

The City of Stirling (WA's largest municipal authority) has established a Peak Oil Working Group, formed to help the City and its community respond to the expected adverse consequences of rising energy prices. We are especially mindful of the need to promote effective solutions that will not result in an inadvertent increase in carbon emissions, and recognise these twin challenges need a coordinated response.

Thanks,

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### **Submission to the Garnaut Review**

Increasing demand for energy (including liquid fuels) is driven by population and economic growth, as well as increases in per capita Vehicle Kilometers Traveled, road freight and aviation.

Australia's domestic crude oil production is declining, increasing our import-dependency in a context of rising prices and potential supply disruptions. Substituting conventional oil with synthetic fuels derived from natural gas and coal could evolve into the preferred national response but is associated with a number of major potential shortfalls.

Converting coal or natural gas into synthetic crude oil (Fischer-Tropsch method) is a costly and difficult undertaking associated with long development timeframes of up to a decade or longer, which may no longer be available (Hirsch, 2006). It would also result in a **net increase** in carbon emissions unless carbon is captured and geo-sequestered. This technology remains untried, would be financially costly, and potentially dangerous.

Carbon Capture and Storage is an energy intensive process. As such, more coal or gas would need to be consumed to produce the equivalent amount of energy as generated in a conventional power plant. Hence, depletion of fossil fuel resources would be occurring at a faster rate than otherwise. This is a concern when taking into account the probability that world crude oil output peaked in 2006, and that global natural gas and coal output may peak within the next two or three decades, even under current demand levels. The Energy Watch Group (2007) predicts world coal output could peak by 2025. A study for the European Commission by Kavalov and Peteves (2007), also predicts growing pressures on world coal supply due to declining Reserves to Production Ratios.

The main strategy to address the twin dilemmas of climate change and Peak Oil should be to contain the growth in travel demand, and shift the travel and transport task onto the most efficient modes (cycling and public transport in the case of passenger trips; freight rail and shipping in the case of goods transport).

Increasing the performance of the vehicle fleet could also reduce fuel demand. This latter change can only be expected to achieve significant reductions in fuel use if policy-makers are cognisant of the 'Rebound Effect' and ensure improved mileage does not translate into cheaper travel costs per kilometer (i.e. increase fuel tax to offset cost saving per unit distance traveled, in order to avoid a scenario under which increasing per capita trip distances cancel out the improvements from vehicle efficiencies).

Producing carbon-neutral local sources of bio-fuel can also make an important contribution. This includes bio-diesel made from green waste, as well as bio-diesel produced from algae bio-reactors deployed at tip site remediation projects and wastewater treatment plants.

Local renewable energy infrastructure (PV cells, micro-wind turbines, etc) should be increased by mandating installation in commercial and residential buildings at the development approval stage. Requiring installation at the time a property is bought and sold would augment this slow process. It would be possible to use some of the renewable electricity produced to power cars driven by alternative propulsion systems (battery powered electric motors; engines powered by compressed air cylinders; hydrogen fuel cells, etc). While a 'de-carbonized' grid may not have sufficient electricity to power large numbers of electric cars, people could join On-line car-sharing schemes and have access to cars for trips not easily substituted by alternative travel modes.

In order to augment locally produced renewable energy, it will also prove necessary to construct large new renewable energy plants. The technology already exists to store energy over a 24-hour cycle in the case of solar thermal plants (molten salt insulates tanks, thereby keeping water above boiling throughout the diurnal cycle) and is being developed in the case of wind and other renewable systems (compressed air, etc). Remote solar thermal plants benefit from being sited in areas that are less contentious (sparsely settled desert regions) which is not always the case for other major infrastructure projects. Hence, the planning approval process should be fast and straightforward.

Peak Oil is expected to increase the cost of transport and food production, thereby increasing inflationary pressures and raising interest rates. The response to climate change should therefore include provisions to help address the social costs of the adjustment process. According to research by Dodson and Sipe (2005), people living in heavily car-dependent outlying suburbs will be worst affected. Large-scale defaults on home mortgages, sharply falling house prices, rising unemployment, and increasing crime and homelessness could be the consequences of Peak Oil. These adverse effects could either be compounded or ameliorated by our climate change mitigation efforts.

I therefore encourage the Garnaut Review to bear in mind the social dimensions when constructing a national response to the problem of climate change. Please also be aware that some governments may be inclined to 'panic' when the effects of Peak Oil become obvious, and this needs to be

incorporated into a climate change 'risk management' strategy (i.e. recognize that pressure to harness more heavily polluting, lower grade fossil fuels will increase, and schemes such as inappropriate coal liquefaction and shale oil production may be widely promoted).

## References

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