



**Public Health Association**  
AUSTRALIA

**Public Health Association of Australia**  
**Submission on the**  
**Energy White Paper Issues paper**

**Energy White Paper Taskforce**

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## Introduction

The Public Health Association of Australia Incorporated (PHAA) is recognised as the principal non-government organisation for public health in Australia and works to promote the health and well-being of all Australians. The Association seeks better population health outcomes based on prevention, the social determinants of health and equity principles.

## Public Health

Public health includes, but goes beyond the treatment of individuals to encompass health promotion, prevention of disease and disability, recovery and rehabilitation, and disability support. This framework, together with attention to the environmental, social and economic determinants of health, provides particular relevance to, and expertly informs the Association's role.

## The Public Health Association of Australia

PHAA is a national organisation comprising around 1900 individual members and representing over 40 professional groups concerned with the promotion of health at a population level.

Key roles of the organisation include capacity building, advocacy and the development of policy. Core to our work is an evidence base drawn from a wide range of members working in public health practice, research, administration and related fields who volunteer their time to inform policy, support advocacy and assist in capacity building within the sector. PHAA has been a key proponent of a preventive approach for better population health outcomes championing such policies and providing strong support for the Australian Government and for the Preventative Health Taskforce and National Health and Medical Research Council (NHMRC) in their efforts to develop and strengthen research and actions in this area across Australia.

PHAA has Branches in every State and Territory and a wide range of Special Interest Groups. The Branches work with the National Office in providing policy advice, in organising seminars and public events and in mentoring public health professionals. This work is based on the agreed policies of the PHAA. Our Special Interest Groups provide specific expertise, peer review and professionalism in assisting the National Organisation to respond to issues and challenges as well as a close involvement in the development of policies. In addition to these groups the Australian and New Zealand Journal of Public Health (ANZJPH) draws on individuals from within PHAA who provide editorial advice, and review and edit the Journal.

## Advocacy and capacity building

In recent years PHAA has further developed its role in advocacy to achieve the best possible health outcomes for the community, both through working with all levels of Government and agencies, and promoting key policies and advocacy goals through the media, public events and other means.

## Ecology and Environment Special Interest Group of PHAA

The Ecology and Environment SIG is an active part of the PHAA on several topics. Overall activity focuses on promoting an ecologically sustainable human society as a foundation for long term

human health. Acting for a safe climate by advocating for a rapid, ordered transition from fossil fuels to renewables; opposing expansion of the nuclear industry and supporting sensible discussion on wind turbines as an energy source are priorities. Environmental chemical, including lead, exposures is an emerging topic.

We work with the Climate and Health Alliance on several projects, including the Energy Choices and Health Collaboration. This project assesses the potential impacts on health of all the major energy sources, with a particular focus on fossil fuel extraction and use. Immediate, direct and longer term global health effects are equally important. We also educate about the wider health and implications of greenhouse gas emissions.

## Energy White Paper Issues Paper Submission Summary

### Background

At the outset, the PHAA acknowledges the tremendous benefits that access to affordable energy has for economic and material prosperity and that this is a determinant of the current health of our industrialised populations, and our ability to deliver modern health care. That said, we also recognise there are other determinants of health operating at environmental and social levels which positively or negatively affect those benefits, and that access to too much energy (ie amounts of energy beyond that required to provide for basic needs including leisure) maintained and promoted and the sources of that energy can undermine the benefits of economic prosperity.

Therefore, we submit that the choices we make about the sources of energy we use to power our society have implications for the prosperity and health of humanity individually and as a society. Health effects of energy source emerge at direct local, delayed regional and long term global systemic levels. Therefore at the beginning of the second decade of the twenty-first century, the health implications of energy choices need to be recognised and incorporated firmly and clearly in any national energy policy. To do otherwise is irresponsible to the current population of Australia and to future generations.

This submission summarises the evidence of the health related impacts of fossil fuels in three domains: direct local, delayed regional and long term global systemic. It makes some general comments about the content of the Issues Paper, and finally it makes suggestions about what an energy policy for Australia should contain if health is to be maintained and promoted.

In this submission fossil fuels mean collectively: coals, natural gas (mostly methane) extracted both conventionally and unconventionally (unconventional gas or UCG) and petroleum products (mostly oil and petrol). Renewables include: solar in various forms (solar hot water, photovoltaic and thermal), wind, hydro-electricity and other water powered generation (tidal, wave and flow), geothermal in its various forms, and biomass (burnt organic matter) and energy and combustible substances derived from algae or bacteria. Active transport, including cycling and walking, also makes use of renewable energy, and has positive co-benefits for health.

The majority of energy is used to generate electricity and for transport, with some used directly for heating. Predominantly our energy comes from fossil fuels with a low but growing share from renewables.<sup>1</sup> This submission focuses on electricity and transport.

PHAA notes that this energy review is one part of a broader government package of reforms (p.6 Box 2, Issues Paper). We submit that the health issues that we raise in this submission are equally important in regard to other elements of this reform agenda and suggest they be considered in the planning and assessment processes of these other reforms for the same reasons as they should be considered here.

## 1. Health Effects

1. Health effects operate at more than one scale but is divided into sections within our submission for ease of understanding. Table 1 summarises the direct local and Table 2 the less direct regional effects. Long term global effects are discussed subsequently.
2. The three levels of effect outlined in Tables 1 and 2 reflect a broad concept of human well-being and health. This concept considers the direct toxic effects on biological systems that underpin the ecosystem services that humanity relies on for fresh water, fertile soil and agricultural production.
3. The psychological and socioeconomic effects from the direct local and indirect regional effects are equally important for health and human survival. The indirect regional and global long term effects (discussed below) are considered to have a much larger impact on well-being and health overall than the direct effects and are therefore more serious. This suggests the need for a public health approach to prevent as far as possible or plan to manage these negative impacts on health.
4. The Australian research in this area is sparse and we rely on overseas evidence for much of what we know. While not always directly applicable, it does give an understanding in broad terms of the health effects of fossil fuels and other energy sources.
5. We emphasise that we are not saying all people in all communities will suffer the effects listed; but these effects reflect the increased risks to some members in some communities, particularly those with higher levels of exposure.
6. The key message is that all energy choices have implications for health. As well, it demonstrates the need for research in the Australian context.

### Direct Local

Table 1 Summary of direct health effects of energy sources on individuals and local communities

Scale of action / Effect	Fossil Fuels		Renewable sources	
	Factor	Health Effect	Factor	Health Effect
Air quality - Gases - Ozone	Mining and combustion:	Cardiovascular and respiratory diseases <sup>2, 3,4,6</sup>	none	

	Coal, gas: volatile hydrocarbons <sup>2,</sup> 3,4,5	Obstetric problems <sup>7,8</sup> Neurological mal- development in children <sup>9</sup>		
Dust / particulates (operations and transport)	Particulates, <sup>3,4,10</sup>  Dust Coal dust	Cardiovascular and respiratory diseases <sup>3,4,10</sup> and lung cancer <sup>11</sup>  Onto washing and houses: regular inconvenience – distress	None  Some dust during construction phase	Time limited inconvenience – distress
Toxin and chemical exposure (water)	Unconventional gas exploration and extraction: exposure to chemicals <sup>2,12,5,13</sup>	Multiple potential health effects: multiple organ systems and cancer <sup>13,14</sup>	none	
Noise – increased volume or exposure	Mining: explosives and machinery  Transport (trains)	Disturbed sleep, annoyance, psychological distress, <sup>15</sup> (personal communication)	Wind turbine noise	Low incidence of annoyance from audible noise. No evidence of infrasound effects <sup>16,17</sup>
Vibration (often linked to noise)	From trains and machinery, explosions	Annoyance, sleep disturbance <sup>18</sup> (personal communication)		
Seismic activity	Increased small (<3) earthquakes arising from post gas extraction water re- injection <sup>19</sup>	Potential minor earthquake damage	Effects of Hydro- electric dams <sup>20</sup>	Potential earthquake damage
Occupational Hazards - mining	Coal, gas, oil: Mining is hazardous: physical, chemical, biological, ergonomic and psychosocial	27.5 deaths/100,000 annually in USA (compared to 28.5 for agriculture and 3.4 for all industries) <sup>23</sup>	Silicate exposure in photovoltaic panel production <sup>24</sup>	Low risk of exposure; WHS reduces risk in developed nations.

	occupational health hazards <sup>21, 22</sup>	WHS reduces risk in developed nations.		
Psychological effects from several of the above sources	Conflict in mining affected communities Loss of control of access to property Fears of loss of land, livelihood and community Loss of wellbeing due to concerns about health Loss of sense of place,	Psychological distress <sup>25</sup>  Solastalgia / psychological distress <sup>26</sup>	Conflict in communities in relation to wind farm placement Fears of loss of land, livelihood and community Loss of wellbeing due to community conflict and concerns about health	Concerns engendered by anti-wind farm lobby in the absence of evidence

### Delayed Regional

Table 2 Summary of delayed health effects of energy sources at the regional level

Scale of action / Effect	Fossil Fuels		Renewable sources	
Indirect Regional	Factor	Health Effect	Factor	Health Effect
Water Quality and availability	Compromise of agricultural land <sup>2, 12</sup> Adverse effects on livestock <sup>2</sup>	Indirect longer term effects on food security	none	
Air quality from use - Power generation - Transport	Toxic chemicals, particulates, heavy metals	Cardiac and respiratory disease, cancer <sup>3, 27</sup> Neurological mal-development in children <sup>9</sup>	none	
Actual loss of agricultural and stock productivity impacting food security for Australia	Mining operations: destruction of land and soil, Post mining / extraction land change: effects on livelihoods, rural township viability		none	

## Long term global systemic

7. The science as reported in the Fifth IPCC Assessment report confirms that humanity needs to peak greenhouse gas emissions this decade if we are to have a better than even chance of remaining within the two degree centigrade global increase (above pre-industrial levels) in temperature. It is clear that anthropogenic GHG emissions are driving this global warming, principally those arising from humanity's use of fossil fuels.<sup>28</sup>
8. The Climate Commission's final Critical Decade Report<sup>29</sup> summarised the situation in regard to fossil fuel use succinctly and concludes:

"The carbon budget is clear and compelling. To stay within the 2°C limit, the trend of increasing global emissions must be slowed and halted in the next few years and emissions must be trending downwards by 2020 at the latest. Investments in and installations of renewable energy must therefore increase rapidly. And, critically, most of the known fossil fuel reserves must remain in the ground."

9. More recently concerns that the planet is probably going to exceed this 2°C guardrail with consequent serious adverse effects on the economy, wellbeing and health, unless very urgent action is taken, has been expressed by the World Bank. Both the World Bank and the International Energy Agency call for rapid de-carbonisation of the energy sector to avoid this.<sup>30, 31</sup>
10. The Climate Change Authority's draft report recommends two options for Australia to play its fair share of GHG abatement; PHAA prefers their Option 2, the (minimum) 25% below 2000 levels by 2020. We argue that this provides Australia with greater flexibility adjusting to progress in international negotiations and agreements, economic and technological change, and in adapting to rapid evolution in the situation. From a risk management viewpoint, should the situation deteriorate more rapidly than anticipated, having conserved a larger proportion of the budget may mean less social and political disruption in the future if targets and trajectories need to be tightened.
11. The other important factor to be considered when setting energy policy and assessing the effects of that policy on Australia's immediate to long term prospects, is that global warming and its consequence are not occurring in isolation, but as part of a series of other changes; global, regional and domestic population increase; the likelihood of 'climate refugees' from small island states in the Pacific and elsewhere; deterioration and loss of fertile top soil through erosion and salination. These increase the pressures on energy demand, and the easy option is to choose more fossil fuel energy unless proper prior planning to do otherwise has been undertaken.
12. The CSIRO's modelling of effects of climate change on Australia<sup>32</sup> show less frequent cold events, more frequent hot events, increased evaporation, changes to rainfall patterns (less winter and spring with more summer rain) and rainfall intensity, and therefore the possibility of more drought and flood events. Taken together with the other factors mentioned in the paragraph above, this potentially adversely affects Australia's capacity to grow enough food, which has consequences for domestic food supply and for food exports.
13. The more specific effects of greenhouse gas emissions on health are summarised in figures 1.

# GHG Emission Effects

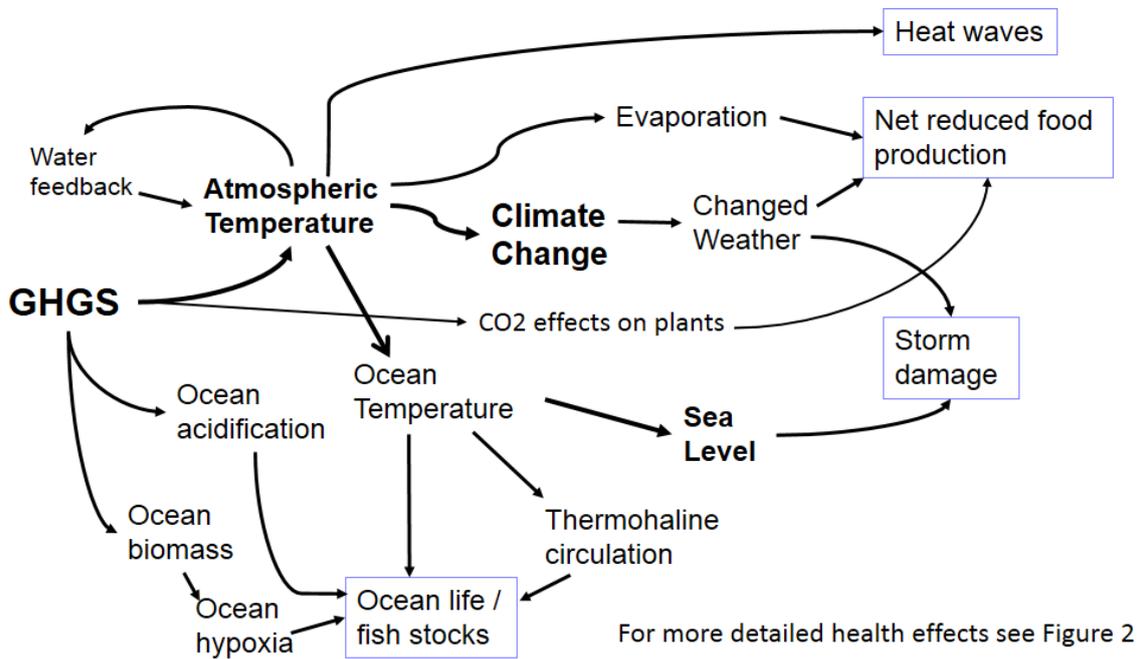


Figure 1: Overview of greenhouse gas emissions mechanisms to affect health

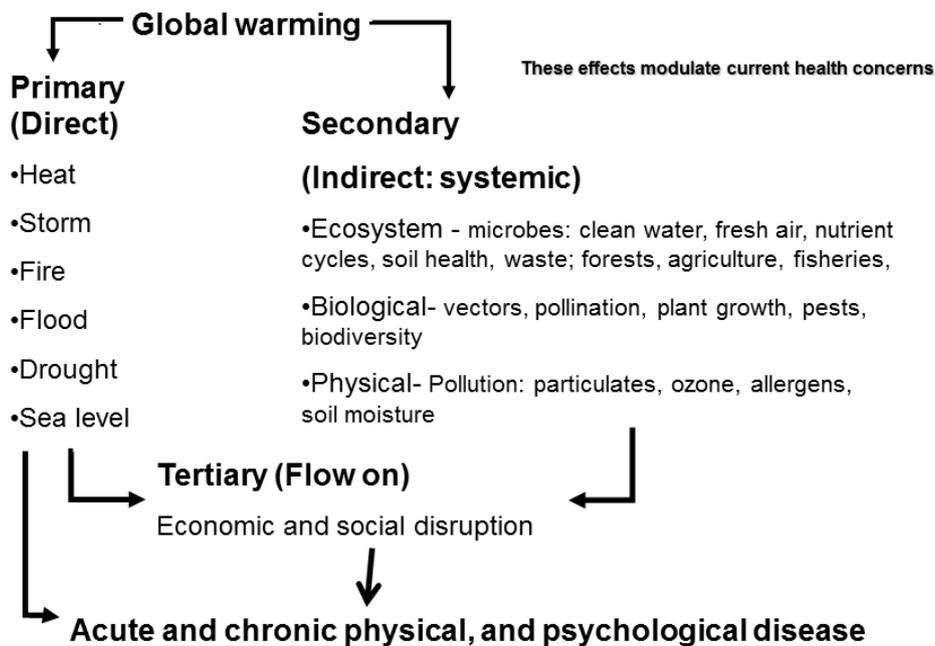
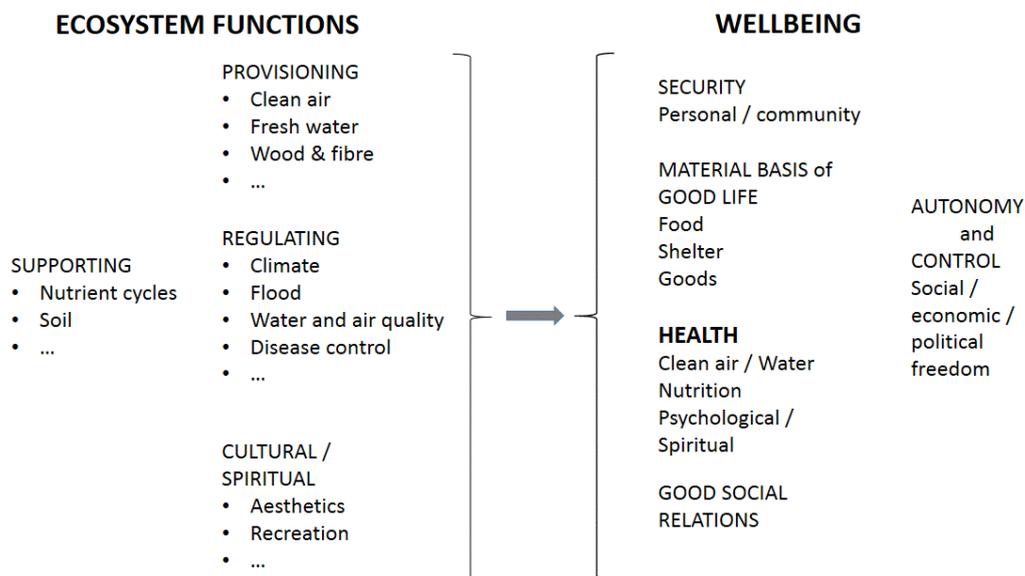


Figure 2: Summary of health consequences of greenhouse gas emissions

14. Global warming health effects are well documented. These include an amplification of a host of existing issues and can be considered in three groups (Figure 2)<sup>33, 34</sup>. First are the direct effects: increased death and morbidity from heat waves; increased injuries from more severe or frequent weather events, compounded by sea level rise and population shifts. Next are the secondary, indirect effects from ecosystem changes in natural cycles and functions. These include the changed range and timing of infectious diseases; changed temperature, rainfall and evaporation effects on plants additional to those from increased atmospheric CO<sub>2</sub> concentrations; sequelae from changes in micro-biota influencing soil fertility; and changed insect ecology that will effect crop fertilisation and pest prevalence and behaviour (Figure 3). In Australia, all of these are likely to synergistically reduce agricultural output and quality, increasing the risk of in food insecurity. The economic and social consequences of these and other systemic effects will both reduce capacity to respond, including health system capacity, and reduce psychosocial wellbeing<sup>35-43</sup>.



Adapted from Millennium Ecosystem Assessment 2005

**Figure 3:** Summary of Ecosystem functions that support society and health

15. In relation to energy choices, it is the regulating functions of the ecosystem that are affected and impact on both health and the basis of the good life. However the adverse effects on health of the negative aesthetic effects of industrialising our landscapes (as mentioned above) are also important.

## 2. General Comments on the Paper

### Health

16. We were not surprised to see health mentioned only three times in the paper. One mention relates to the health of the economy, and two appear in the context streamlining regulations; “Required approvals may relate to land acquisition, use and access, planning, marine reserves, environmental regulations and offsets, Indigenous and non-indigenous heritage, native title and public health and safety” (p.20) where health concerns features **as a barrier to be removed**; and relating to WHS “Skills will also be required in areas including health and safety, and science and technology appropriate for specific industrial demands” (p.29). **Human wellbeing receives no mention.**
17. We realise that health has not traditionally been a primary concern in relation to energy policy, but as we have submitted above, we think that it needs to be. There is critical need to build health impacts into the assessments across all sectors. This is to ensure that our economy is not damaging health and the environment on which it depends.

### Climate Change and Greenhouse Gases

18. Surprisingly the Issues Paper does not mention global warming or climate change. We would think that in 2014 an up to date energy policy paper cannot omit this singularly important factor.
19. Greenhouse gases (GHGs) get four mentions; two in “*Greenhouse and Energy Minimum Standards Act 2012*”, and two reiterating the commitment to “achieve Australia’s goal of a five per cent reduction in greenhouse gas emissions by 2020”. There is no mention or discussion of the Climate Change Authority’s Draft Report and the implications which it would have for energy policy in Australia.
20. As outlined above, greenhouse gas emissions constitute a critical issue for the prosperity, health and wellbeing of Australian society.

### Vision and leadership

21. There is no overarching vision of an energy transition and economic re-structure that the science and health impact contexts show are essential if we are to improve health (or indeed even maintain current levels of health and health care services); there seems to be an assumption reflected throughout the Issues Paper that a continued business as usual approach to energy supply with some minor tinkering will see us through. Further, no time frame for evolution of the energy sector is anticipated.
22. The time for strong action to conserve our society is now. To be relevant, 21<sup>st</sup> century energy policy must help address the challenges to society from global warming and environmental change.

### 3. Specific Energy White paper Task Force Queries

We comment on some of the specific Task Force queries to introduce the health aspect to them.

#### Energy Efficiency and Renewable Energy Sources

23. PHAA is pleased to see included “the Energy White Paper will also consider lower emissions energy and the more productive and efficient use of energy” (p.9-10 Box 3), along with the issues list on page 8: encouraging alternative and emerging energy sources and technology. However we are disappointed in that the tone of discussion of need for energy security frames increasing use of renewables as a problem whereas in the context of the need to change to renewables it is an opportunity / solution. For example on page 11 “In part, security can be met by diversity in supply, however, switching energy sources may not always be a technically viable or available solution. Switching may also be inconsistent with other commercial realities or government policy goals.” Energy security seems to be focussed on further developing conventional or more unconventional fossil fuel sources (p.12). There seems little recognition that the increasing cost of liquid fuel supplies is a reflection of scarcity.

From Box 3 p.10 *Alternative and Emerging Energy Sources and Technology*

The Government seeks comment on:

- ways to encourage a lower emissions energy supply that avoids market distortion or causes increased energy prices;
- the need to review existing network tariff structures in the face of rapidly growing deployment of grid-backed-up distributed energy systems, to ensure proper distribution of costs;
- additional cost-effective means, beyond current mandatory targets and grants, to encourage further development of renewable and other alternative energy sources and their effective integration within the wider energy market;
- how the uptake of high efficiency low emissions intensity electricity generation can be progressed;
- any barriers to increased uptake of LPG in private and commercial vehicles and CNG and LNG in the heavy vehicle fleet; and
- any barriers to the increased uptake of electric vehicles and advanced biofuels.

24. Unfortunately these sentiments would seem to be offset by an increasing focus on simultaneously expanding fossil fuel production, use and exports. In the context of the global effects of GHGs and increasing recognition of the overall costs of energy, this would be a development counter-productive to maintaining human health.

## Nuclear Energy

25. Contrary to the assertion in the Energy White Paper, nuclear technologies do not present an appropriate option for energy in Australia now or in the future. Nuclear energy remains one of the most costly forms of energy, and economic costs are compounded by environmental costs and risks at every stage of the nuclear cycle, including uranium exploration, mining, transport, refining, energy generation, reaction decommissioning and waste disposal. No long term nuclear waste disposal systems have been demonstrated to be safe anywhere in the world, despite decades of promises that this intractable problem could be solved. After multiple government enquiries there is still no long term agreed storage plan for the waste created from Australia's nuclear research activity, this should sound a warning for any proposals to create an increased waste stream from energy production. Despite being non-fossil fuel based at the point of electricity generation nuclear energy is not a suitable option for greenhouse gas emission reduction. PHAA supports Australia's decision to avoid nuclear energy.

## Role of Government

26. This is mentioned in the terms of reference ("the appropriate role for government in the energy sector") and come into multiple sections of the Issues Paper. PHAA suggests that at this time of momentous change, the role is to lead by providing strong clear guidelines for energy use and transition, within which industry, State/Territory and local governments can find most effective solutions.

## Energy Pricing

27. The Issues paper expresses concern that "emerging issues in the electricity sector where tariff structures may not fully reflect actual costs of supply" (p.15). While PHAA is pleased to see consumers being given more information about their electricity use, the bigger issue in reviewing the tariff structures is that environmental and consequent health costs of energy are externalised by producers and so are not reflected in the prices of energy. PHAA considers that these externalised cost need to be included so that consumers can be even better informed when making choices about energy use. Otherwise there is a market distortion.
28. PHAA agrees with the sentiments expressed by "There is significant opportunity for Australian business to re-orient towards developing intellectual property and value-added products. This includes proactively exploring opportunities for research and development, collaboration and investment.
29. "Industry leadership in fostering a business culture that supports and facilitates innovation and sustainability ... is fundamental for growth and development" (p.19) but is disappointed that this seems to translate only into Australia being an "attractive destination for explorers to sustainably develop Australia's natural resources" (p.19). It seems that the Issues Paper is not considering how the transition to renewable energy and developing a manufacturing and maintenance industry (domestic and export oriented) around renewable energy technology could help Australia employment and prosperity, with the consequent benefits for health and wellbeing. Furthermore, sustainability of an extractive resource is a contradiction that the paper has not addressed.

30. One of the assumptions underlying this report is that energy costs need to remain low, although this is not defined. This appears in several places and is reflected in the statement “Policy that encourages low-emissions sources in a manner that does not lead to increased price pressures, risks surety of supply or reduces investment certainty for long-return investments will be challenging” (p.35). This sentence also frames the discussion in a way suggesting renewable / alternative energy sources are likely to create upward pressure on process and fossil fuel developments will not. However as discussed under tariffs above, PHAA submits that fossil fuel prices are low because the costs to health and the environment from their use are externalised. We further submit that investing in energy production that protects health and the environment, while this may increase prices, is beneficial for society overall and in the long term. Government’s priority should be to conserve our environment and protect health as primary goals, with energy affordability a secondary priority once the higher order goal is reached.

## Summary of recommendations and suggestions

31. It is critical for the health and wellbeing of current and future generations of Australians that the adverse health impacts of energy use, particularly fossil fuel use, be balanced against the benefits. This is particularly the case in relation to global systemic environmental effects from greenhouse gasses.
32. 21<sup>st</sup> century energy policy has to be developed within the broad scientific and environmental context so it helps address the challenges to society from global warming and environmental change.
33. These health effects must be factored into assessment of the complete package of energy reforms that the Australian government is proposing.
34. The health effects at all scales need to inform decisions about energy policy.
35. There is critical need to build health impacts into the assessments across all sectors to ensure that our economy is not damaging health and the environment on which it depends.
36. In particular the global long term systemic effects of greenhouse gas emissions and their relationship to fossil fuel use needs to be given a very high priority in these decisions.
37. This Energy Policy review gives Australia the opportunity to stay abreast of international developments in energy security; PHAA is concerned that continuing with a business as usual approach to energy policy will mean Australia is left behind as the world economy transitions away from the carbon economy, with consequent implications for health and wellbeing and for about how we will be able to deliver quality health care into the future.
38. Energy pricing needs to include the currently externalised costs to the environment and to human health to permit consumers better informed choice about energy use. Limiting energy prices is secondary to ensuring we have a liveable environment and health society.
39. Nuclear energy is not useful for addressing energy needs in the context of greenhouse gas abatement, because the overall costs and risks are too high in both the short and long term.

The PHAA appreciates the opportunity to make this submission and would welcome the opportunity to present to an inquiry if this arises.

Please do not hesitate to contact PHAA should you require additional information or have any queries in relation to this submission.



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4 February 2014

Enclosed:  
PHAA Safe Climate Policy  
PHAA Health Effects of Fossil Fuels Policy



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