Committee Secretary
Select Committee into the Resilience of Electricity Infrastructure in a Warming World
Department of the Senate
PO Box 6100
Parliament House
CANBERRA ACT 2600
AUSTRALIA

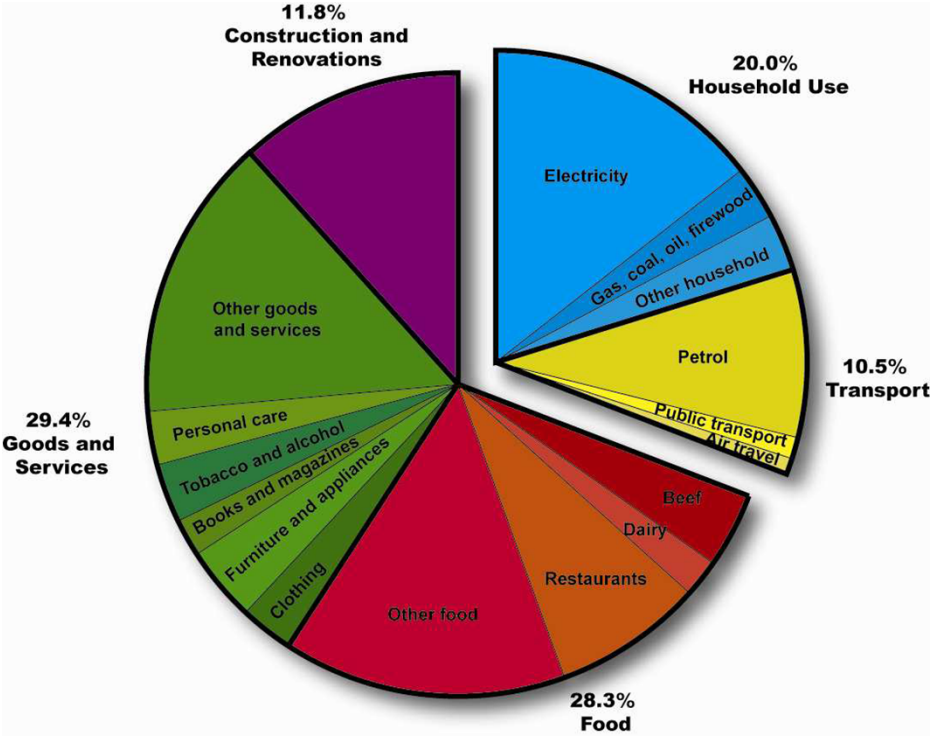
Dear Sir/Madam

I write to you as an individual, a father, a grandfather and a person concerned with the wellbeing of his community.

My wife and I live in a rural area just north of Mudgee in NSW and have chosen to be "off grid" to reduce our personal greenhouse gas emissions. Our commitment to the environment and to taking personal responsibility for climate change action is not something we take lightly. We have spent the last 2 ½ years building, largely with our own hands, a sustainable home. Our definition of a sustainable home is one where no net greenhouse gases were generated in construction and no net greenhouse gases will be generated during ongoing occupation.

Some years ago the University of Sydney, on behalf of the Australian Conservation Foundation, undertook a study indentifying the "drivers" of greenhouse gas generation in Australia. This study was called "***Consuming Australia***" (Note 1). The report contained the following pie chart which summarises the drivers of greenhouse gas emissions.

Fig 1. Average household profile: greenhouse gas pollution



As can be seen Construction and Renovation account for nearly 12% of total greenhouse gas emissions. This represents the “embodied energy” contained in many conventional building materials.

Energy use in the home accounts for 20% of greenhouse gas emissions and most of this is due to coal and gas fired electricity generation.

Committee Members should be aware of the drivers of greenhouse gas emissions as a wide range of strategies and actions will be required to address the overall problem and reduce Australia’s net emissions to zero by 2050.

Committee Members should also be aware that Mudgee was hit by a freak storm on Wednesday 18 January 2017, which left the whole town of approximately 8,000 residents and all businesses without mains power. This was due to a combination of street poles and local distribution cables being damaged and high tension lines bring power to the town being damaged. Surrounding rural areas such as our Budgee Budgee locality were also left without mains power.

SOLUTIONS

Energy

We were not affected by the Mudgee power outage as we have a stand alone photovoltaic power system with 3.1K of solar panels and a 48 Volt, 1320 Amp Hour battery bank. An added benefit was that we were able to lend our back-up generator to a local restaurant to stop a large quantity of food from spoiling and assist them to avoid financial loss.

Clearly, distributed systems, whether they are power generation and supply systems, computer systems or water storage and supply systems, etc, are much more resilient than centralised systems.

Battery technologies are advancing rapidly and becoming more cost effective. Many households who took advantage of feed-in-tariff offers and installed grid connected solar systems will be looking at the benefits or installing some storage capacity in order to use the electricity they generate themselves rather than sell it to electricity providers at ludicrously low prices. It is criminal that electricity providers charge a premium for green power while paying as low as 6 cents per kilowatt hour for green power fed into the grid. Electricity providers need to become proactive in becoming generators and distributors of renewable energy, otherwise they will end up in a downward spiral that will severely disadvantage those consumers who are unable to disconnect from the grid.

Australian Commonwealth Governments and State Governments need to start planning for the future and develop a holistic plan to move Australia onto 100% renewable energy. By the very nature of renewables, distributed energy generation would be an important feature of such a plan. A mixture of photovoltaic, solar thermal, wind, hydro, geothermal, biomass and wave power generation, by its distributed nature would be inherently more reliable.

Inevitably the move to 100% renewable energy will leave behind "stranded assets", particularly fossil fuel powered generators. It is important that Australia have a holistic plan and a timetable for a complete transition so that:

1. Planning for ongoing investment in generation capacity and in the grid can proceed with a measure of certainty. If the development of a holistic plan is delayed then inevitably sub-optimal investment decisions will be made and either investors or consumers or both will suffer.
2. There can be no argument against having a plan to convert to 100% renewable energy. This is essential for Australia to reduce its greenhouse gas emissions to zero by 2050 and to limit global warming to a maximum of 2 degrees. The sooner the government faces this reality the better off Australia will be.
3. The Renewable Energy Sector in Australia will be made stronger and more attractive to investors and Australia can start to benefit from economies of scale.
4. Australian can finally start to benefit from the ground breaking research into photovoltaic's that has taken place at the University of NSW. It is a national tragedy that other countries have benefited from investment, manufacturing and job creation associated with solar panel production due to Australian government short sightedness and neglect.

Construction

The level of greenhouse gas emissions attributable to construction and renovation is so large it merits direct government intervention by way of incentives or penalties. If this is not done then 'business as usual' will prevail and these driver of greenhouse gas emissions will continue to be a festering sore preventing Australia from reducing its emissions as rapidly and as completely as is needed.

Two areas where action could be taken come to mind.

Firstly, all State energy rating system such as BASIX in NSW should start to focus on embodied energy. To reduce net greenhouse gas emissions from construction and renovation to zero we will need to reduce the embodied energy contained in conventional building materials substantially and require developers/builders to provide offsets to all remaining emissions. The alternative that we adopted in building our home is to use natural materials; straw, mud bricks, clay and lime renders and plantation timber. Such materials have very low levels of embodied energy and actually sequester carbon that would otherwise contribute to emissions.

Secondly, the government needs to give direction to bodies such as the ***Green Building Council of Australia (GBCA).*** The rating system run by the GBCA is supposedly a guide to the 'sustainability' of buildings. However, as it currently stands it is focussed purely on ongoing building performance and ongoing emission levels. To the extent that people do not understand this the rating system is very misleading. The GBCA has acknowledged the embodied energy is a problem but aside from suggesting that builders and developers should measure it there is no direction as to how this major problem might be overcome.

The government needs to give direction to industry bodies such as the GBCA to incorporate measures of embodied energy into rating tools and to refrain from claims that buildings, which are simply energy efficient ongoing are 'sustainable'. Clearly, such direction is needed because the directors of the GBCA, who are all involved in the property development and construction industries have a huge vested interest in maintaining the status quo and avoiding any move towards the construction of buildings that truly are sustainable.

SUMMARY

- Australia needs a plan and a timetable to transition its current electricity generation infrastructure to 100% renewable energy. There are many advantages to be gained from the development and implementation of such a plan and no real disadvantages.

- A transition to 100% renewable energy generation would make power supplies inherently more reliable.

- The implementation of such a plan would be a tremendous boost for the renewable energy sector. It would certainly create many jobs in the installation area and could potentially support local manufacturing of all manner of renewable power generation equipment and power storage technologies.

- The Committee should concern itself with greenhouse gas emissions deriving from building construction and with the energy efficiency of buildings. Together these drivers account for almost one third of Australia's greenhouse gas emissions. Good building design can greatly reduce energy demand. Achieving net zero emissions from building construction and renovation is essential in the long run for Australia to reduce overall net emissions to zero.

I would ask that the Committee respect the fact that this submission comes from someone who has taken personal responsibility for reducing their own greenhouse gas emissions. It is not a frivolous or politically inspired submission. As a nation, we need to take immediate action to combat global warming for the sake of our children, our grand children and all future generations of Australians. The Australian government could have no higher priority.

Yours sincerely

Barry Hadaway
23 January 2017

Notes:

1. ***Consuming Australia: Main Findings***

This report is based on data collected and analysed by the Centre for Integrated Sustainability Analysis at the University of Sydney.

This project was supported by the NSW Government through its Environmental Trust