To the Chair:

I write to you today in regards of the Senate Select Committee on Climate Policy. In particular, I draw your attention to Section 1 of the Terms of Reference[1], which state:

> (1) (a) the choice of emissions trading as the central policy to reduce Australia 's carbon pollution, taking into account the need to:
>
> (i) reduce carbon pollution at the lowest economic cost,
>
> (ii) put in place long-term incentives for investment in clean energy and low-emission technology, and
>
> (iii) contribute to a global solution to climate change;
>
> (b) the relative contributions to overall emission reduction targets from complementary measures such as renewable energy feed-in laws, energy efficiency and the protection or development of terrestrial carbon stores such as native forests and soils;
>
> (c) whether the Government's Carbon Pollution Reduction Scheme is environmentally effective, in particular with regard to the adequacy or otherwise of the Government's 2020 and 2050 greenhouse gas emission reduction targets in avoiding dangerous climate change;
>
> (d) an appropriate mechanism for determining what a fair and equitable contribution to the global emission reduction effort would be;
>
> (e) whether the design of the proposed scheme will send appropriate investment signals for green collar jobs, research and development,and the manufacturing and service industries, taking into account permit allocation, leakage, compensation mechanisms and additionality issues; and
>
> (f) any related matter.

I would like to address these roughly in order.

- **(1) (a):** While there are Pros and Cons to both Emissions Trading and Carbon Taxes, the simplicity and transperancy of Carbon Taxes is preferable to me personally. The structure to apply Carbon Taxes already exists with the Tax Office, and requires little or no additional funds to operate. On the flipside, people and businesses have an averse reaction to taxes, primarily because they see it as an impost on the cost of living/doing business. This reaction can be alieviated (although probably not eliminated), by a careful explanation of what the Tax is for, and how it will be spent (for example, combining the Tax proceeds with 'General Revenue' will not be acceptable). On the other hand, an Emissions Trading Scheme allows emissions-heavy industries to shift the burden onto not only other sections of the community, but indeed other Nation-States, if the system is compatible with theirs (least-cost). The Tax reciepts are 'fuzzy', poorly explained, and non-transparent. I note that the Federal Government says there is the option to reduce the total number of CPRS credits year-on-year, however, there is no requirement in the Legislation to do so.

- **(1) (a) (i):** Measures aimed at 'lowest economic cost' are fraught with danger. We have seen the effect 'lowest economic cost' style thinking has had on local manufacturing, as industries

1 http://www.aph.gov.au/senate/committee/climate_ctte/tor.htm Terms of Reference

have moved off-shore. If the CPRS is intended to work 'as advertised' the focus should not be on LEC, but rather, 'best effect'. That is, a system which has 200% of the effect of another system, but costs 250% more, should still be seriously considered, even though it has an additional cost over and above the effect it provides. Consideration should also be given to the possibility of expanding a given system; if System A cannot be expanded, but System B can be, then System B has a better potential effect, even if it costs more to implement in the first place. Public Transport, such as Trams, Light Rail, and Heavy Rail fall into this category, as they can be expanded for little additional cost once the rails and stations are in place. Furthermore, if a given system is constructed locally, it should be given increased weighting in favour of a system manufactured overseas (partly economic reasoning, partly environmental, as Western Nations are more energy-efficient than Developing Nations).

- **(1) (a) (ii):** I am not of the opinion that long-term incentives are in place at all. Current policies still seem dependent on Fossil Fuels as the primary 'source' of the energy we use. Renewables are seen as either a small 'cost' of 'doing business', to appeal to the Public and make it seem like real action is being taken (Greenwashing), or as seen as *additional* to existing Generation. Further, the current design of the CPRS does almost nothing to encourage heavy emitters to change their ways, due to the large volume of Permits given away for free, and the complete lack of incentive for individual action (ie, if an individual reduces their consumption of electricity produced from Coal, then this simply frees up energy for someone else to use. The only option available to the individual is to purchase CPRS permits – if indeed they can – and allow them to expire/destroy them). On the contrary, there should be a national focus on *replacing* (not simply elimiating) existing emissions-heavy industries where practical, and reducing the emissions intensity of other non-replaceable industries (for example, recycling Aluminium uses only 5% of the energy used to refine it in the first place, and recycling Steel (electric arc furnace) uses only 36% - 40% of the energy originally used[2]. If renewable electricity were used instead of Fossil-Fuel derived electricity, Carbon Dioxide emissions would be cut drastically).

  The Federal Government is giving highly mixed signals to the Business Community, and to individuals. It has repeatedly 'committed to tackling [Anthropogenic] Climate Change'[3], but in the Economic Stimulus, is spending vast amounts on actually *increasing* emissions (Highways, Coal Loaders, and so forth), rather than using the economic crisis to promote reduced emissions intensity, reduced emissions, and more Renewable generation. If funds are being spent to prove infrastructure for the future, and stimulate the economy, there is no sane reason to hitch the wagon to industries and practices of the past.

- **(1) (a) (iii):** The CPRS as it stands is not a Global Solution (were it to be compatible with international schemes). Rather, it is a global *transfer* of pollution to the Developing and Third-World. A true global solution would be firm-but-ever-reducing caps on Emissions, starting today, backed up by trade incentives (for countries which reduce their emissions) and costs (for countries which do not reduce their emissions), and cross-border co-operation between nations for the transfer of technology to allow less well-developed nations to reduce their emissions without sacrificing the well-being of their citizenry. The CPRS (or Carbon Taxes) by itself is not a 'silver bullet' for AGCC - as there are other factors such as population which need to be considered – but real, significant limits on CO^2e and other pollutants are a significant and necessary step.

2 http://sine.ni.com/cs/app/doc/p/id/cs-11227 Nucor Refines Steel Recycling Using NI LabVIEW and National Instruments Hardware

3 http://www.trishcrossin.com.au/news/0908/mr0824-01.php "The Rudd Government is committed to tackling climate change by reducing carbon pollution, helping to secure a global solution and providing support for communities to adapt to the effects of unavoidable climate change."

- **(1) (b):** It is cheaper to save a watt than it is to generate it. To this end, the Insulation rebate[4] in the current economic Stimulus package is to be applauded. Insulating homes and businesses, particularly in the north, south, and inland of the country is a cheap and cost-effective method of quick efficiency gains. However, while we continue to build structures poorly suited to the environment, Insulation is a patch, not a solution. Increasing the 'Star Rating' for homes should be a priority, as the additional costs are quickly recouped by the reduced amount of fuel required to heat and cool them. It also provides a buffer against price swings of fuel, such as we saw in 2008/2009 with Oil and Gas. While there is some movement in this direction (the Queensland Government has made rainwater tanks mandatory for new houses, and is increasing the minimum star rating for residential houses to 5 Stars), it is not enough if people continue to live in existing, poorly-insulated houses. To this end, Smart Meters are a clever and (mostly) passive method of encouraging users to limit their electricity useage. I note that while there are incentives to install Solar Hot Water and Insulation, there appears to be no incentives from Governments to install Ground-Sourced Heat Pumps - a viable and low-cost-to-run alternative to reverse-cycle air conditioners in every environment Australia supports – or other items like hot water recirculators and motion sensors for internal lights.

  BioChar is heralded as the new saviour of the world, but when it comes to Sequestration of Carbon, it's usefulness is not yet fully known. Terra Preta[5] gives interested parties hope that a 'natural' and cheap solution can be found to Sequester Carbon. An added bonus is that Terra Preta is significantly more fertile than surrounding soils, making it a two-for-one. Adding BioChar to poor soils may both improve their productivity (a key consideration in Australia) and remove Carbon from the Atmosphere. There are suggestions that in limited cases, the application of BioChar could stimulate soil organisms which results in carbon being expelled from the Soil into the atmosphere, so, due to the science of BioChar being in its infancy, clearly requires more study. It has huge potential.

  Feed-in Tarrifs are an excellent method of encouraging low-carbon generation. In addition to the fast energy payback time that Renewable technologies provide, localised generation reduces line-loss, making the generation and distribution of electricity more efficient. Similarly, regional Renewable generation, such as the proposed Cloncury Solar Power Station[6][7] reduces or removes the need for isolated towns and homesteads to rely on long-distance shipment of fuel, such as Diesel for Generators, and reduces or removes the worry about price variability, and supply issues. In light of the expected weather changes as a result of AGCC (more severe events, but not necessarily more events per se), the desirability of a locally (even in centralised local) available system of electricity generation not dependent on outside supply should be obvious. Similarly for Suburbia, a rooftop Solar System (PV) could provide power for essentials in the event of an event like that which hit The Gap in Brisbane last year, or Sydney some years back. The usefulness of local generation in Cyclone-prone areas should be obvious (even in the Pilbara, companies have considered constructing multiple Concentrating Solar Power Stations[8] for a similar cost of the HRL Coal-fired Power Station in the Latrobe Valley[9]. HRL has a projected cost $1.875m/MW , Pilbara CSP plant $4m/MW (construction cost only). The CSP plant only requires water, while the HRL plant requires both water and Coal).

4 http://www.environment.gov.au/rebates/index.html
5 http://www.css.cornell.edu/faculty/lehmann/research/terra%20preta/terrapretamain.html Soil Fertility Management and Soil Biogeochemistry
6 http://www.lloydenergy.com/presentations/Cloncurry%20Solar%20Thermal%20Storage%20Project%20FAQ.pdf
7 http://www.theaustralian.news.com.au/story/0,25197,22700605-2702,00.html
8 http://www.businessspectator.com.au/bs.nsf/Article/Dream-solar-system-HF6HW?OpenDocument&src=sph
9 http://www.envict.org.au/file/file/HRL%20QA%20EV%20-%20FINAL.pdf

- **(1) (c):** As it stands, the CPRS is borderline useless. With no incentive for individual action, free permit handouts to the biggest emitters, and an apallingly low target, the CPRS could be easily and fairly labeled as Greenwashing. The 5% (15% if other nations join in) target is so low as to be non-existent. Eliminating the 'low-hanging fruit' should be the main (but not exckusive) aim of the next decade, with the comparatively expensive items like fixed generation targeted for 2020-2050. Reducing household emissions (much of the low-hanging fruit) is remarkably easy: CFL and LED bulbs in place of incandescents (already well underway), chest fridges and freezers instead of uprights, better insulation, Smart Meters, rooftop Solar PV, Solar Hot Water, tinting/glazing/double-paning windows, avoid using clothes dryers, the list goes on. All these are cheap, readily available, and have a quick energy payback time (additionally, all but Solar PV have a fast financial payback time). While the Government is moving towards a '1-Watt' standard for standby power for devices such as DVD players and televisions (although this is, apparently, 'aspirational' only[10]), there's no reason why 0.1W isn't achievable, both financially and technically. Simply switching devices off at the wall is something everyone can do to save power.

  Are we to believe that a 15% goal is the best we can do by 2020? The Dow Chemical Company in the US achieved a 22% reduction alone in 10 years[11], based purely on business interests. In Austin, Texas, the local utility *avoided* building a new 750MW facility by implementing efficiency measures for its customers. The low-hanging fruit is easy and cheap. A 15% goal laughs in the face of the accepted science of AGCC.

  For 2020-2030, things become harder. The low-hanging fruit is largely gone, and we have left hard (and often expensive) choices. Some choices will be made for us (Peak Oil means driving will become unaffordable), but others require some deliberation. Such as: what will we replace our centralized, coal- and gas-fired power plants with (the average age of stationary fossil-fuel-fired power plants in Australia is 25-30 years, with design lives af around 50 years)? Replacing them with other coal- and gas-fired plants isn't an option, least of all because Gas and Coal will follow Oil into Depletion, limiting supply and increasing prices. Better to plan for the construction of a 'Smart Green Grid'. This is, build enough Renewable generation for a 95% uptime (roughly what existing generation guarantees).

  Relying on one technology won't cut it; we've been doing that for a hundred years, and that's led us here. Rather, complementary generation should be constructed. Solar during the day complements Wind at night. Both can be backed up by Pumped Hydro. Excess power can be used in air- and water-to-Ammonia plants (the resulting Ammonia can be used as a CO2-free fuel/energy storage, or as fertilizer). A Smart Grid, with regions linked by HVDC, would let us move power where it's needed, cheaply and with little line loss (estimates for HVDC line loss range from 3% - 6%/1000km). We could then shunt power from Western Australia to the Eastern Seaboard in the evenings, while retaining Pumped Storage/Ammonia for the next day, and use Wind at night. Nuclear power plants are also an option, especially given their relative safety over Coal-fired plants (once externalities such as the effect on Human Health of coal plant emissions are accounted for[12][13]), and provide a slot-in replacement for existing Base-Load power plants. Dealing with Nuclear 'waste' is not a technological issue, but rather a political one (the current once-through cycle is very wasteful anyway).

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10 http://www.energyrating.gov.au/standby-background.html
11 http://www.news.dow.com/pdfs/dow_energy_plan.pdf Dow's Energy Plan for America Executive Summary
12 http://www.sciam.com/article.cfm?id=coal-ash-is-more-radioactive-than-nuclear-waste Coal Ash Is More Radioactive than Nuclear Waste
13 http://www.epa.gov/ttn/caaa/t3/reports/eurtc1.pdf Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units -- Final Report to Congress.

Other emissions need looking into as well. Obviously, deforestration needs addressing. Reducing the scant remaining tree cover in a time of concern about Climate Change is ludicrous. A linked aspect is human dietry habits: meat takes a lot of land and energy to grow, and Industrial Agriculture, mainly through plowing, emits enormous volumes of Greenhouse Gasses into the atmosphere, roughly 18% of Australias total emissions. Nutritionists recommend a diet with less meat than current, and more vegetables. A simple dietry change, but one likely resisted by many, would reduce emissions by not requiring so many grazing animals[14].

- **(1) (d):** When considering an appropriate Global Emissions scheme, one must consider the historical influences. While China and India are the current favorite for scapegoating, due to their high volumetric emissions, it should be noted that a) they have enormous populations, and their per-capita emissions are significantly lower than that of Western Nations, and b) the CO^2e currently causing problems was largely emitted by Western Nations. As such, a Global agreement should reflect both current, future, and past emissions. Logically, Nations should remove from the Ecosphere the same amount they have emitted, however, this is not possible, as at least some of it has been locked away through the weathering of rocks, sequestering in the soil, and other natural phenomena. Therefore, a formula must be agreed upon reflecting historical emissions. If a given country emitted 10% of all emissions between 1800 and today, then they should agree to remove 10% of the excess CO^2e currently in the atmosphere, and continue to do so at least until CO^2e reaches an agreed level (below 300ppm). Critics of various schemes will argue that China (for example) has larger absolute emissions, and thus must make larger absolute cuts, while China would argue that the US (again, for example) emits more per capita, and must make larger cuts. Both are good points, and a compromise must be reached.

  It must be pointed out that a large amount of Chinas and Indias emissions are actually *on behalf* of Western Nations, who have outsourced their manufacturing sector there. This aspect should be considered when discussing emissions allocations. Chinas emissions for its' own population is likely a small slice of its' absolute emissions.

- **(1) (e):** With regard to compensation, there should be none, or, at the very most, a rapid phase-out. An ETS/CPRS is s*upposed* to make carbon-intensive activities economically unappealing! Compensating either Industry or individuals removes the economic incentive to alter behaviour. Individuals often note that a CPRS will increase the cost of things like electricity (even while the generators get free permits?!), but in-home efficiency measures like mentioned above would compensate regardless. Electricity generators says the CPRS will make them economically unviable, which is the point. Even if they were so, they can petition their particular government to allow them to raises prices, which would be offset in the home by more efficiency measures. An increase in the cost of Coal won't make Loy Yang or everything in the Hunter Valley shut down in 2011. Malcom Turnbull states that by 2050 “in order to achieve any of these measures is by mid-century our world must be one that gets all, or almost all of its energy, from zero-emission sources”[15]. Export vulnerable industry has a valid point, however, but they have an 'out'. The WTO says that a Nation can impose tarrifs for 'non-economic' reasons[16]. Thus, it could be argued that we can add or remove tarrifs on imports or exports, depending on wether they are headed for a country that

14 http://www.daa.asn.au/index.asp?PageID=2145841202
15 http://www.1degree.com.au/files/cm27aug07mp028.pdf The Big Debate on Climate Change
16 http://en.wikipedia.org/wiki/WTO “In specific circumstances, governments are able to restrict trade. There are three types of provisions in this direction: articles allowing for the use of trade measures to attain noneconomic objectives; articles aimed at ensuring "fair competition"; and provisions permitting intervention in trade for economic reasons”

has a compatible Climate Change policy.

- **(1) (f):** Population, as an aside, is used by the incumbent Federal Government as a justification for their weak 2020 targets. This brings up another aspect of the various global crises we seen in action today. If we didn't have so many people, we wouldn't have these problems! We live on a finite world, with finite resources, yet we believe we can extract more energy, fell more trees, grow more crops, to feed an ever-expanding population. This is patently not achievable. We, collectivly, have ruined our best farmland (and paved over much of it with roads and houses), and yet expect to support ever more people from it. Population is the 'Elephant in the room'. Everyone knows it's there, but no one wants to be the first to mention it.

  "The greatest shortcoming of the human race is our inability to understand the exponential function." - Albert Bartlett[17].

  To allieviate pressure on the ecosystem that supports us (and our economy is a wholy-owned subsidiary of the ecosystem, not the other way around), we need less people. Only three countries, to my knowledge, have a dedicated population Policy;
  - China, with their one-child policy. This is achieved through often brutal means, but it is effective. Were it not for the policy, there would be nearly 300 million extra Chinese alive today[18];
  - Iran, which has quietly implemented family planning, and reduced its' fertility rate from 7/woman in 1986, to 1.71/woman today[19][20]; and
  - Australia, which pays women $5000 to have a baby.

  The best acknowledged method of restraining birthrate is education of women. Educated women have less children, and later in life.
  Rather than paying to promote increased fertility, Australia should instead be paying for *voluntary* sterilisations, both here and abroad, and implementing passive population controls such as gradual removal of support for those with more than two children. This is not meant to promote an attitude against immigrations. Immigration can still continue, but along lines which promote a stable population level; yearly intakes should balance out natural internal population growth/decline and emmigration.

  Further to a comment above about Peak Oil, emissions from the transport sector will necessarily decline as conventional Oil becomes increasingly scarce or expensive. Dr James Buckee, a former Oil Company CEO, recently testified to the Senate inquiry into Public Transport funding:

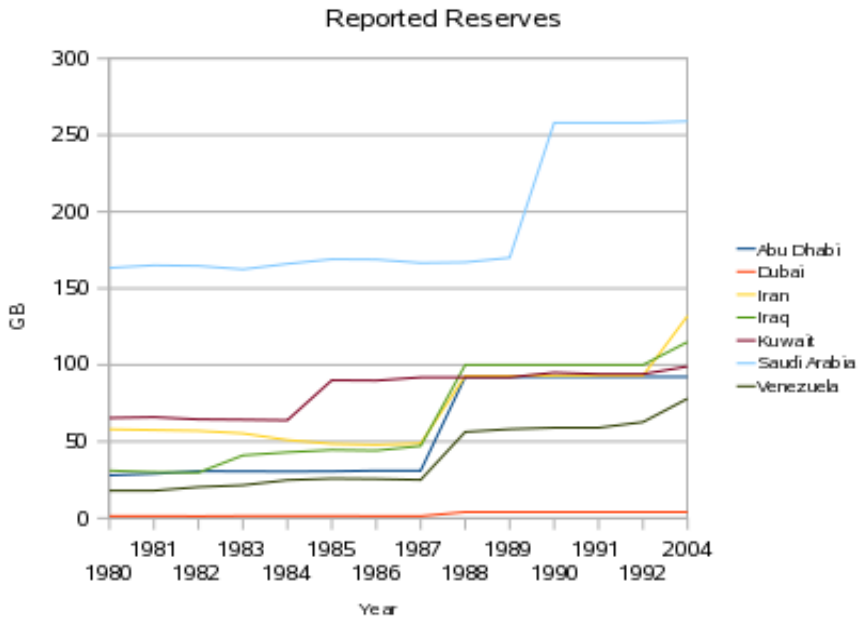
  > "The second point is that—I agree with the gentlemen over there—the black oil has peaked. This is disguised by the NGL production from the big gas fields in Qatar. They are quite rich in liquids and, as the LNG has been boosted from there, so has the associated NGL. So that has enabled the world's liquids to keep growing, albeit slowly, while the black oil itself has declined, and this is disguised.[21]"

  While I disagree strongly with his later statement that it's only by 2030 we'll start to definitely see declines in availability, he's quite correct in his assesment that conventional

17 http://www.albartlett.org/presentations/arithmetic_population_energy.html Arithmetic, Population, and Energy.html
18 http://www.china.org.cn/english/2002/Oct/46138.htm
19 http://www.mnforsustain.org/iran_model_of_reducing_fertility.htm Iran's Birth Rate Plummeting at Record Pace: Success Provides a Model for Other Developing Countries
20 https://www.cia.gov/library/publications/the-world-factbook/geos/ir.html CIA World Factbook - Iran
21 http://www.aph.gov.au/hansard/senate/commttee/S11759.pdf Hansard

Oil has already peaked in production. In 2005, in fact. This information can be easily reviewed at the EIA and IEA websites. It is likely that 2008 saw the high-point of worldwide Oil production. The combined effects of the Global Credit Crisis and natural field Decline means that we will, in all liklihood, never reach a higher production level. While Australia produces its' own Oil, we are not self-sufficient, having Peaked in 2000, not having the refinery capacity to produce enough end-user product, and with demand outstripping supply. According to Martin Ferguson MP, Australia's future probably depends on "finding another Bass Strait"[22]. Given that most, if not all, of the attractive geological features in Australia have already been surveyed, pinning our hopes on future discoveries does not sound like a sane course of action to me. Matrin Ferguson is also a proponent of CTL, a process which is twice as carbon-intensive as conventional Diesel[23]. Implementing such a polict to stave off Oil supply shortages flys in the face of efforts to reduce carbon emissions! Much better is to reinvigorate the rail networks around the nation that have been laid waste over the last 50 years. Freight moved by rail is significantly more fuel-efficient than freight moved by truck[24]. Even allowing for the increased emissions from locomotives over trucks, movement by rail is still more fuel-efficient and environmentaly-friendly. Trains also require significanly less infrastructure, due to needing only one 'lane' to move a hundred containers per train, compared to the standard two containers per truck. This does not allow for the option of electrifying the railways, which allow for an efficiency improvement again. Freight pulled by electric locomotives may be as much as 21 times more efficient[25] than movement by truck! A bonus is that electric trains care not a whit about where the electricity comes from, so can be powered by Renewable sources, and are quieter than both Diesel locomotives and trucks. Trains may also be powered by Diesel engines modified to burn Ammonia (produced with Air, water, and electricity), if the prospect of electrifying Australia's Main Lines is too daunting, or to service branch lines.

Another factor in Oil availability is that stated Oil reserves may be a work of complete fiction:



22 http://www.smh.com.au/news/national/australia-gets-bigger-and-richer/2008/04/21/1208742851950.html
23 http://www.iop.org/EJ/article/1755-1315/6/17/172028/ees9_6_172028.pdf?request-id=8b1495c7-cf61-42a4-9948-fa9e0b7eface
24 http://www.factcheck.org/askfactcheck/can_a_freight_train_really_move_a.html
25 http://www.theoildrum.com/node/4301 Multiple Birds – One Silver BB: A synergistic set of solutions to multiple issues focused on Electrified Railroads

Source: http://en.wikipedia.org/wiki/File:OPEC-reserves-thumb.png

These reserve additions came at the same time as OPEC instituted new rules allowing members to produce at rates relative to their stated reserves. No new discoveries were announced, and their 'books' have never been independently audited. Kuwait has recently dramatically downgraded their reserves[26].

Coal is also a finite resource, and will eventually peak, possibly far sooner than many in the industry predict[27][28]. The Coal industry has a PR disaster on its' hands, has no way out, and is rapidly losing its social licence to operate. The much-touted 'Clean Coal' technology is as far away as ever (and doesn't deal with the particulate matter left behind), and the industry is constantly harping on about how a CPRS will harm exports. Given that six countries (USA, Russia, India, China, Australia, South Africa) dominate global production and export, and that Australia is far and away the largest exporter (roughly twice that of all of North America), one must ask; how? Anthracite coal was fetching over $200/ton in 2008. An additional $20/ton on top, and the Chinese wouldn't even blink as they handed over the cheque. Where will these other (importing) countries source their coal from? China is undergoing massive depletion, the USA is past Peak Coal Energy (and may be past Peak Coal), India is going to need it for themselves, South Africa is already busy turning it into Diesel (the SASOL CTL plant is the largest point-source of pollution in Africa, and one of the largest in the world[29]). Given these facts, relying on Coal to continue to power our future, Anthropogenic Climate Change or not, is a fools gamble. It will keep us going for now, but we will eventually lose the shirt off our back. More foolish still is building new or replacement coal-fired power plants whos design life exceeds the ready availability of the fuel (white elephants).

Lastly, I draw your attention to Section 5:

> (5) That the committee elect as chair one of the members nominated by the Leader of the Opposition in the Senate and, as deputy chair, a member nominated by the Australian Greens.

Why can a member nominated by The Greens not be elected to the Chair? Should not all nominated members be considered equal for the purposes of potential election to the committee Chair?

I put it to the committee that not only is the CPRS unacceptable in its current form, but given the impact of the Global Financial Crisis, Peak Oil/Gas/Coal, Population pressures, and other resource contraints, there is no better time to actively move to a cleaner, greener future. The initiatives made today will lock us in to an energy regime for the next fifty years. Let's not look to the existing, failed, self-interested industries of Oil, Coal, and Gas for a solution.

I thank you for taking the time to read this submission. I hope the information contained within assists in a positive way to shape opinions about the effectiveness (or lack of, in my opinion) the CPRS as it stands, and Australias' Energy Policy in general.

Michael Van Boeckel

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26 http://www.energybulletin.net/node/12336 Things just got worse.
27 http://www.energybulletin.net/node/29919 Peak coal: sooner than you think
28 http://europe.theoildrum.com/node/2726/ COAL - The Roundup.
29 http://www.time.com/time/globalbusiness/article/0,9171,1838771,00.html Dirty Little Secret