

## Nuclear Power Issues

### ECONOMICS

Firstly, I state that I am not against using nuclear fuel in principle. I do however believe that for Australia it will continue to prove uneconomic.

Many years ago, I toured some of the UK nuclear plants and the one thing that I remember is the huge cost of the necessary security infrastructure around all stages of its operation. At the time I was an electrical engineer in training.

More recently I have spent about 4 months talking with US citizens including a trip to the US. I am also aware of what is occurring in the UK regarding Nuclear Power Stations.

### THE U.K.

The UK had planned to operate 4 nuclear power stations. The UK had gone out to tender and even started some contract negotiations.

We are now left with one Power Station that continues. Even this generation facility was not viable under today's terms. The UK Government was forced to make considerable extra compensation (above the normal level of KWH) for its continuation. I understand that the nuclear compensated UK power supply price was around 17p/KWH. This base price is around 10p. There are other costs which Governments have been forced to pick-up. Mainly with respect to the long-term waste disposal and security costs. Some of the older Nuclear power stations were built in areas of considerable coastal erosion and now there is a large costs to stabilise their sites due to higher sea levels and wave action.

The other 3 planned sites have been stalled.

Of course the UK has some nuclear weapons and submarines. Having reactors could be helpful in keeping these supplied.

### THE U.S.

The US is in a similar state to the UK in having military needs. However old nuclear plants are slowly being dismantled and new ones not being built.

### THE ECONOMICS

A few years ago when I was studying this in more detail, international generating companies (Engie Co,) were costing renewables at 3c/KWH.. Prices have probably dropped since then.

Adding storage may double that cost, but even with adequate storage the price is much lower than the cost of Nuclear. Say 6c/KWH.

I know that there are some companies with very rosy ideas of new nuclear power generation, but when you understand the continuous security costs and the rather optimistic long term disposal costs they portray - the picture changes somewhat.

#### THE MISUNDERSTANDING OF "BASELOAD POWER" AND THE USE OF NEW ELECTRICAL STORAGE TECHNOLOGIES

In the old world baseload power was necessary, We all had inefficient houses, industries and shops. With cheap solar panels we now have a very varying requirement for electricity. Little during the day and more at night. I would note that Australia has very inefficient homes compared to many in Europe,

The old coal powered generators could take up to 3 days to start a turbine, and even more modern coal takes several hours. This is much too slow for the emerging requirements. Keeping a coal powered generator spinning in idle is costly and uncompetitive.

Renewables including storage costs are around 6c/KWH in grid feed cost. Recently MIT in the US announced a shippable storage technology where the electrical storage costs challenged pumped hydro.

This puts nuclear power suitability in niche areas, such as the Antarctic. Security will always be a costly problem as long as we have saboteurs.

#### CONCLUSION

The real question is whether Nuclear Powered generation makes sense for Australia? Nuclear is costly and still needs ample water.

As have many other sources of power readily available, and at a lower cost; it seems nuclear will be at the margins. It will need substantial subsidisation, open or hidden.

Nuclear is not a major source of power in the UK. It is gas and renewables. The UK recently ran for 2 weeks with no use of coal. Similarly, nuclear is being reduced in the USA. Whilst I was there, I observed several closed coal powered stations, being replaced by solar.

Although there are a few newer nuclear options my view is that it remains uneconomical.