

Supplementary
Submission
No 108a

INQUIRY INTO RURAL WIND FARMS

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Inquiry into Rural Windfarms (GPSC 5)

Supplement to evidence given by George McLaughlin,

Terms of Reference number 5

Locating Datacentres close to sources of renewable energy

From an article by Bill St Arnaud, a colleague – permission to make available granted

One of the challenges of delivering renewable energy such as wind power or solar systems is the high cost of the electrical transmission lines to carry the power to where it is needed.

Unfortunately ideal solar and wind power sites are rarely located near major urban centres. Most renewable energy systems produce relatively small amounts of power compared to a coal and nuclear power plants, and as consequence the cost of the electrical transmission line given the distances to reach renewable energy sites can completely undermine the business case for deploying a renewable energy system in the first place."

The answer is to move servers, storage, and other facilities to the renewable energy sites themselves. In other words, you build your wind farm in the middle of nowhere, and you put your servers and storage out there, too. That way, you don't need the expensive power lines; the wind farm's sole purpose is to power the computers that are in the same location.

All you really need are less expensive fibre-optic lines to connect those computers with the Internet. St. Arnaud points out that high-speed optical networks allow your facilities to be located just about anywhere, so the remote location of the wind farm is not an issue.

The technology to rapidly balance traffic among different servers in different locations is well established, so if the wind//solar/geothermal server farm goes down, traffic can be routed to other computers in a different location.

As St. Arnaud writes:

"We have the technology at hand to build 'follow the wind' or 'follow the sun' computing grids using optical networks to ensure extreme high reliability information systems and computing grids regardless of whether or not components of the underlying physical computational network and/or storage facilities are available and on line."

It is now almost 2 years since Bill wrote the words above, since then many advances have been made with large companies locating datacentres in this way and with the likes of IBM and others now shipping container-based server farms to be located anywhere.

The National Broadband Network would provide an ideal vehicle for the location of datacentres in remote locations close to sources of renewable energy, and could be underpinned even further with Australia's bid to host the 2 billion dollar Square Kilomre array (in remote Western Australia) which will require substantial computing facilities and power as well as advanced communications capability.

This would present Australia/NSW with a great opportunity to show real leadership.