LATROBE VALLEY SUSTAINABILITY GROUP SUBMISSION TO THE EPA ASSESSMENT OF THE HRL DUAL GAS POWER STATION PROPOSAL

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30/9/10

The Latrobe Valley Sustainability Group (LVSG) is a community based, incorporated group of citizens with the aim of working towards creating a sustainable future for our own and future generations and to preserve the natural environment to provide quality of life for our citizens. We have over 70 members and welcome this opportunity to respond to the EPA request for comment on the HRL proposal.

THE LATROBE VALLEY RESPONSE TO THE DUAL GAS PROPOSAL FROM HRL

We would prefer

1. That no new coal fired power station be built anywhere in Australia or the world for that matter because of the greenhouse gas emissions. Every kg of dry coal burnt will yield 2.93 kg of CO_2. The HRL proposal can't be considered a 'clean' technology as it will still produce 60% of the CO_2 per kWh as what Hazelwood does. This proposal, if it extends to its designed operational life of 30 years will contribute another 90 million tonnes of CO_2 into the atmosphere.
2. The fact that its operational life will be 30 or so years means that if future governments try to close it down due to the increasing concern about global warming, then the operators will demand compensation. The Government of the day will be liable meaning that taxpayers will have to pay.
3. If as an agreed interim measure to enable the part closure and eventual phasing out of Hazelwood, then this would be considered more favourably. However, if there was a danger that a successful implementation of this project was somehow seen as a green light for opening other similar coal fired power stations around the world, then we would not encourage its development. The fact that the proponents of this project call it a "demonstration plant", seems to imply that they see it as the forerunner of many more such plants and not as a one off interim measure to tide us over until renewables can take over.
4. This power station is to built as a base-load power plant. It still takes 24 hours to bring it to peak production after a shut down. If it was to be used to supplement renewable power, say when there was a lack of wind throughout the state and had a quick turn on time, then there could be some justification for it being built, but the operators intend to run it all the time.
5. We are afraid that money will be diverted from renewable energy technologies to fossil fuel energy generation if this project goes ahead and further delay the day when we have a truly sustainable carbon free energy sector and our economy becomes carbon neutral. We do not see CCS technology as a solution in this regard. See our critique in the **appendix** at the bottom of this document.

6. We do not want any more high value land such as we have in the Latrobe Valley/Gippsland region to be lost to mining. We want this land to be available for food production, living space and environment for future generations. We can't see the justification of good land being lost forever to provide energy for one generation, when alternative technologies are increasingly able to deliver a secure power supply.
7. The fact that this plant requires only 5 to 10 percent of the water that the Yallourn and Loy Yang power stations use is a good thing, but 2 GL is still a significant loss to the Gippsland Lakes in a dry year.
8. If the IDGCC proposal was linked to the phased shut down of Hazelwood, then it would be considered more favourably. This includes a consideration of transferring job skills from Hazelwood to the IDGCC.
9. We note that the NO_x and SO_2 emissions are well within the allowable limits, but it still adds to the load of pollutants in the Latrobe Valley and so will the load of particulate matter from the open cuts and ash fines and think that this as another reason not to proceed with the development.
10. Some backers of the project might argue that it provides employment in the Valley. The maximum number of employees that were talked about was to be 40. As a comparison, the Eureka's Future project to manufacture solar hot water sets in Morwell, will employ the same number of people. By contrast, renewable energy sources will employ more people overall because they will be smaller and spread more strategically throughout the state. As a consequence there will be more smaller sized plants, with a larger workforce overall.
11. In California, Spain and some other countries, solar thermal power plants have been able to deliver base load power for just about 24 hours per day, through molten salt technology. The Solnova and Andasol solar thermal power plants in Spain and the Ausra plant on California are some examples of this technology, which are operating efficiently now. The salt is heated to about 500 degrees C by concentrated light during the day making the salt liquid. It returns to a solid when the temperature drops to about 360 degrees. Heat is released at this temperature to drive the steam turbines during the night.
12. Geothermal electricity is another promising technology that will produce base load power. Ocean wave technology is being proved up now by Carnegie Wave Energy and Oceanlynx in Western Australia and Port Kembla respectively.

APPENDIX 1

WHY WE DO NOT FAVOUR CCS

- We view the option of **GEO-SEQUESTRATION as non-viable on price and effectiveness** when compared to the suite of renewable technologies on the cusp of delivery. This is because

    - Billions of dollars will be needed to set up the infrastructure of carbon capture and then sequestering it under the ground. This money can only come from **tax-payers and would be better spent on renewables.**

    - Nowhere near 100 % of the CO_2 emissions would be captured. Effectively, it is said, that a maximum of 90% could be captured and the reality is likely to be much less than this, because

of the law of diminishing returns. **Investment money would be better spent** on technologies, which **guarantee at least 90 % savings of CO_2 emissions** including the embedded energy of construction. Including materials and construction costs, wind farms produce 98 % CO_2 free electricity.

- **Effective geo-sequestration will not reduce CO_2 emissions in the near future.** Geo-sequestration involves not only billions of dollars of investment, but we have been told this technology will not be available to roll out on a large scale till well after 2020 and possibly 2033. If we are going to avoid catastrophic climate change, then we need to act well before then.

- **The long-term safety of storage of CO_2 is another matter of conjecture.** There is no evidence that the CO_2 sequestered will stay in the ground and form carbonate rock as has been suggested by some sources. It is more likely that it will sit as a compressed gas or liquid (because of the pressure) for the entire time it is stored. Future earth movements could release this gas into the atmosphere and cause local asphyxiation initially, and then world-wide rapid increase in atmospheric CO_2 leading to almost instant global warming. Who will pay for the global litigation – the taxpayers of the "guilty" nation most likely. In all likelihood, the state or Federal government will have to assume responsibility for the storage after the private enterprise operation has ceased to exist i.e. taxpayer liability.

- Carbon dioxide is a type of chemical matter, which sublimes and does not have a liquid phase at standard temperature and pressures. It needs to be pressurised before it becomes a liquid. If it reverts back to a gaseous phase underground and because gases occupy a far greater volume than liquids, the question must be asked. "**Will there be enough capacity to store the carbon dioxide as gas** in the depleted gas wells of Bass Strait and for how long?" Some estimates say only about 50-60 years, providing that the CO_2 remains in the liquid phase.

- **Cost effectiveness**. When a certain **proportion of the energy produced** by a fossil fuelled power station has to be **diverted** to provide the energy to run a **carbon-capture** and **sequestration operation, then this reduces the profitability** of that power station. The parasitic power consumption as the industry refers to it, is about 30%. This means that a power station with 2000 MW capacity can effectively only send about 1400 MW out to the grid. We will **NOT support any compensation to fossil fuel fired power stations by the taxpayer for this loss of profitability**. The coal fired producers need to cover this themselves by becoming as efficient as renewable technologies.

- We encourage the fossil fuel fired power companies to **develop geo-sequestration by RAISING CAPITAL FROM PRIVATE INVESTORS**, but the fact that they are increasingly asking for government money shows that they think this is futile. By contrast, private investors are only too willing to invest in renewable energy generation and development is only being hampered by government regulation at the moment.

- We demand that the cost of any fossil fuel fired electricit**y factor in the cost of sequestration of CO_2 and that this is reflected in the wholesale price of the electricity provided by the producer.**

- **It seems that CCS has been spoken of for political reasons rather than practical considerations. It is not economically feasible at any time in the foreseeable future.**

APPENDIX 2

BACKGROUND INFORMATION BASED ON SCIENTIFIC CONSENSUS RE GREENHOUSE GASES

Any new fossil fuel power station proposal should be seen in the light of global atmospheric levels of greenhouse gases.
The main factors in this regard are: -

- The normal level of CO_2 in the atmosphere for at least the last 800,000 years has varied between 200 ppm and 270 ppm.
- Humans (Homo sapiens) and the biosphere in general have evolved to comfortably exist at the level of temperatures that this range of greenhouse gases causes.
- At present, the level of CO_2 in the atmosphere is around 390 ppm. This is about 40 % above the 270 ppm level that could be considered the normal level.
- The warming that this increased level of carbon dioxide has already generated has led to further warming from the increase in water vapour (also a greenhouse gas), which in turn has produced warming which has led to the melting of tundra and led to the release of methane, which although shorter lived in the atmosphere is 21 times more potent a greenhouse gas than CO_2.
- We know that even if humans stop putting any more greenhouse gas into the atmosphere from burning fossil fuels, the CO_2 equivalent greenhouse gas level will reach about 450 ppm by 2050. This is simply as a result of the chain effect of processes like the ones described previously.
- Glaciers were melting and other impacts of a warming global climate were being observed when the level of atmospheric CO_2 was only about 340 ppm.
- The long periods of drought followed by wet spells and greater levels of extreme climate variability such as the drought and heat waves in northern Europe and Russia, the extremely wet monsoon in Pakistan and India and the extremes seen in the last 13 years in Australia were all predicted as likely scenarios of increased CO_2 levels in the atmosphere.
- The warming trend will eventually stop ice from covering the Arctic ocean during summer and this could trigger a runaway greenhouse climate, where no matter what actions humans take to turn the situation around, nothing can be done to stop the situation.
- By 2050, the CO_2 equivalent greenhouse gas levels will be well above 450 ppm unless we quickly phase out burning fossil fuels.
- It is necessary now or as soon as possible to not only stop putting greenhouse gases into the atmosphere but start taking massive amounts of them out of the atmosphere, by any means possible. Increasing the areas of forest are a first step, but industrial means such as biochar production will need to be considered.