

---

**From:** derek wrigley  
**Sent:** Sunday, 3 June 2007 6:07 PM  
**To:** Committee, ISR (REPS)

Submission No: .....5.....

**Subject:** Inquiry

## **Inquiry into the development of Australia's non-fossil fuel energy industry**

### **Terms of Reference**

The House of Representatives Standing Committee on Industry and Resources shall inquire into and report on the development of the non-fossil fuel energy industry in Australia.

The Committee shall undertake a comparative study of the following renewable energy sectors: solar, wave, tidal, geothermal, wind and hydrogen. The case study will examine the relative state of development of these sectors and their prospects for economically viable electricity generation, storage and transmission.

---

Submission by :

**Derek F. Wrigley**, OAM, FRAIA, ARIBA, LFDIA, DA(Manchester)  
Solar architectural consultant

-----

SUMMARY - Distributive renewable generation of electricity in which generators *use their own product* and export their surplus *into the existing grid* should be considered as well as more centralized forms of renewable energy generation which do not consume and incur transmission losses.

---

There is an inherent danger in thinking that large scale *renewable* sources which supplement the existing centralized power stations will be the *only* answers to our looming power problem and reduction of emissions.

One effective and relatively speedy answer could be for a large number of small generating sources *integrated into building structures* to firstly generate their own needs and *also* build in an extra capacity to export green electricity in a *reverse* way to assist those who are unable to do so. This could reduce transmission losses substantially.

The Terms of Reference of the enquiry do not seem to include the ways in which renewable energy modules can be integrated into individual structures, such as houses and the myriad of small buildings where 'distributive generation' can be economically provided *without incurring the current substantial transmission costs and losses*.

From a historical viewpoint we are unfortunately (but necessarily) going through a phase where new technologies are being added onto buildings in a somewhat haphazard manner, eg. photovoltaics, and hot water systems, but we must aim for a mandatory integrated architecture where every new building should generate its own power and export its excess in a reverse fashion into the existing grid system. This can be achieved very quickly and would encourage a huge market.

I can speak from experience, having installed a 2.94kW photovoltaic array on the roof of my house which supplies 105% of my electricity needs and exports 185kWh of carbon free electricity back into the grid in summer. It is not difficult, the technology is now well known, there are several million suitable sites around Australia, we have the best climate in the world – yet we ignore its potential. The only things holding it back are a shortage of silicon and an unwillingness of governments to recognise the potential and get it moving.

The coming introduction of a Feed-in Tariff, currently being considered by the governments of the ACT, NSW, Vic. and SA will encourage such development and should be put into force as soon as possible at a federal level.

If this were adopted across the whole of Australia it could have a dramatic impact upon the *real need* for large scale generation complexes around the country based upon supply to the existing grid structure and would reduce the enormous transmission losses.

The current generating and distributing system has grown in a somewhat chaotic manner since the introduction of centralized electrical generation plants, (usually coal fired, and located on local coal supplies) but has resulted in very long transmission distances, increasingly wasteful in its losses and will become even more wasteful when rising temperatures affect the conductance of the transmission lines.

This is unacceptably inefficient and from a pollution viewpoint we cannot really afford to burn coal at all and should not be waiting for the development of clean coal technologies.

A distributive system has the potential to reverse the supply situation with clean energy and probably at far less cost than an extension of current

transmission from new, renewable, concentrated sources which have high transmission losses.

From a future security point of view it would surely be safer to have millions of suppliers than a more vulnerable handful?

No doubt there are several problems of which I am unaware in adopting a multi-generating concept, but there are *already* several buildings around the world which are contributing in this way and this concept should be a valid consideration by this committee of enquiry.

One important consideration is that integrated generating modules can often *replace* traditional external materials, such as wall panels or roofing materials, minimising the extra cost quite markedly.

Stimulation of the market for such integrated modules would help to reduce costs, encourage new industries, increase employment and reduce our reliance on imported products. It is already under way but needs urgent government assistance.

### **The housing industry**

An enquiry into the almost *culpable reluctance* of the housing industry to adopt more solar effective designs and the use of solar technology should be initiated as their *application* is critical in this area of personal comfort and reduction of emissions of greenhouse gases. Conservation of *natural* energies in housing design is not understood or being practiced and is probably of greater and more immediate significance than the development of larger scale and currently popularised concepts of wind, wave and geothermal energies.

We have an exceptionally sunny climate for solar utilisation and yet only ~5% of houses have solar water heaters and even fewer have photovoltaic arrays. This is a huge, wasted opportunity. Every house should automatically incorporate them and costs would come down to a more acceptable level .

Generous subsidies in this area would probably achieve faster and more effective results in the very short window of opportunity we have available.

Time is not on our side in stimulating renewable energies at the micro level.

Summary of needed action :

- 1 Explore the distributive generation of electricity more thoroughly, particularly in the housing area.
  
- 2 Mandate for the integrated inclusion of solar design principles, use of

natural energies and integrated technologies in domestic architecture.

- 3 Rationalise the immediate introduction of Feed-in Tariffs throughout Australia at a federal level.
  
- 4 Stimulate research and development into solar technology, recognizing it as our only sustainable way of transforming solar energy into the distant future.
  
- 5 Initiate an immediate enquiry into the unresponsive housing industry.
  
- 6 Do it now, while we have time on our side.

Derek F. Wrigley