoria, comprising the City of Wodonga and the Shires of Moira, Alpine and Towong. Funding will be provided to support the development of partnerships (including seeking the involvement of other councils, the local Catchment Management Authority and other local groups) for activities relating to emissions abatement and adaptation.

#### *Northern Metropolitan*

Funding will be provided to the Northern Alliance for Greenhouse Action (NAGA) – a group of six councils in Melbourne's northern suburbs (Darebin, Moreland, Banyule, Whittlesea, Hume and Nillumbik). This will support the expansion of the Alliance's work on local greenhouse issues.

NAGA has recently conducted business and household energy efficiency programs. It will also be involved in the delivery of a new travel behaviour change program across its six municipalities. The program will be rolled out as part of the Government's TravelSmart initiative which aims to achieve a sustainable change in personal travel behaviour using customised campaigns in conjunction with local governments, schools, universities and workplaces (see section 3.2).

#### *Gippsland*

The Gippsland Catchment Management Authority, in partnership with local councils, is receiving funding in the first half of 2005 to undertake research into the local impacts of climate change as a basis for further work in developing regional adaptation strategies. The group will also be developing a Gippsland Regional Climate Change Action Plan (see section 4.2).

### **2.3 Working with local government**

#### *Support for Cities for Climate Protection™*

Victoria leads the way in local government action on climate change. Fifty-eight local government areas (covering 86% of Victoria's population) are involved in the CCP™ program. This program provides a framework for action to reduce greenhouse gas emissions from local government operations, and for local governments to work with their communities to achieve emissions reductions across a range of activities.

Since 2002, the Victorian Government has supported the CCP™ program with a particular emphasis on the recruitment of, and support for, rural and regional councils. The Government provides funding for 'advancing action' to all councils within CCP™ Rural Victoria. In 2005/06, the Government will provide \$300,000 to continue this program and to support additional activity by CCP™ Councils across Victoria relating to action within their local communities. Activity will initially focus on CCP™ Plus Councils pursuing opportunities for greenhouse benefits from local economic development.

#### *ECO-Buy*

ECO-Buy – the Victorian-based local government green purchasing program – is a joint initiative between the Municipal Association of Victoria (MAV) and the Victorian Government. This program works with councils to increase procurement of recycled, greenhouse-friendly and environmentally preferred products.

Membership of ECO-Buy has grown rapidly over the past three years. Sixty Victorian councils are currently members, representing over 70% of local government areas in the State. ECO-Buy is driving real change in the marketplace, with expenditure on green products by ECO-Buy members increasing from \$5.9 million in 2001 to \$36.7 million in 2004, including \$11.3 million on greenhouse-friendly products.

In 2005/06 the Government will provide \$100,000 for the ECO-Buy program to enable it to expand by recruiting new councils as well as developing additional resources to assist councils with their green purchasing. Specific program initiatives include: ECO-Find – a free online database of green products and suppliers ([www.mav.asn.au/ecobuy](http://www.mav.asn.au/ecobuy)); and ECO-Bonus – an innovative incentive scheme that rewards ECO-Buy members who purchase products from participating suppliers. Over 40 green suppliers have so far joined the ECO-Bonus scheme and are offering a range of incentives to members who buy environmentally-friendly products.

One of the key long-term challenges facing the Victorian community is the sustainability of our urban environments. The pressures of population growth, and increasing standards of living that are driving ever greater consumption of resources, highlight the need for changes that reduce environmental and social impacts associated with life in urban areas.

Given the long life span of the built environment and urban infrastructure, it is important that the implications of climate change are considered early in the planning stage.

Recent projections estimate that, over the next 30 years, Melbourne's population will grow by up to one million people and our city will need to accommodate an additional 627,000 households. Continued population growth, combined with demographic trends towards an ageing population and smaller household sizes, will create new pressures on our cities, with huge implications for how we manage future land use, urban development, waste issues and the transport network.

*Melbourne 2030* is the Victorian Government's keystone planning strategy for managing growth and change across metropolitan Melbourne and the surrounding region over the next 30 years. *Melbourne 2030* was developed within a sustainability framework and includes as a key direction a commitment to 'contribute to national and international efforts to reduce greenhouse gas emissions' (Policy 7.3 – A Greener City) – see [www.melbourne2030.vic.gov.au](http://www.melbourne2030.vic.gov.au).

In practical terms, this means containing urban sprawl and continuing the trend towards higher density living in appropriate locations, especially around key activity centres and public transport nodes. These issues have significant implications for future trends in relation to greenhouse gas emissions from transport and from energy use in the built environment.

It is also important to continue to promote more environmentally-sensitive housing and other development in non-metropolitan Victoria.

### 3.1 Sustainable neighbourhood design

As part of implementing *Melbourne 2030*, the residential subdivision provisions in Clause 56 of the Victoria Planning Provisions are being updated. Draft *Sustainable Neighbourhood Provisions* are being prepared for public consultation. The provisions will apply the Neighbourhood Principles of *Melbourne 2030* to urban areas throughout the State. In addition to existing energy efficiency requirements for lot orientation, the draft provisions will propose that greenhouse issues are considered more closely in the design of residential subdivisions by encouraging reduced car use – with public transport easier to use, and walking and cycling more realistic options in daily life.

### 3.2 Influencing travel demand

As our population grows so too does the demand for travel. This is resulting in increasing pressures on transport systems and the environment. The need to shift to a low carbon economy reinforces the directions already being pursued by the Government to reduce car dependence, traffic congestion and commuter distances travelled by extending the public transport network, improving public transport services and focusing new residential developments around places of employment.

*Linking Melbourne: Metropolitan Transport Plan* is the Government's comprehensive 10-year plan for the management and development of Melbourne's transport system, released in November 2004. The Plan lays the foundations for achieving the Government's target that by the year 2020, 20% of motorised trips will take place on public transport – see [www.linkingvictoria.vic.gov.au](http://www.linkingvictoria.vic.gov.au).

#### *Sustainable development of Transit Cities*

The Transit Cities program, launched in 2001, delivers integrated urban renewal and transport projects to 13 urban centres in the metropolitan area and across the State<sup>7</sup>. The program coordinates and promotes public and private sector projects aimed at creating safe, vibrant and accessible communities centred on and around public transport. The program has the potential to deliver greenhouse benefits by building in energy efficiency improvements at the design and project planning stages. Funding of \$150,000 will be provided to the Transit Cities program to enhance the greenhouse performance and overall sustainability of local area planning processes.

#### *TravelSmart*

The TravelSmart program is a key element of the travel demand management strategy outlined in the *Linking Melbourne: Metropolitan Transport Plan*. Since 2002 the program has worked with local governments, schools, universities and workplaces to achieve sustained changes in personal travel behaviour.

A key element of the new community action partnership to be launched with the Northern Area Greenhouse Alliance (NAGA) will be the roll-out of a travel behaviour change program utilising the TravelSmart model. This will involve action across six municipalities in the northern suburbs of Melbourne, including Darebin, Moreland, Banyule, Whittlesea, Hume and Nillumbik (see section 2.2).

#### *Car sharing programs*

Car sharing programs have been operating successfully in Europe and North America for over 30 years. The schemes have boomed in the last five years with the advent of web-based booking and are now operating in Melbourne and Sydney. Car sharing schemes have a number of environmental and social benefits. Experience overseas shows that they result in an overall reduction in car usage and increased use of alternative transport modes, such as walking and cycling. A decrease in use of private transport reduces traffic congestion and greenhouse gas emissions. The Victorian Government will provide \$100,000 to support the development of car sharing schemes in Melbourne.

### **3.3 Improving the energy efficiency of the built environment**

There is major scope for improving the energy efficiency of Victoria's building stock. Energy use in residential and commercial buildings is responsible for around 16% and 12%, respectively, of Victoria's total greenhouse gas emissions.

The *Greenhouse Challenge for Energy* position paper outlined a range of energy efficiency initiatives that will be progressed during 2005 through the Victorian Energy Efficiency Strategy and the National Framework for Energy Efficiency.

The Government's immediate focus is on driving improved energy efficiency in new commercial and residential buildings, particularly through regulatory change. Ensuring that new homes – of which around 30,000 are constructed each year – and office buildings incorporate high levels of energy efficiency will reduce greenhouse gas emissions, improve comfort and lower energy costs for building occupants.

An equally important, but more complex and longer term task, is to improve the energy efficiency of existing buildings. The Government is currently exploring – through work to develop the Victorian Energy Efficiency Strategy – options for retrofitting poor performing existing stock. One of the simplest and most effective approaches to date has been to assist consumers to select appliances and fixtures that reduce energy use and greenhouse gas emissions.

<sup>7</sup> The 13 Transit Cities are: Ballarat, Bendigo, Box Hill, Broadmeadows, Dandenong, Epping, Footscray, Frankston, Geelong, Latrobe, Ringwood, Sydenham and Werribee.

### *Energy efficiency standards for new commercial buildings*

The Victorian Government is committed to the introduction of mandatory standards relating to energy efficiency for new commercial buildings. Work on standards is underway as part of a national process through the Australian Building Codes Board. The Board has released details of the proposed standards and a Regulatory Impact Statement is due to be released in the first half of 2005. The new standards are scheduled for inclusion in the Building Code of Australia by May 2006. These standards will be incorporated in the Victorian Building Regulations, to apply to all new commercial buildings constructed in Victoria, from May 2006.

### *Commercial Office Building Energy Innovation Initiative*

The Commercial Office Building Energy Innovation Initiative (COBEII) was launched in 2003 to support projects involving new and existing office buildings that demonstrate innovative design and reduced energy use with a view to reducing greenhouse gas emissions. COBEII, which is a joint initiative of the Property Council of Australia and SEAV, will receive further funding of \$200,000 in 2005/06.

### *5 Star energy efficiency for new homes*

Victoria is a leader in housing energy efficiency and was the first State to amend Building Regulations to require all new dwellings to achieve a minimum 5 Star energy efficiency rating. The regulations, which commenced operation in 2004 and will take full effect from July 2005, will halve the energy use for heating and cooling in new homes, resulting in significant energy savings and an annual reduction in greenhouse gas emissions of 1.3 tonnes per household.

### *Energy efficiency in home renovations*

There is an excellent opportunity to drive cost-effective energy efficiency improvements in existing homes when homeowners undertake major renovations requiring a building permit. The Australian Building Codes Board has proposed a new national 5 Star energy efficiency standard for all new residential buildings and a Regulatory Impact Statement for the new standard is due to be released in the first half of 2005. The new standards are scheduled for inclusion in the Building Code of Australia in May 2006 and will be applied to state building regulations pertaining to renovations.

### *Solar hot water rebate*

Hot water accounts for 25% of an average Victorian household's energy use. A solar hot water system can reduce this consumption by around three-quarters. To help increase uptake of solar water heating, the Government introduced a rebate program in July 2000. Rebates of up to \$1500 are available for the purchase of a new accredited solar water heater when replacing an existing gas or solid fuel hot water system, or converting an existing hot water system to solar. For most other situations, such as replacing an electric hot water system or installing a solar hot water system in a new home, an alternative benefit is available through the Commonwealth Government's Mandatory Renewable Energy Target<sup>8</sup>.

As part of the Victorian Government's 5 star energy efficiency requirements (see above), from July 1 2005, all new homes will be required to install either a solar hot water system or a rainwater tank.

### *Consumer information on energy efficient appliances*

Victoria actively supports national efforts to introduce minimum energy performance standards for appliances. These programs drive a process of continuous improvement in the appliance manufacturing industry for the development of locally produced energy-efficient products. They also seek to influence consumer choice through appliance energy-star rating labelling and consumer purchasing guides, and by educating retailers about the energy efficiency features of the products they sell.

<sup>8</sup> Renewable Energy Certificates (RECs) are a form of 'currency' created by the *Commonwealth Renewable Energy (Electricity) Act 2001*. Owners of selected solar hot water systems that are proven to reduce greenhouse gas emissions are granted RECs for selecting a renewable energy source in preference to electricity. New home owners who purchase solar hot water systems that attract RECs are able to obtain a cash back offer of similar value to the rebate from manufacturers by signing over or 'trading' these RECs at the time of purchase.

#### *Water efficient shower roses*

The Government has committed \$10 million to a Water Rebate Scheme over four years to mid-2007. As part of this Scheme, Victorians can receive a \$10 rebate on the purchase of any AAA-rated water-efficient shower rose, which reduces both water and energy use in the home. Using funds from the Water Rebate Scheme, Victorians purchased 3,225 AAA water-efficient shower roses between September 2003 and December 2004, resulting in an estimated annual saving of up to 3,500 tonnes of greenhouse gas emissions.

### **3.4 Towards Zero Waste**

Waste reduction and improved management of waste streams is a major issue given rising costs for waste disposal and increasing concern about the environmental impacts, including greenhouse gas emissions, of landfills and wastewater treatment facilities. Despite making major inroads into solid waste recycling over the last decade, Victorians continue to generate more waste each year.

This has implications for climate change. Waste makes up around 2% of Victoria's annual emissions of greenhouse gases<sup>9</sup>. There are also lost opportunities in terms of the energy embodied in waste disposed in landfills – recycling materials can deliver energy savings of up to 90% over the use of virgin materials.

The challenge as a community is to pursue a 'materials-efficient' economy, in which waste generation is progressively reduced, materials are used and re-used more efficiently and waste disposal is seen as a last resort. Industry has an important role to play in relation to the design, manufacture and packaging of products that have reduced environmental impacts and that are amenable to recycling.

The Government is pursuing objectives in this regard through its *Towards Zero Waste* strategy. As outlined in the draft strategy released in March 2003, the Government is setting targets for the reduction and recovery of solid waste to drive the establishment of new waste management systems and infrastructure. Current projections indicate that these initiatives can result in a 15% reduction in solid waste by 2013, with resulting greenhouse gas emissions reductions – [www.ecorecycle.vic.gov.au](http://www.ecorecycle.vic.gov.au).

### **3.5 Managing climate change impacts**

In early 2005, storms across Victoria, particularly in Geelong and metropolitan Melbourne, highlighted the vulnerability of urban areas to the impacts of extreme weather events. Detailed risk assessments of such events, as well as the more gradual impacts of climate change, will be research priorities as part of action on impacts and adaptation. In particular, it will be important to ensure that the consideration of potential climate change impacts and development of adaptation measures are integrated into further policy development in relation to land use and infrastructure planning and local area strategies.

Specific areas of activity during 2005 and 2006 will include:

- a vulnerability assessment of public and private infrastructure (see section 4.1)
- pilot project with regional clusters of local governments to identify climate change risks and possible adaptation responses (see section 4.2)
- work by Melbourne Water directed to addressing climate change impacts in relation to Melbourne's water supply, sewerage and drainage systems (see section 4.1).

<sup>9</sup> Methane, a greenhouse gas 21 times more potent than CO<sub>2</sub>, is released from landfills and wastewater treatment plants where organic waste decays anaerobically.

Victoria's climate is already changing. In recent years, the State has experienced higher average temperatures, increased severity and frequency of droughts, and extreme weather events such as storms with high intensity rainfall. There is an increasing realisation that this is the beginning of major long-term change, not just cyclical climate variability.

The increase in atmospheric greenhouse gas concentrations since the industrial revolution will continue to affect global climate for centuries to come – even with action to reduce greenhouse gas emissions, our climate will continue to change.

Projections by CSIRO indicate that, by 2070, Victoria's average annual temperatures are expected to increase by between 0.7°C and 5.0°C, accompanied by decreases in rainfall, especially in the spring. Changes in temperature and rainfall patterns will have significant impacts on Victoria's ecosystems, society and the economy, especially in those regions and sectors that are already currently challenged or under stress due to other pressures. Detailed information on climate change projections and their implications for Victoria can be found in the booklet – *Understanding Climate Change* – available on the web at [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au).

The Victorian Government has, and continues to support research to improve understanding of the potential impacts of climate change. This research underpinned regional profiles, released in August 2004, that identify areas and activities at specific risk from climate change impacts within each of Victoria's 10 Catchment Management Authority regions.

While priority must continue to be given to reducing greenhouse gas emissions to limit the extent and severity of climate change, it is also important to develop adaptation strategies that lessen the impacts of climate change on the environment, society and the economy. Adaptation strategies can also be developed to exploit opportunities that may arise in a changing climate.

In July 2004, the Minister for Environment launched a public consultation process regarding Victoria's approach to adaptation to climate change. The consultation process involved:

- community engagement through a series of public meetings and information sessions across the State to raise awareness of climate change
- the release of a Consultation Paper – to which more than 40 submissions were received.

The views of stakeholders have been taken into account in formulating the climate change impacts and adaptation actions discussed below. Reflecting the emerging priority of adaptation issues, the Government has allocated over \$800,000 to these activities in 2005 & 2006.

Uncertainties about the nature and magnitude of the impacts of climate change mean that research will remain an underlying component of action with respect to climate change impacts and adaptation. However, action on adaptation cannot be deferred until all questions are answered. Recognising the precautionary principle, adaptation action can be progressed now, averting serious future damage and/or avoiding the need for more costly remedial action in the future.

#### *Climate Change Research and Project Database*

To support future research work and community capacity building, the Victorian Government will publish an on-line database of projects and research related to climate change impacts and adaptation in Victoria on the Government's greenhouse website – [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)

The database will include details of current and completed projects and provide links to other relevant reports.

#### 4.1 Assessing and reducing the vulnerability of key sectors

##### *Reducing the vulnerability of Victoria's water supply*

Projections of changes in rainfall patterns and a reduction in total rainfall across the State highlight that water will be a key area of vulnerability as a result of climate change. CSIRO research, commissioned by Melbourne Water, is examining the potential implications of projected changes in climate – including possible changes in rainfall, temperature, evaporation and humidity – for Melbourne's catchments, sewerage and drainage systems. This research project will assist Melbourne Water to plan a more robust water supply system. It will also inform consideration of the implications of climate change for catchment fire risks, flooding, water quality and water recycling.

The Government will continue to work with water authorities and other stakeholders to improve understanding of the impacts of climate change on Victoria's water and drainage systems. *Our Water Our Future* – the Government's keystone strategy for a secure water future – outlines a pathway for sustainable water management which is particularly important given the potential long-term reductions in water availability resulting from climate change.

##### *Reducing coastal vulnerability*

Past research efforts have focussed on the impacts on coastal areas of sea level rise due to climate change. However, climate change will also impact on coastal areas through its effects on storms and tidal surges.

During 2005 and 2006, a priority will be to work with the Victorian Coastal Council and other stakeholders to develop integrated assessments of the vulnerability of Victoria's coastal zones to these effects, and to determine appropriate adaptation responses. Particular attention will be directed to identifying actions that can be taken to mitigate adverse impacts on physical assets and urban infrastructure in coastal areas. For example, the Government and local councils could cooperate to avoid development and investment occurring in coastal areas expected to be subject to inundation due to sea level rise or damage from storm surges.

**In addition to the overarching considerations discussed under Strategic Setting, the following factors have an important influence on the scope of, and priorities for work in Victoria on climate change impacts and adaptation.**

- An **integrated approach** is needed to ensure that the development and implementation of adaptation actions occurs in a manner which:
  - takes into account the range of environmental, social and economic objectives of the Victorian community
  - promotes greenhouse gas abatement measures where these are relevant to the business or community group that is the subject of adaptation efforts
  - recognises that initiatives driven by other community objectives – for example, sustainable building design, water conservation and biodiversity protection – are helping to position Victoria to adapt to climate change.
- A **risk management approach** should be used to determine the nature and timing of responses, taking into account:
  - the level of risk to regions and systems due to climate change impacts and, related to this, the level of benefits and the cost-effectiveness of the outcomes expected to be achieved through action to address these impacts
  - the relative benefits and costs of taking action now rather than later.
- **Shared responsibilities** recognising that all levels of government, together with businesses, communities and individuals, will need to plan for and adapt to climate change.
- **Flexibility in the face of changing circumstances** – an effective program to address the impacts of climate change requires flexibility to adjust to developments over time such as new information on impacts, technological developments, and changes in other factors (stresses) that may exacerbate the impacts of climate change.

### *Assessing the vulnerability of Victoria's infrastructure*

Improving understanding of the impacts of climate change on infrastructure is a priority because of the critical role infrastructure plays in supporting economic activity and community life. The long life of infrastructure assets also means that current planning needs to take into account the potential impacts of future climate change. Building in capacity to cope with the impacts of climate change (for example, building drainage infrastructure to cope with more frequent and severe storm events) is likely to be more cost-effective than dealing with the damage resulting from a failure to do so.

The starting point for this will be a review during 2005 and 2006 of public and private infrastructure to identify areas of vulnerability to climate change and opportunities to incorporate adaptation responses.

### *Determining responses to changes in fire risk*

Climate change has the potential to affect the intensity, return periods and spread of bush and grass fires. Victoria is working with other jurisdictions to identify changes in the vulnerability of natural and human assets to these risks and to develop appropriate hazard reduction and land use planning responses. This project will provide natural resource managers, emergency response coordinators and local communities with information on changes to fire danger at a number of key Victorian sites.

### *Reducing the vulnerability of Victoria's biodiversity*

Victoria's biodiversity is particularly vulnerable to climate change. Work to date has focused on the potential effects of a range of climate change scenarios on selected Victorian flora and fauna.

Future work will occur within the framework established by the *National Biodiversity and Climate Change Action Plan*. Victoria led the development of this three-year plan (2004-2007) which outlines specific objectives, strategies and actions that will be taken to reduce the impacts of climate change, and promote conservation of species and ecological communities. An early priority for action is an assessment of the vulnerability of Victoria's biodiversity to invasive species.

### *Addressing the vulnerability of primary industry*

Research efforts to date have resulted in mapping of the potential land suitability of key agriculture commodities under climate change scenarios. In 2005 & 2006, work will focus on continued development of science capability (such as models, assessment tools and collaborative partnerships). Specific projects will include:

- further assessments of climate change impacts on key agricultural industries including grains, horticulture, dairy, fisheries and forestry – this work will assist in identifying regions and sectors most vulnerable to climate change impacts and the setting of priorities for further research
- modelling of changes in habitat distribution of various weed species
- incorporation of climate change information into extension programs.

### *Community health and implications for health systems*

International and national research has identified a range of significant climate change-induced health effects, which are expected to increase in the future. There has, however, been limited research to date on the impacts of climate change on human health in Victoria.

The Government will commence work in 2005 to address this knowledge gap with a view to informing future policy development, in particular, clarifying the range of implications for health care service delivery and identifying the priority areas for further work on adaptive responses.

## **4.2 Building the community's capacity to adapt**

An effective adaptation strategy requires that the community is informed about the potential impacts of climate change and the adaptive responses needed to address these impacts.

While government has a key role to play, community engagement is needed to ensure community ownership of the process of determining adaptive solutions that 'make sense on the ground'. Challenges can often be overcome when communities work with researchers to find solutions appropriate to local conditions.

The Victorian Government will foster partnerships between its departments and agencies, and local governments and their communities, business, researchers and other stakeholders. These partnerships will seek to foster community capacity building through the development and dissemination of information and tools needed to help the community prepare for climate change. In particular, local government needs specific information and tools for responding to climate change impacts through planning processes.

*Regional action on adaptation (see section 2.2)*

The Government is working with clusters of local governments, Catchment Management Authorities, tertiary institutions and community organisations to build community capacity and support local community action on both greenhouse gas emissions abatement and adaptation.

In 2005 & 2006 support will be provided to the Westernport Greenhouse Alliance and the West Gippsland and North Central Catchment Management Authorities to identify local climate change impacts, raise community awareness and pilot adaptation projects for their communities. Following the assessment and evaluation of these projects, it is anticipated that the approach will be extended to other areas of the State.

*Updating regional climate change profiles*

In 2004 the Victorian Government released a series of 10 regional climate change profiles that outlined recent climate change trends, projections of future climate change and potential impacts on key sectors for each of Victoria's Catchment Management Authority regions. These profiles, which were the first step in providing regionally specific information on climate change and its impacts, will be updated commencing in late 2005.

### **4.3 Capacity building in Government**

Climate change has potential implications for a wide range of activities including trade, tourism, service and infrastructure provision, agriculture, natural resource management and public health. Increasingly, government planning and investment frameworks and program delivery in these and other areas will need to be adjusted to address the issue of climate change impacts and ensure sustainability for the longer term.

*Vulnerability assessments for departmental program delivery*

The Department of Sustainability and Environment and the Department of Primary Industries will undertake a study to identify the implications of climate change for key delivery areas of their portfolios. This work will provide a model for vulnerability assessment across other areas of government.

### **4.4 Supporting national research activities**

The Victorian Government is an active participant in national research activities relating to climate science, climate variability, regional climate modelling and the development of analytical tools for assessing impacts and adaptation strategies. This work is carried out through a range of national processes involving the Commonwealth, other States and Territories, CSIRO, the Bureau of Meteorology and other specialised research institutions.

In particular, Victoria works with the Australian Greenhouse Office in relation to action under its National Climate Change Adaptation Programme and Australian Climate Change Science Programme.

Victoria will also engage with other jurisdictions to ensure that climate change impacts and adaptation issues receive appropriate consideration in related policy processes and programs including Landcare, the *National Biodiversity and Climate Change Action Plan*, and the South East Climate Initiative.

## Reducing net emissions from land management in rural Victoria

Land-based activities – such as agriculture and forestry – are both a source of, and sink for greenhouse gas emissions. Improvements in land management practices, and increases in vegetation cover, can significantly reduce Victoria's net greenhouse gas emissions<sup>10</sup>.

### 5.1 Improved management of greenhouse gases in the agricultural sector

Emissions of greenhouse gases – particularly methane and nitrous oxide – from agricultural activities are a significant contributor to Victoria's total emissions. In 2002 agricultural emissions contributed 15.8 million tonnes (or 13.5%) of Victoria's total greenhouse gas emissions.

In addition to improved grazing and cropping practices to reduce emissions, improved soil management can reduce the release of greenhouse gas emissions and enhance soil carbon uptake – thereby reducing net emissions.

The Victorian Government has been a national leader in stimulating and carrying out research to better understand the nature of agricultural emissions. Victoria has been a key player in establishing a new body of work through the Cooperative Research Centre for Greenhouse Accounting. Information on this work is available at [www.greenhouse.crc.org.au/crc/gia/](http://www.greenhouse.crc.org.au/crc/gia/).

Drawing on these research efforts, Victoria's Department of Primary Industries has developed proposed action priorities for greenhouse and agriculture, including:

- developing a more accurate profile of greenhouse gas emissions for the agricultural sector
- strategies to reduce greenhouse gas emissions from Victoria's agricultural sector
- ensuring Victoria's agricultural industries and rural communities are aware of and have options for responding to the impacts of climate change (see section 4.1).

Future *research and policy/program development* – which will receive funding of \$400,000 in 2005/06 – will continue to focus on issues with the greatest potential for cost-effective emissions reductions and that are likely to be deliverable in the short term (around three years). In particular, effort will be directed to reducing emissions from the grains industry (nitrous oxide) and intensive grazing (nitrous oxide and methane) by:

- assessing technological solutions and establishing best practice management guidelines
- utilising industry extension programs to promote take-up of these approaches.

### 5.2 Increasing carbon sequestration through permanent vegetation and sustainable forest management

The removal of trees through land clearing is a significant source of Australia's national greenhouse gas emissions. However, land clearing controls in place in Victoria since 1989 have meant that land clearing contributed only 2 million tonnes to Victoria's greenhouse gas emissions in 2002 (less than 2% of the State's total emissions).

Increased vegetation cover (including commercial forestry plantations) resulted in the absorption (or bio-sequestration) of 4.4 million tonnes of carbon dioxide in Victoria in 2002 – exceeding emissions from vegetation removals by 2.4 million tonnes in that year.

Greenhouse benefits may also occur when timber or other wood products are derived from sustainably managed forests and used as a substitute for energy-intensive products such as cement, steel and aluminium; and for fossil fuels for heating.

Reforestation of cleared land to provide a carbon sink also delivers important co-benefits, most notably environmental services such as biodiversity, salinity mitigation and water quality improvement.

The Government is investing in revegetation and better management of existing vegetation for carbon sinks through programs such as:

- *Plantations for Greenhouse* – \$1.9 million over three years, commencing 2002/03, for establishing new sawlog plantations on private land
- *CarbonTender* – \$3 million over three years, commencing 2002/03, for establishing new vegetation that is permanent and indigenous on sites with high biodiversity values

<sup>10</sup> Net greenhouse gas emissions = total emissions – total removal of emissions from the atmosphere by greenhouse 'sinks'.

- *BushTender* – \$650,000 in 2004/05, for providing and quantifying carbon sequestration benefits of better management of existing vegetation
- *Sink investments to offset Government vehicle fleet emissions* - \$480,000 over 2004/05 and 2005/06.

These initiatives have fostered 'learning by doing' that has driven the development of new knowledge and skills – particularly with respect to the technical, legal and contractual issues associated with the ownership of carbon property rights related to carbon sinks. They have also provided opportunities to evaluate the role of sinks as part of a comprehensive approach to greenhouse gas emissions abatement.

Future initiatives will focus on promoting the application of this learning and adding value to these initial investments. Victoria is now well placed to take advantage of an expected increase in private investor interest in forest-based carbon sinks for project-based emissions offsets and through carbon trading. The potential benefits to commercial tree-growing arising from carbon sequestration will also be promoted through the Government's \$9 million Plantation Investment Strategy that is currently under development.

The Government will continue to *support the development of Kyoto Protocol-compliant tools and frameworks*, although its direct investment in sinks will decrease over time. During 2005/2006 the Government will provide \$150,000 to support the following activities:

- quantifying the potential total contribution that carbon sinks can make to reducing Victoria's net greenhouse gas emissions
- supporting strategic research relating to the development of technical, legal and accounting tools for carbon sinks – including with respect to compliance with the rules of the Kyoto Protocol and potential linkages between trading in forest-based carbon and emissions trading schemes
- evaluating current Government investments to inform ongoing involvement in the supply of credible and tradeable carbon sequestration products, and to promote investor confidence
- establishing a register of carbon sink rights created by the Government as part of Victoria's vegetation accounting system.

The public sector has a key role to play in Victoria's response to climate change through facilitation of planning for a low carbon future; showing leadership by demonstrating the potential for achieving emissions reductions in the Government's own operations; and in dealing with future climate change impacts.

As highlighted in the 2002 Victorian Greenhouse Strategy, improvements in the energy efficiency of government operations provide a powerful demonstration of commitment and a model for community action – as well as helping to manage government energy costs. These efforts can be strengthened by adopting procurement policies which enhance environmental performance within government and that support the market for greenhouse-friendly goods and services.

In addition to leading on action to reduce greenhouse gas emissions, an emerging issue is the need for the Government to commence planning to cope with and adapt to the impacts of climate change on its operations.

#### *Government energy efficiency and emissions reduction targets*

The Government is pursuing action across all departments to achieve the following targets:

- 15% reduction in energy use in buildings by June 2006
- 10% of electricity to be purchased in the form of Green Power by June 2006 – all major departments and agencies are on track to achieve this target, with Green Power purchases being progressively incorporated into all Government energy contracts as they come up for renewal
- 10% reduction in greenhouse gas emissions from the Government's passenger vehicle fleet by June 2006.

Targets for reducing energy use in buildings and in the transport fleet will continue to be pursued vigorously and will be reviewed to determine further action beyond the target date of June 2006.

Key highlights of these programs include:

- a number of departments and agencies have already achieved greater than a 15% saving in building energy consumption: Department of Justice (16%), Department of Infrastructure (23%), Environment Protection Authority (43%) and Department of Treasury and Finance (18%)
- provision of solar-heated hot water to all high-rise public housing in Victoria, as part of a \$3.86 million program of energy efficiency demonstration projects implemented across a range of public housing types, to be completed in 2006
- the new Marine and Freshwater Systems facility for Primary Industries Research Victoria (PIRVic) in Queenscliff is the first non-residential building in Australia to achieve a 6-star rating for energy efficiency
- 4.1% of electricity is already being purchased as Green Power
- commitment to purchase 100 environmentally-friendly Toyota Prius hybrid vehicles for the Government's fleet
- a carbon-neutral Government fleet is being achieved by investing in sinks, through programs such as Greenfleet, to offset greenhouse gas emissions (see section 5.2)
- the 2006 Commonwealth Games will be the first major multi-sport event to be carbon neutral. Greenhouse gas emissions resulting from the event will be reduced through energy efficiency measures, by increasing public transport use and by offsetting residual emissions through the planting of native trees.

#### *Improving energy efficiency in the healthcare network*

In the major energy-consuming areas of health and human services, the geographic spread, diversity and complexity of facilities pose special challenges for achieving improvements in energy efficiency. In addition, energy demand in this sector is growing, as a result of the deployment of new technology, improvements in service delivery and increases in service demand. Action taken to date has achieved significant savings within individual institutions and identified that there is considerable potential for improved energy efficiency – with the added benefit of assisting institutions to contain growth in energy costs.

A range of strategies is now in place to pursue improvements in existing facilities and to ensure that all new facilities achieve high levels of energy efficiency. In particular, the Department of Human Services has established sustainability guidelines and is currently developing an environmental rating tool specifically for use by hospitals and other health care and community centres. The tool will be applicable to both new and existing facilities and will focus on achieving better-integrated design with an emphasis on reducing the use of energy and water, and improving building services and waste management.

#### *Environmental Management Systems (EMSs)*

In 2002 the Government commenced the introduction of EMSs across Government to provide a planning framework for departments and agencies to address their environmental impacts – including those from energy use – and to seek continuous improvement in their environmental performance. Departments are required to report progress on their environmental performance in their Annual Reports – the first such Reports were in 2003/04.

Effort is also being made to drive reductions in waste-to-landfill across government with resulting greenhouse benefits. For example, in 2003/04 the Department of Sustainability and Environment reduced its waste-to-landfill by 89%.

#### *Utilising government procurement to drive greenhouse outcomes*

Governments are major purchasers and, therefore, have the potential to influence the development of markets for green products and services.

The Victorian Government requires all departments to incorporate environmental considerations into their purchasing decisions, and to report annually on how their activities support the objectives of the Government's Environmental Purchasing Policy – see [www.vgpb.vic.gov.au](http://www.vgpb.vic.gov.au).

During 2005 and 2006, this commitment will be strengthened through further work on developing programs to test and evaluate environmental purchasing tools and practices, with a view to facilitating and accelerating environmental purchasing 'on the ground'. A pilot project will be conducted by the Department of Sustainability and Environment that will draw on the expertise and best practice principles of the highly successful local government ECO-Buy program (see section 2.3), as well as local, national and international public and private sector 'green purchasing' frameworks.

As a major purchaser, the Government also has the potential to influence the broader economy and to drive the development of markets for green products and services. The strengthened approach to environmental purchasing will provide clear guidance to Victorian providers of goods and services, and support innovations that improve environmental performance.

#### *Vulnerability to climate change – assessment of risk for Government operations*

Government operations and service delivery will be affected by, and will need to adapt to, the impacts and increased risks associated with climate change. Specific areas of vulnerability include natural resources and ecosystems, water resources, infrastructure and human health. As a basis for developing a comprehensive response to these issues, the following studies will be undertaken in the course of 2005 and 2006:

- the Department of Sustainability and Environment and the Department of Primary Industries will pilot vulnerability assessments across their portfolio activities
- an assessment of the vulnerability of public and private infrastructure (see section 4.1).

# Reference guide to Victorian Government action on climate change

## 1. Low Carbon Economy

Related Government Activities:

Sustainable Energy programs – see [www.seav.vic.gov.au](http://www.seav.vic.gov.au)

Greenhouse Challenge for Energy – see [www.greenhouse.vic.gov.au](http://www.greenhouse.vic.gov.au)

<b>1.1 Improving the greenhouse performance of Victorian businesses</b>		
EPA statutory policy – Greenhouse Program	EPA	<a href="http://www.epa.vic.gov.au/Greenhouse/program.asp">www.epa.vic.gov.au/Greenhouse/program.asp</a>
Business Energy Innovation Initiative (BEII)	SEAV	<a href="http://www.seav.vic.gov.au/manufacturing/BEII/index.asp">www.seav.vic.gov.au/manufacturing/BEII/index.asp</a>
Promoting greenhouse/energy efficiency innovation in investment facilitation activities	DIIRD	Contact Invest Victoria (03) 9651 8100
Improving the sustainability of large retail chains	DIIRD	Contact Victorian Business Line 13 22 15
Considering greenhouse issues in environmental impacts assessments	DSE	<a href="http://www.dse.vic.gov.au/planning">www.dse.vic.gov.au/planning</a>
<b>1.2 Reducing peak energy demand</b>		
Addressing growth in air conditioner energy use	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Interval metering	ESC	<a href="http://www.esc.vic.gov.au/electricity900.html">www.esc.vic.gov.au/electricity900.html</a>
<b>1.3 Supporting renewable and low emission energy</b>		
Renewable Energy Support Fund	SEAV	<a href="http://www.seav.vic.gov.au/renewable_energy/resf/index.asp">www.seav.vic.gov.au/renewable_energy/resf/index.asp</a>
Electricity Industry Wind Energy Development Act	DoI	<a href="http://www.dms.dpc.vic.gov.au/">www.dms.dpc.vic.gov.au/</a>
Geothermal Energy Resources Bill	DPI	<a href="http://www.dms.dpc.vic.gov.au/">www.dms.dpc.vic.gov.au/</a>
<b>1.4 Supporting cleaner energy technologies</b>		
CRC for Clean Power from Lignite	DPI	<a href="http://www.cleanpower.com.au/">www.cleanpower.com.au/</a>
Centre for Energy and Greenhouse Technologies	DIIRD	<a href="http://www.cegt.com.au/">www.cegt.com.au/</a>
CO2CRC	DPI	<a href="http://www.co2crc.com.au/">www.co2crc.com.au/</a>
Carbon Sequestration Leadership Forum	DPI	<a href="http://www.cslforum.org/">www.cslforum.org/</a>
<b>1.5 Public reporting and disclosure</b>		
National Pollutant Inventory – Victorian greenhouse pilot	EPA	<a href="http://www.epa.vic.gov.au/students/mpi.asp">www.epa.vic.gov.au/students/mpi.asp</a>
Working with the finance sector	EPA	<a href="http://www.epa.vic.gov.au/Industry/">www.epa.vic.gov.au/Industry/</a>
<b>1.6 Working with Victoria's automotive industry</b>		
Alternative vehicle fuels / technologies	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>1.7 Education and training for the future</b>		
Knowledge and Skills for the Innovation Economy	DET	<a href="http://www.otte.vic.gov.au/publications/knowledgeandskills">www.otte.vic.gov.au/publications/knowledgeandskills</a>
RMIT Sustainable Education pilot project	DSE (RMIT)	<a href="http://www.rmit.edu.au/ssp/belp">www.rmit.edu.au/ssp/belp</a>
Climate Change Roundtables for Universities and TAFEs	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>

## 2. Communities shaping their future through action on abatement and adaptation

<b>2.1 Challenging Victorians to make a difference</b>		
Engaging all Victorians to take action – energy efficiency communications campaign	DSE/Dol	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Household purchases of Green Power – 5% challenge	SEAV	<a href="http://www.greenpower.com.au">www.greenpower.com.au</a>
Household behaviour change – regional pilot	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Small business energy efficiency – regional pilot	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>2.2 Partnerships for community action</b>		
Central/Northern Victoria regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
South West Victoria regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Westernport regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
North East Victoria regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Northern Metropolitan regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Gippsland regional partnership	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>2.3 Working with local government</b>		
Support for Cities for Climate Protection™	DSE (ICLEI)	<a href="http://www.iclei.org/anz">www.iclei.org/anz</a>
ECO-Buy (environmentally friendly purchasing)	DSE (MAV)	<a href="http://www.mav.asn.au/ecobuy">www.mav.asn.au/ecobuy</a>

## 3. Transforming Urban Areas

Related Government Strategies:

*Melbourne 2030* – see [www.melbourne2030.vic.gov.au](http://www.melbourne2030.vic.gov.au)

*Linking Melbourne: Metropolitan Transport Plan* – see [www.linkingvictoria.vic.gov.au](http://www.linkingvictoria.vic.gov.au)

<b>3.1 Sustainable neighbourhood design</b>		
Draft Sustainable Neighbourhood Provisions	DSE	<a href="http://www.dse.vic.gov.au/planning">www.dse.vic.gov.au/planning</a>
<b>3.2 Influencing travel demand</b>		
Sustainable development of Transit Cities	DSE	<a href="http://www.dse.vic.gov.au/transitcities">www.dse.vic.gov.au/transitcities</a>
TravelSmart	Dol	<a href="http://www.travelsmart.vic.gov.au">www.travelsmart.vic.gov.au</a>
Car sharing programs	DSE	<a href="http://www.flo.net.au">www.flo.net.au</a> <a href="http://www.goget.com.au">www.goget.com.au</a>

<b>3.3 Improving the energy efficiency of the built environment</b>		
Energy efficiency standards for new commercial buildings	Building Commission / SEAV	Contact Building Commission (03) 9285 6400
Commercial Office Building Energy Innovation Initiative (COBEII)	SEAV	<a href="http://www.seav.vic.gov.au/buildings/COBEII/">www.seav.vic.gov.au/buildings/COBEII/</a>
5 Star energy efficiency for new homes	Building Commission/ SEAV	<a href="http://www.seav.vic.gov.au/buildings/5starhousing/">www.seav.vic.gov.au/buildings/5starhousing/</a>
Energy efficiency in home renovations	Building Commission	Contact Building Commission (03) 9285 6400
Solar Hot Water Rebate	SEAV	<a href="http://www.seav.vic.gov.au/renewable_energy/shw/">www.seav.vic.gov.au/renewable_energy/shw/</a>
Consumer information on energy efficient appliances (MEPs)	SEAV	Contact Sustainable Energy Authority (03) 9655 3222
Water efficient shower roses	DSE	<a href="http://www.dse.vic.gov.au/ourwater/education/Senior/SavingWater/Water_bathroom.htm">www.dse.vic.gov.au/ourwater/education/Senior/SavingWater/Water_bathroom.htm</a>
<b>3.4 Towards Zero Waste Strategy</b>	ERV	<a href="http://www.ecorecycle.vic.gov.au/www/default.asp?casid=3316">www.ecorecycle.vic.gov.au/www/default.asp?casid=3316</a>
<b>3.5 Managing climate change impacts</b>	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>

#### 4. Adapting to a Changing Climate

Climate Research and Project Database		<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>4.1 Assessing and reducing the vulnerability of key sectors</b>		
Reducing the vulnerability of Victoria's water supply	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Reducing coastal vulnerability	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Assessing the vulnerability of Victoria's infrastructure	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Determining responses to changes in bushfire risk	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Reducing the vulnerability of Victoria's biodiversity	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Addressing the vulnerability of the agricultural sector	DPI	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Community health and implications for health systems	DHS	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>4.2 Building the community's capacity to adapt</b>		
Regional partnerships for adaptation	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Updating regional climate change profiles	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>4.3 Capacity building in Government</b>		
Departmental vulnerability assessments	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>4.4 Supporting national research activities</b>	DSE	<a href="http://www.greenhouse.crc.org.au/crc/gja/">www.greenhouse.crc.org.au/crc/gja/</a>

## 5. Reducing net emissions from land management in rural Victoria

<b>5.1 Improved management of agricultural greenhouse gases</b>	DPI	<a href="http://www.dpi.vic.gov.au">www.dpi.vic.gov.au</a>
Research and policy/program development	DPI	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
<b>5.2 Increasing carbon sequestration through permanent vegetation cover and sustainable forest management</b>	DPI	<a href="http://www.greenhouse.crc.org.au/crc/gia/">www.greenhouse.crc.org.au/crc/gia/</a>
Plantations for Greenhouse	DPI	<a href="http://www.dpi.vic.gov.au">www.dpi.vic.gov.au</a>
CarbonTender	DSE	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
BushTender	DSE	<a href="http://www.dse.vic.gov.au">www.dse.vic.gov.au</a>
Sink investments to offset government vehicle fleet emissions	DSE/DTF	<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>
Support the development of Kyoto Protocol compliant tools and frameworks		<a href="http://www.greenhouse.vic.gov.au">www.greenhouse.vic.gov.au</a>

## 6. Government leadership

<b>6.1 Improvements in government operations</b>		
Government energy efficiency and emissions reduction targets	Whole of Government	<a href="http://www.seav.vic.gov.au/advice/government">www.seav.vic.gov.au/advice/government</a>
Improving energy efficiency in the healthcare network	DHS	<a href="http://www.healthdesign.com.au/vic.dghdp">www.healthdesign.com.au/vic.dghdp</a>
Environmental Management Systems (EMSs)	Whole of Government	<a href="http://www.epa.vic.gov.au/Government/EMS">www.epa.vic.gov.au/Government/EMS</a>
Utilising government procurement to drive greenhouse outcomes	DSE	<a href="http://www.vigpb.vic.gov.au">www.vigpb.vic.gov.au</a>

EPA	Environment Protection Authority
ESC	Essential Services Commission
DET	Department of Education and Training
DHS	Department of Human Services
DIIRD	Department of Innovation, Industry and Regional Development
Dol	Department of Infrastructure
DPI	Department of Primary Industries
DTF	Department of Treasury and Finance
DSE	Department of Sustainability and Environment
ICLEI	International Council for Local Environmental Initiatives
MAV	Municipal Association of Victoria
RMIT	Royal Melbourne Institute of Technology
SEAV	Sustainable Energy Authority of Victoria



