26 November 2011

Review of Climate Change Act
PO Box 500
East Melbourne 8002

Sent by email to: legislation.review@climatechange.vic.gov.au

Submission to the Victorian Government Review of the Climate Change Act (2010)

Dear Sir/ Madam,

Thank you for the opportunity to provide a submission regarding this important review.

LIVE acknowledges the Victorian Government for **accepting mainstream climate science** and therefore accepting its responsibility to legislate to ensure a **drastic reduction in the amount of greenhouse gas emissions (GHG) produced and/or emitted in this state.** Victoria's current GHG emissions target of 20 per cent below 2000 levels by 2020 falls dangerously short of what the science demands.

Although Victoria will be assisted by the introduction of the Federal Government's Clean Energy legislative package, the State Government must also develop **a comprehensive suite of complementary measures** to drive the urgent structural change needed to avoid catastrophic climate change and prepare Victoria for a clean energy future. Strong and decisive legislative and regulatory action are imperative NOW not only to avoid enormous foreseeable costs but also to ensure our State is well positioned to lead and prosper for generations to come.

The key areas that require specific policy measures and binding legislation include:

- Electricity generation
- Energy efficiency
- Sustainable transport
- Land use
- Planning

ELECTRICITY GENERATION

In its Synthesis Report in 2007 the Intergovernmental Panel on Climate Change claimed that *"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level"*[1] and called for urgent, drastic cuts to global GHG emissions. According to one of the world's most respected climate scientist's, NASA Goddard Institute for Space Studies' Director, Dr James Hansen: **"It is moral turpitude, depravity, to build more coal-fired power plants or open coal mines**, knowing what we know now…It was one thing to dig coal when we didn't know the consequences, but quite another thing today."[2]

Every step in the production of energy from coal — mining, transporting, washing, burning and depositing of the waste — poses grave health and environmental hazards. Yet more than 90 per cent of Victoria's electricity is still being generated by coal-fired electricity, with plans for new coal plants (e.g. HRL's controversial proposal) in the pipeline. Only policies to **quit coal use** as quickly as humanly possible will meet the demands of mainstream climate science.

Burning gas is proving to be equally problematic. Recent studies have shown that far greater **emissions of methane (typically 85 to 90 per cent of natural gas)** are being released into our atmosphere than were suspected.[3] **Methane is at least 72 times, and possibly 105 times, more potent than CO_2 in the atmosphere**, when viewed over a twenty year time span.[4]

Safe and secure renewable energy alternatives are available NOW. With only a fraction of Victoria's renewable energy resources, countries such as Denmark, Germany, Spain, USA, Austria and Sweden, to name a few, are enjoying the **social and economic benefits** of a burgeoning, multi-billion dollar renewable energy industry. In many places around the world renewable energy is already generating new investment and new jobs in rural and regional areas while stabilising local greenhouse gas emissions and increasing **energy security**. In 2010 Germany reported that more than **367,000 clean jobs** have been created in its renewable energy and energy efficiency industries.[5] According to a report by the University of Newcastle's Centre of Full Employment and Equity, a shift to a renewable energy economy in the Hunter/Wyong region could generate between 7,500 and 14,300 jobs– **a net gain of between 3,900 and 10,700 jobs**[6]. Note that the lower estimate, while a marked gain on current employment figures, is extremely conservative because it assumes there will be no manufacturing of renewable energy technologies in the region[7].

Establishing renewable energy supplies from a range of technologies in numerous locations, using high voltage direct current lines which would allow better flows and considerably reduce transmission losses, would ensure a **more robust and secure power supply** than the current centralized models. By their very nature centralised power supplies are more vulnerable to major disruptions caused by storms — which scientists predict will become more ferocious and more frequent[8] — as well as accidents and deliberate attacks. Meanwhile, the *learning curve*[9] is already paying dividends for renewables such as wind, concentrated solar thermal, and solar PV. In the case of solar energy, **the technologies have advanced rapidly and are predicted to be competitive in price with existing fossil fuel sources in the very near future**. In some places, wind power is already competitive.

In recent years investments in renewable energy capacities and manufacturing have grown strongly and steadily, up from just $30 billion in 2004 to more than US$211 billion in 2010 (a 540 per cent increase).[10] Since 2008 each year more money has been flowing into new renewable energy capacity than in new fossil fuel capacity[11]. This happened even while fossil fuel energy sources continue to enjoy massive public subsidies, a virtual monopoly of the energy market and the rights to freely pollute. Even in the heat of the Global Financial Crisis, the renewable energy industry grew by 32 per cent per annum worldwide. With such serious money now being injected into alternative technologies, all indicators are suggesting that a major transformation in the way the world makes and uses energy is well on its way.

As an example of wind's enormous potential, feasibility studies have shown that the UK has offshore renewable energy capacities representing six times its current electricity demand. Using existing technologies—wind turbines with both fixed and floating foundations, wave machines, tidal range and tidal stream devices and accepting the usual constraints on offshore renewable (maximum water depths, the need to avoid dense shipping lanes and other obstacles, and technical limits)—the UK could be a large exporter of electricity. And in realising this renewable resource, it is estimated that **145,000 new jobs** would be created[12].

According to the World Wind Energy Report (2010), China has doubled its installed wind power capacity every year for the past five years. At the end of 2010 China was generating 45 GW annually, which is **enough wind power to replace Australia's entire installed capacity every few weeks.**

Meanwhile, here in Victoria, upon entering office the State Government commenced a veritable war on wind power. The Baillieu Government has no grounds to do this. The Baillieu Government's anti-wind agenda is entirely at the expense of the Victorian people who will not only suffer further effects of dangerous climate change as a result of failing to displace emission intense coal-fired electricity, but will lose out on the new jobs and investment that wind power would deliver to local economies.

Victoria is also well placed to develop solar energy from solar photo voltaic (PV) cells for homes and buildings, to **industrial-scale concentrated solar thermal plants with enormous electricity generating capacity**. Already in Spain, the Torresol Gemasolar plant (near Seville, in Spain), which consists of thousands of mirrors reflecting solar radiation onto a collection tower filled with molten salt, produces 110GWh/year (19.9MW) and has enough storage capacity to dispatch **electricity for up to 15 hours after dark**.[13] Furthermore, this technology has a 'capacity factor'[14] of 75 per cent, which is higher than that of a NSW black coal-fired electricity plant. Like wind farms, concentrated solar thermal plants would provide secure, zero emission energy, along with an **enormous boost for local economies**.

So where will Victoria be in 2020? Unless we move quickly to develop our zero carbon energy resources, our reliance on fossil fuel electricity will not only continue to force dangerous climate change but will also ensure that our economy falls behind because everything coming out of our State will carry an enormous carbon footprint at a time when **world economies are transitioning** away from polluting technologies and practices.

ENERGY EFFICIENCY

The quickest, cheapest and most efficient means of drastically reducing GHG emissions is to use less energy. Strong incentives and penalties must be introduced and enforced to improve the energy efficiency of Victoria's built environment and encourage all property owners to bring their homes and buildings up to a minimum standard.

Although Victorian new homes and renovations must now meet a 6-star standard at the planning stage, a gaping hole exists in monitoring and enforcing whether this standard is actually achieved upon completion, to the detriment of homeowners as energy prices continue to rise.[15]

By every measure, energy efficiency technologies are an excellent investment for all. With legislation the Victorian Government could ensure that energy consumption is drastically reduced in this State, and help build a thriving local energy efficiency industry.

SUSTAINABLE TRANSPORT

To drastically reduce GHG emissions from transport, we must identify and legislate to end the massive hidden subsidies that exist for unsustainable road transportation. Transport companies should not be able to externalise their business costs by exploiting taxpayer-funded roads. In addition to being unsafe, 'road trains' put enormous pressure on our roads, that requires costly maintenance work. The movement of goods around our state (and Australia) should be by rail, which can eventually be powered with 100 per cent renewable energy.

To reduce GHG emissions, reduce traffic congestion and improve road safety, the Victorian government should replace incentives favouring private car transportation with **incentives to improve and encourage public transportation**. Hidden subsidies for road transportation mean that we are not seeing or paying the true cost of car transportation and this drives behaviour and choices that are counter-productive to a reduction in GHG emissions.

Because it can be powered with renewable energy, **rail transport is the most responsible and appropriate response to both climate change and peak oil**. The massive social and environmental costs of road transportation for goods and the people of Victoria, whether it be the astronomical cost of maintaining the roads, the escalating congestion of Melbourne in particular, or the spiralling GHG emissions resulting from increased private car use, have been ignored for too long.

LAND USE

Mining for coal and/or gas poses enormous environmental and, increasingly, social costs. Massive amounts of fresh water are wasted and environmental and health impacts include scarred landscapes and in many cases contaminated ground water from migrating gases and chemicals. Mining fossil fuels for energy has no place in a healthy and sustainable economy.

As a result of our long history of unsustainable land use (land clearing, poor farming practices, mining), much of Victoria's countryside is in need of rehabilitation. Private companies continue to profit from the destruction of our forests: our most valuable carbon sinks, water catchments and wildlife habitat for endangered species. According to scientists advising The Wilderness Society, one hectare of mature, tall, wet forest can store the equivalent of 5,500 tonnes of carbon dioxide in the trees and soil, while logging operations release most of this carbon back into the atmosphere.

It is not until we properly value our environmental public assets that we can build dynamic local economies around preserving them. For example, instead of "drought relief" or ironically compensation for crops devastated by flooding, Victorian farmers could be financially supported and rewarded for taking on the vitally important role of drastically cutting methane and carbon emissions from animal production and farming and instead rehabilitating and revegetating the land. Such a policy would deliver significant, measurable benefits for farmers and our environment. For instance pyrolysis is a process which creates a stable form of charcoal called biochar from agricultural, forestry and urban waste (known as biomass) burned under high temperature, low oxygen conditions. So rather than allowing biomass to break down naturally and release CO_2 into the atmosphere, pyrolysis can sequester and store the carbon in biochar which remains stable in soils for centuries or even for millennia. Not only is pyrolysis the fastest and most effective means of drawing carbon out of the atmosphere, it also enriches the soils enormously. Further to this, the pyrolysis process also creates bioenergy that can displace fossil fuel use.

PLANNING

Our current state laws will not protect Victorians from the dangerous impacts that mainstream science is predicting will occur as a result of climate change.

For example, the reports used to assess possible sea level rises around Victoria (2001 and 2007 Intergovernmental Panel on Climate Change reports) are now widely understood to be too conservative. Several leading scientists have raised their projections for sea level rise by the end of the century to the range of around 2 meters. However, there is evidence that mass loss from the Greenland and Antarctic ice sheets could increase exponentially, raising the possibility of sea level rise of many meters and a situation that is out of humanity's control.[16]

Regarding all proposed projects, the Victorian government must, at every stage of planning, reference the most up-to-date climate science to comprehensively assess 1) the project in question's capacity to contribute to climate change, and 2) what the likely impacts of climate change will be on the project in question. Anything less will be in direct breach of the State government's stated aim: to build Victoria's capacity to respond to the challenges of climate change and enable a more effective response and reduce any economic and social impacts, ensuring Victoria remains a prosperous and sustainable State.[17]

Meeting 21st Century Challenges

If Victoria is to maintain living standards and quality of life for current and future generations, we must immediately commence a rapid transition away from 'old' centralised and highly polluting fossil fuel based infrastructure and energy sources towards 'new' decentralised and more sustainable alternatives. In addition to drastically reducing GHG emissions, the adoption of renewable energy sources located close to end power users will ensure a more **robust and secure power supply** than the current one. This is because centralised power supplies are more vulnerable to major disruptions caused by accidents, fires and storms (which are predicted by scientists to become even more frequent and ferocious[18]), accidents and/or deliberate attacks.

We know the big test for Victoria, and indeed all places around the world, will be how to manage the **twin challenges of climate change and peak oil.** Climate change is here and our environment is already showing the predicted signs due to excessive GHG emissions in our atmosphere, as

clearly demonstrated by the tragic events occurring over recent summers. Further, the era of cheap crude oil for transportation is gone. Given the tyranny of distance and our increased vulnerability to drought and flooding, it is even more critical for Victoria to prepare itself for the changed economic and ecological circumstances that will be part of life in the 21st Century.

A safe climate and healthy environment are the **foundations** on which all else we know and value depends. The most cited argument for slow and inadequate responses to climate change and peak oil, are driven by a combination of ignorance of up-to-date climate science, greed by those with vested economic interests in 'old technologies', fear of change and the failure to recognise the bountiful economic opportunities that are ready to be taken up through the adoption of renewable energy and energy efficiency technologies.

Further, I emphasise the point that we only have to look at a few recent extreme weather events in Australia and around the world to appreciate that the cost of inaction far outweighs the cost of taking preventative measures. The more climate change we experience the more costly it will be for the State's economy. We are not suggesting that it will not be a challenge but by introducing a comprehensive suite of policy measures and legislation, that will complement the Federal government's Clean Energy legislative package, Victoria is in an ideal position to more quickly transition our economy away from GHG emission intense practices towards a more healthy and sustainable model.

In concluding I wish to emphasize that this submission, along with numerous others located at http://live.org.au/live-submissions has been prepared to voice the deep climate concerns of private citizens associated with LIVE (an independent, non profit climate change action group representing the views of more than 3,000 people). In other words, we have no vested interests, nobody is paying or compensating us in any way and there is nothing covert about LIVE's access to our democratically elected representatives.

Thank you for your attention to this submission. I would welcome the opportunity to discuss any part of this submission with you.

Yours faithfully,

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[1] http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms1.html
[2] http://www.guardian.co.uk/environment/2009/aug/14/coal-energy 'Opencast coal mine surge weakens UK's authority at climate change talks' by Severin Carrell, *The Guardian*, 14 August 2009
[3] http://www.nytimes.com/2011/04/12/business/energy-environment/12gas.html?pagewanted=2&_r=1 'Studies say natural gas has its own environmental problems' by Tom Zeller Jr., *The New York Times*, 11 April 2011
[4] 'Methane losses stir debate on natural gas' by Tom Zeller Jr., *The New York Times*, 12 April 2011
[5] http://www.bmu.de/files/english/pdf/application/pdf/ee_in_zahlen_2010_en_bf.pdf Renewable energy sources 2010: Data from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) on the development of renewable energy sources in Germany in 2010 based on information supplied by the Working Group on Renewable Energy Sources-Statistics (AGEE-Stat), March 2011

[6] http://www.greenpeace.org/raw/content/australia/resources/reports/climate-change/just-transition-report.pdf
[7] Ibid
[8] 'Briefing: Intergovernmental Panel on Climate Change Report: Implications for Australia' Climate Institute of Australia, January 2007
[9] The term learning curve describes the quickening of technological advances as a result of experience, along with a measure of how much a technology's costs decrease for every doubling of production/capacity
[10] http://www.energymatters.com.au/index.php?main_page=news_article&article_id=1622 'Global Renewable Energy Investment Surged in 2010, *Energy Matters*, 8 July 2011
[11] http://www.ren21.net/Portals/97/documents/GSR/REN21_GSR_2010_full_revised%20Sept2010.pdf REN21 Renewables 2010 Global Status Report, Forward by the Chairman
[12] http://www.offshorevaluation.org/downloads/offshore_vaulation_full.pdf The Offshore Valuation
A valuation of the UK's offshore renewable energy resource, First Published in the United Kingdom 2010 by the Public Interest Research Centre on behalf of The Offshore Valuation Group
[13] 'Concentrating Solar Thermal Power with Heat Storage Presentation', Alternative Technology Association, Melbourne Branch, May 19, 2010 http://www.ata.org.au/wp-content/uploads/notes-with-solar-thermal-presentation.pdf
[14] 'Capacity factor' is the percentage of the nameplate capacity of the plant that is used on average over the year. Ib id.
[15] 'Stars in a Galaxy Too Far' by Michael Green, *The Age*, 16 May 2011
[16] Email correspondence from Prof James Hansen, 12 August 2011
[17] http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/LTObject_Store/LTObjSt6.nsf/DDE300B846EED9C7CA257616000A3571/1D4DF4A072EEC835CA2578BF000A25A1/$FILE/10-54aa001%20authorised.pdf Preamble, Authorised Verion No. 001, Climate Change Act 2010, No. 54 of 2010
[18] Climate Institute of Australia, *Briefing: Intergovernmental Panel on Climate Change Report: Implications for Australia*. January 2007.