Submission by Ian Fischer to the Parliamentary Inquiry into Nuclear Energy.

No doubt the Members of the Committee would be well aware of the facts and figures surrounding my submission but I feel it imperitive to impart my views and opinion on such a very important matter which effects all Australians namely reliable power generation.

Renewables in the form of wind & solar cannot operate when the wind doesn't blow or the Sun does not shine, therefore, a suitable base load power source is required. In the past coal has been that source followed by gas.

Battery power as base load power does not have the capacity to maintain reliable power when wind and solar fails. Gas is the saviour for base load but is expensive and emits at least half of the emissions as a coal fired power station.

Sometime in the future the world will move towards electric cars to combat emissions. Unless there is a powerful back up base load power supply, renewable power will not cope with the increased load.

To meet the demands of the 21st century and beyond, nuclear power will be the most effective and efficient generation of electricity.

Nuclear power has evolved markedly since the 1950's when the most advanced technological device for children was a crystal radio set.

It is to be noted that nuclear power generation has been updated to the Gen. IV reactors and the advantages of these reactors are as follows:

- Gen.IV reactors have zero emissions.
- These modern reactors are also safe from melt down. If a Gen IV reactor overheats it automatically cools on its own. This all happens because of gravity-no pumps, external power, or human intervention is required.
- The Small Modular Reactors (SMR) version can be delivered on the back of a truck and joined with other SMR's to increase the size of the power station.
- Gen IV generators can efficiently use stored nuclear waste as a fuel yielding over 20,000 years of energy demand for the World.
- Whilst older nuclear reactors used as little as 0.25% of the available fuel, Gen IV reactors has an increased efficiency 100-300x.
- Nuclear waste is better utilised, safer to use and is made up of:
    - About 60% of the waste from a Gen IV generator becomes inert material which is no longer radioactive.
    - About 14 % of the waste becomes less radioactive and is suitable for medical isotapes and radiography.
    - About 13% of the waste can be used for industrial applications such as X-rays that test for leaks in pipelines and sprinkler systems.

- The remaining 13% is much less radioactive and only needs to be stored for 300 years and not the current 125,000 years.

Existing nuclear waste becomes impotent through the Gen IV process. Gen IV can also consume traditional fuel and no weapons-grade material byproduct will result.

Gen. IV power stations do not have to be built by the sea for access to massive amounts of water for the cooling process which would otherwise likely stir up people's fears of having a nuclear power station close to a popluted area.

In modern Gen. IV reactors, cooling is achieved by liquid metals (lead & solium), gases (helium or carbon di-oxide) and molten salt (lithium fluoride or sodium fluoride).

In the past there have been several example of nuclear reactors being operated without the use of water cooling. The US submarine "Seawolf" from the 1960s operated a sodium cooled plutonium as did Russia's Breactor N-800 power plants. Also, Bill Gates' Terra Power Company has a liquid sodium reactor designed to meet Generation IV criteria.

Whether power is generated by coal, gas, wind, solar, hydro or nuclear the power is markedly lost through transmission wires over distance. It makes sense that SMR reactors be strategically placed throughout regional areas.

It is my submission that a Voluntary postal survey (plebiscite) be conducted after the Committee hands down its findings to allow the Australian Public to decide if nuclear power is part of Australia's future.

Terms of Reference.

a. waste management, transport and storage,

b. health and safety,

c. environmental impacts,

d. energy affordability and reliability,

e. economic feasibility,

f. community engagement,

g. workforce capability,

h. security implications,

i. national consensus, and

j. any other relevant matter.