Submission to the Senate Inquiry into the Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008 from Dr Gideon Polya

1. Preface – top scientists state that there is a Climate Emergency

The Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008 must be seen in the context of what many people – including outstanding climate scientists at the cutting edge of climate research, other top scientists and top scientific bodies - now regard as a Climate Emergency and Sustainability Emergency (see "Climate Emergency: What Top World Scientific Experts Say": http://sites.google.com/site/yarravalleyclimateactiongroup/climate-emergency-what-top-world-scientific-experts-say .

Whether it is climate change risks or major disease risks (e.g. from influenza, smoking, alcohol, obesity etc), responsible risk management means that we take very seriously the advice from top scientific experts at the cutting edge of research in these areas and also from other outstanding scientists and top scientific bodies able to make authoritative statements about such risks.

Thus top US climate scientist Dr James Hansen (top US climate scientist; Director, NASA Goddard Institute for Space Studies; member of the prestigious US National Academy of Sciences; 2007 Award for Scientific Freedom and Responsibility of the prestigious American Association for the Advancement of Science; see: http://www.columbia.edu/~jeh1/ ; http://en.wikipedia.org/wiki/James_Hansen ; for 1880-present NASA GISS Global Temperature graphed data see: http://data.giss.nasa.gov/gistemp/ and http://data.giss.nasa.gov/gistemp/graphs/) has made the following statements:

(a) With 8 UK, French and US climate change scientist co-authors (2008): "Paleoclimate data show that climate sensitivity is ~3 deg-C for doubled CO_2 [carbon dioxide; atmospheric CO_2 280 ppm pre-industrial], including only fast feedback processes. Equilibrium sensitivity, including slower surface albedo feedbacks, is ~6 deg-C for doubled CO_2 for the range of climate states between glacial conditions and ice-free Antarctica. Decreasing CO_2 was the main cause of a cooling trend that began 50 million years ago, large scale glaciation occurring when CO_2 fell to 450 +/- 100 ppm [parts per million], a level that will be exceeded within decades, barring prompt policy changes. If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO_2 will need to be reduced from its current 385 ppm to at most 350 ppm. The largest uncertainty in the target arises from possible changes of non-CO_2 forcings. An initial 350 ppm CO_2 target may be achievable by phasing out coal use except where CO_2 is captured and adopting agricultural and forestry practices that sequester carbon. If the present overshoot of this target CO_2 is not brief, there is a possibility of seeding irreversible catastrophic effects" (see: http://arxiv.org/abs/0804.1126).

(b) In relation to the recent book "Climate Code Red. The case for emergency action" by David Spratt and Philip Sutton (Scribe, Melbourne, 2008; see: http://www.climatecodered.net/): "A compelling case … we face a climate emergency."

Contrary to the position of non-scientist economist Professor Garnaut (see "Critical Scientific Review of Badly Flawed Australian Garnaut Climate Change Review": http://sites.google.com/site/yarravalleyclimateactiongroup/critical-scientific-review-of-badly-flawed-australian-garnaut-climate-change-review) and of the non-scientist authors of the Australian Government Carbon Pollution Reduction Scheme Green paper (see "Australian Carbon Pollution Reduction Scheme will Increase Carbon Pollution": http://sites.google.com/site/yarravalleyclimateactiongroup/australian-carbon-pollution-reduction-scheme-will-increase-carbon-pollution), Dr Hansen and his colleagues expertly advise a "negative CO_2 emissions policy": "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO_2 will need to be reduced from its current 385 ppm to at most 350 ppm."

The views of these outstanding US climate scientists are echoed by top Australian specialist climate scientists and other outstanding Australian scientists (see: "Climate Emergency: What Outstanding Australian Scientists Say": http://sites.google.com/site/yarravalleyclimateactiongroup/climate-emergency-what-outstanding-australian-scientists-say). Thus, for example, Professor Tim Flannery (2008) (eminent Australian mammalogist, palaeontologist and climate change expert; http://en.wikipedia.org/wiki/Tim_Flannery): "[inserting global dimming sulphur into the stratosphere] would change the colour of the sky. It's the last resort that we have, it's the last barrier to a climate collapse. We need to be ready to start doing it in perhaps five years time if we fail to achieve what we're trying to achieve…The consequences of doing that are unknown …The current burden of greenhouse gas in the atmosphere is in fact more than sufficient to cause catastrophic climate change… Everything's going in the wrong direction at the moment, timelines are getting shorter, the amount of pollution in the atmosphere is growing…It's extremely urgent" (see: http://www.news.com.au/story/0,23599,23724412-2,00.html).

Professor David Karoly (member of the Nobel Prize-winning Intergovernmental Panel on Climate Change(IPCC) Working Group 2; School of Earth Sciences at the University of Melbourne; a top Australian and world climate scientist: http://en.wikipedia.org/wiki/David_Karoly) has stated:

(a) 2007: "There is no doubt in my mind that the climate change we've seen over the last 50 years is primarily due to human activity… Australia has the highest per person emissions in the world. It is critically important for the government to take leadership in setting emission reduction targets, irrespective of which political party is in government. It's not too late to do something now because we can still reduce the worst impacts of climate change, but it is too late to slow down climate change for the next 30 years because for the next 30 years, the warming is committed. What I'm trying to do as much as possible, is communicate the seriousness of this and the urgency" (see: http://www.abc.net.au/catalyst/stories/s2091117.htm).

(b) June, 2008: "We have far less time to minimize dangerous anthropogenic climate change than previously thought. Observations of the climate system indicate that the impacts of atmospheric warming are at the upper end of the range predicted by the IPCC. This puts us in an extremely precarious and urgent situation that compels immediate action" (see his Forward to Greenpeace's "Energy [R]evolution. A

sustainable Australian energy outlook": http://www.greenpeace.org/raw/content/australia/resources/reports/climate-change/energy-revolution-scenario-full.pdf).

Professor Peter Doherty (Albert Lasker Award for Basic Medical Research, 1995; Nobel Prize in Physiology or Medicine, 1996; Australian of the Year, 1997.Laureate Professor at the University of Melbourne; author "A Light History of Hot Air", Melbourne University Publishing, 2007; see: http://en.wikipedia.org/wiki/Peter_Doherty) has stated : "Germany has rejected nuclear power and gone for solar and Spain is putting a lot of effort into solar. Denmark has chosen wind power … Everything is about hot air. Political and in the atmosphere. We are in real danger. The recent CSIRO report suggests that temperatures could rise as much as five degrees by 2070. The ice is melting much more quickly than anyone expected. The Himalayas are melting very fast. We are now talking about the Arctic being ice-free by 2030" (see: http://uninews.unimelb.edu.au/unarticleid_4775.html).

Professor David de Kretser, A.C., Governor of Victoria, Australia (2008) (eminent Australian medical scientist; http://en.wikipedia.org/wiki/David_de_Kretser) in launching the book "Climate Code Red. The case for emergency action" by David Spratt and Philip Sutton (Scribe, Melbourne, 2008): "The book draws on a vast array of information to build a cogent and compelling case that we do have a genuine emergency on our hands if we are to limit the rise of greenhouse gas emissions to a level at which we can limit the degradation of our planet to manageable levels … There is no doubt in my mind that this is the greatest problem confronting mankind at this time and that it has reached the level of a state of emergency" (see: http://www.scribepublications.com.au/book/climatecodered).

Australian risk management is derelict if it ignores the expert opinions of top world climate scientists, top Australian climate scientists and our most outstanding scientists in the area of risks to human health.

2. What Australia should do

The Yarra Valley Climate Action Group of Melbourne (see: http://sites.google.com/site/yarravalleyclimateactiongroup/Home) (to which I belong) and many other climate action groups endorse the following carefully considered position of the Australian Climate Emergency Network (CEN) (see: http://www.climateemergencynetwork.org/):

The Danger We Face

We have examined the latest science (see: "Climate Code Red: The Case for a Sustainability Emergency", Spratt and Sutton, 2008; www.climatecodered.net) and symptoms of global warming. The imminent disintegration of the Arctic ice is an alarming indicator of rapid climate change. Our Earth is already too hot. The danger is now, and accelerating. We are extremely concerned that the current targets in relation to carbon emissions are dangerously inadequate and will expose our world to unacceptable risks. The window of opportunity for effective action is rapidly closing. We need to move at a pace far beyond business and politics as usual.

Our Core Values

We have no right to bargain away the lives of others. Our goal is a safe climate future for all people, all species, and all generations.

What The Global Community Must Do

The Global Community must concurrently halt man-made greenhouse gas emissions, remove excess carbon dioxide from the atmosphere, and actively cool the Earth.

Climate Emergency Network Objectives

- All levels of all governments across the globe must recognise and work together to fulfil their responsibility to secure a safe climate; it is their moral and legal duty-of-care to their citizens.
- Underpinned by legislation, governments must lead a large scale transformation of the economy to a post-carbon society.
- Given the extreme urgency and enormous scale of transformation required, governments must recognise and declare a Climate and Sustainability State of Emergency, whilst respecting basic human rights and freedoms.
- The community must be engaged in recognising and supporting the Climate Emergency. Therefore, we will work to engage citizens in taking responsibility for recognising and responding to the emergency.

What Australia and the World should do is to reduce atmospheric carbon dioxide (CO_2) to a safe and sustainable level of no more than 350 parts per million (ppm) from the present dangerous level of 387 parts per million (ppm) (a level at which coral is already dying around the world from ocean warming and acidification and at which all Arctic summer ice may be gone within 5 years – just 2 immense catastrophes in addition to current species extinction rates that are 100-1000 times greater than in the past). **For detailed and documented Fact Sheets on the Climate Emergency see those provided as a public service by the Yarra Valley Climate Action Group:** http://sites.google.com/site/yarravalleyclimateactiongroup/Home .

Such reduction can be achieved by cessation of fossil fuel burning by urgent substitution of renewable and geothermal energy; re-afforestation and preservation of high CO_2-sequestration old growth forests; return of carbon to the soil with pyrolytically-generated biochar; urgent diminution of agricultural methane production through limits to livestock and substitution of non-methanogenic gut bacteria in livestock (if feasible).

Nobel Laureate and former American Vice President Al Gore has declared that America should attain 100% renewable energy status within 10 years: “Today I challenge our nation to commit to producing 100 percent of our electricity from renewable energy and truly clean carbon-free sources within 10 years. This goal is achievable, affordable and transformative. It represents a challenge to all Americans - in every walk of life: to our political leaders, entrepreneurs, innovators, engineers, and to every citizen” (see: http://www.wecansolveit.org/content/pages/304/).

The latest advances in concentrated solar power (with heat storage) , silicon photovoltaics with balloon technology solar energy capture, non-silicon thin-film photovoltaics, large-scale wind farming and geothermal energy already make these energy sources cheaper than the "true cost" of coal-based power with the environmental and human cost taken into account (this being 4-5 times the "market cost" of coal-based power). Thus the new, large-scale, commercialized, Ausra Concentrated Solar Power (Solar Thermal) Compact Linear Fresnel (CLFR) system technology is already HALF the "true cost" of coal-based power with lower cost to come with economies of scale: "Ausra claims that It can generate electricity for 10 cents/kWh now, under 8 cents/kWh in 3 yrs. It also claims that using Ausra's current solar technologies, all U.S. electric power, day and night, can be generated using a land area smaller than 92 by 92 miles" (see: http://thefraserdomain.typepad.com/energy/2007/12/ausra-building.html ; http://www.newmatilda.com/node/2398?ArticleID=2398&CategoryID=213 ; http://mwcnews.net/content/view/18667/42/ ; http://www.coolearthsolar.com/ ; http://www.martinot.info/Martinot_et_al_AR32_prepub.pdf ; http://www.rsc.org/publishing/journals/PP/article.asp?doi=b715013j).

Australian legislation such as The Renewable Energy (Electricity) Amendment (Feed-in-Tariff) Bill 2008 must act to urgently encourage the shift to a non-carbon energy economy.

3. Gross Feed-in Tariff, no means test for solar installation and support for renewables

The cross-over point between the cost of advanced renewable power and the market cost of fossil fuel-based power may be only a few years away. There is a race between science, technology and sensible business practice versus the heavily subsidized and Planet biosphere-threatening fossil fuel interests – and it is vital for Australia and the World that the race is won by science, technology and sensible business practice.

However the "coal lobby" is extremely effective. Australia is the developed World's worst annual per capital CO_2 polluter and the World's biggest coal exporter. Consulting the US Energy Information Administration database (see: http://www.eia.doe.gov/) we obtain the following information on "annual per capita fossil fuel-derived carbon dioxide (CO_2) pollution" in "tonnes (t) per person per year" for Australia and other major polluters (2004 data): 19.2 (for Australia; 40 if you include Australia's coal exports), 19.7 (the US), 18.4 (Canada), 9.9 (Japan), 4.2 (the World), 3.6 (China), 1.0 (India) and 0.25 (for Bangladesh) (see "Coal is king" Australia CO_2 pollution Fact Sheet": http://sites.google.com/site/yarravalleyclimateactiongroup/%E2%80%9Ccoal-is-king%E2%80%9D-australia-co2-pollution-fact-sheet).

It is estimated that fossil fuels are subsidized in Australia by $10 billion per annum. Back-of-the-envelope calculations indicate that diversion of this carbon pollution subsidy to windpower installation could substitute Australia's present 50GW electricity capacity (92% fossil fuel-based) with 50GW of windpower in 10 years ($2 per W x 50GW = $100 billion). Taking differential capacity factors into account would indicate a cost of $250 billion for such effective substitution (and of course the

expertly assessed reality would actually involve a mix of renewables and geothermal in a non-carbon energy economy).

In relation to the current proposed legislation I would offer the following points in support of urgent promotion of renewable energy:

(a) Gross metering-based Feed-in tariff required

Professor Garnaut offered the expert advice that in relation to feed-in tariffs for domestic energy production (Garnaut Draft Review, Chapter 17, p433; see: http://www.garnautreview.org.au/domino/Web_Notes/Garnaut/garnautweb.nsf) "A feed-in tariff based on gross metering [as in Germany and Spain] is thus a more accurate means of pricing these benefits" i.e. while "dirty energy" and its hypothetical "cleaner" coal burning versions can be heavily subsidized according to the Review, the only "subsidy" advocated for "clean energy" is a gross metering-based feed-in tariff because it is "more accurate" than the net metering feed-in tariff that now obtains in Victoria.

(b) The means testing for domestic renewable installation should be abolished

The means testing for domestic renewable installation should be abolished (middle to high income people are the very people who have the money and the will to make such installation and should not be discouraged).

(c) Energy subsidies should go to safe renewables that do not kill Australians

Pollutants from Coal burning-based power generation (carbon monoxide, sulphur dioxide, nitrogen oxides, particulates, volatile organics and heavy metals, notably mercury) are estimated to kill about 5,000 Australians annually. The US EPA has recently made a risk avoidance-based re-valuation of each American life as $6.9 million per person. For Australia this means 5,000 person per year x $6.9 million per person = about $35 billion per annum (see "How many people die from Carbon Burning and Climate Change each year?": http://sites.google.com/site/yarravalleyclimateactiongroup/how-many-people-die-from-carbon-burning-and-climate-change-each-year and "Pollution deaths from fossil fuel-based power plants": http://sites.google.com/site/yarravalleyclimateactiongroup/pollution-deaths-from-fossil-fuel-based-power-plants). Energy subsidies should go to safe renewable power generation systems that do not kill Australians.

This submission has been made in the public interest.

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Credentials. Dr Gideon Polya published some 130 works in a 4 decade scientific career, most recently a huge pharmacological reference text "Biochemical Targets of Plant Bioactive Compounds" (CRC Press/Taylor & Francis, New York & London, 2003). He has just published "Body Count. Global avoidable mortality since 1950"

(G.M. Polya, Melbourne, 2007: http://mwcnews.net/Gideon-Polya and http://globalbodycount.blogspot.com/); see also his contribution "Australian complicity in Iraq mass mortality" in "Lies, Deep Fries & Statistics" (edited by Robyn Williams, ABC Books, Sydney, 2007): http://www.abc.net.au/rn/science/ockham/stories/s1445960.htm). He is currently preparing a revised and updated version of his 1998 book "Jane Austen and the Black Hole of British History" (see: http://janeaustenand.blogspot.com/) as biofuel-, globalization- and climate-driven global food price increases threaten a possibly 100-fold greater famine catastrophe (see: http://www.countercurrents.org/polya310308.htm) than the man-made famine in British-ruled India that killed 6-7 million Indians in the "forgotten" World War 2 Bengal Famine (see recent BBC broadcast involving Dr Polya, Economics Nobel Laureate Professor Amartya Sen and others: http://www.open2.net/thingsweforgot/bengalfamine_programme.html