Senate Standing Committee on Economics
ANSWERS TO QUESTIONS ON NOTICE
Innovation, Industry, Science and Research Portfolio
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AGENCY/DEPARTMENT: INNOVATION, INDUSTRY, SCIENCE AND RESEARCH

TOPIC: CSIRO - Solar Energy

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QUESTION No. AI-13

Senator MILNE—Moving to solar thermal as a comparison, what can you tell me about the progress on the multitower solar array and the conclusions about the viability of solar thermal as a commercial application now?
Dr Ronalds—I cannot give much detail on that. I am not as familiar with that program. Certainly we have our solar centre at Newcastle that is performing well. Again, there is some early planning around some additional facilities. I cannot go into more detail on that right now. I just do not know more detail.
Senator MILNE—With the permission of the minister, I would be interested in an update from somebody working in that area.
Dr Garrett—We will certainly do that, Senator, and perhaps we can invite you to come and see what is happening in Newcastle. I recently had the opportunity to spend some time with colleagues in the US in the energy field, and they are significantly impressed with the work that we are doing in solar thermal. I think in their country they believe they are underinvesting so far in this domain, and as we indicate, we are very enthusiastic about the progress being made here. We would be happy to (a) provide that on notice and (b) invite you.

ANSWER

CSIRO's high temperature solar thermal research began in 1994 with the concept design of thermo chemical systems, and novel catalysts, to enable both closed and open loop solar thermo chemical processes. The research progressed with a CSIRO-funded, $7 million program between 1997 and 2001. This resulted in the demonstration of solar steam reforming, using a dish solar collector at its Lucas Heights research facility. This project was the recipient of an award from the Australian Institution of Engineers.

The Lucas Heights research successfully showed how solar energy could be embedded in the chemical bonds of a gas. However the dish was deemed to be an expensive way of concentrating the sun. In 2005, at its new National Solar Energy Centre (NSEC) in Newcastle, CSIRO started work on two new infrastructure technologies – a solar tower reactor, and a field of small solar trough collectors. This program proceeded with Commonwealth and NSW Govt support.
The NSEC is a facility for the development of concentrating solar thermal technology. It aims to be a hub to bring together the best of national and international research in this area, as well as industry partners. The aim is to develop the next generation of solar thermal technology and bring down the cost to levels competitive with other forms of zero-emission electricity.

The solar tower reactor at NSEC has about 200 mirrors, each of $4m^2$. It achieves temperatures in excess of 1000°C. It was selected as a technology that had the best prospects for scale-up and commercial application of solar thermal power generally, and for SolarGas technology specifically. The solar tower was designed and fabricated locally. In late 2007, the solar tower and SolarGas technology became fully operational as a research tool at Newcastle.

While the solar tower is a flexible technology suitable for both small and large scale centralised power generation, the smaller, lower temperature troughs were installed to demonstrate distributed energy applications, such as electricity and cooling for shopping centres. Along with full solar instrumentation and flux mapping tools, these technologies form part of the National Solar Energy Centre (NSEC).

The establishment of the NSEC is timely. Concentrating solar thermal power is presently undergoing a renewed surge of global interest, with more activity in the last 2 years than ever before.

CSIRO is not in a position to offer a definitive view on when solar thermal or any other renewables power generation technology might become viable as a commercial application. CSIRO does however remain focused on undertaking research to ensure that this option is exercisable.