



## DIRECTOR SHIRE SERVICES REPORT

14<sup>th</sup> November 2006

**DSS1                      SOLAR PHOTO ELECTRIC CELLS**  
**FILE: 707            GTS            {Folio No. \* }**

### SUMMARY:

Reporting on the possibility of installing solar photo electric cells on the roof of the Customer First Centre



### DESCRIPTION:

Council at its meeting on 12 September 2006 resolved:

- "1 That the Director of Shire Services be requested to investigate and report on the possibility of installing Solar Photo Electric Cells on the roof of the Customer First Centre to produce our own electricity. Such investigation to include all aspects including, but not limited to; feasibility, viability, cost, payback period and any other relevant matters.*
- 2 That the Director Corporate Services be requested to investigate with Country Energy issues involved with our selling to the electricity grid any excess electricity generated by the above.*
- 3 That the Director Corporate Services be requested to also investigate the issues involved with Carbon Credit trading from the above (if implemented) to build a non rates income stream.*
- 4 That a report be prepared as soon as possible.*

*That enquiries be made of Newcastle City Council regarding their electricity cost savings initiatives."*

Technical data and background to the report are contained within [Appendix A](#).

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It would be possible to install solar cells on the roof of the Customer First Centre (CFC) to produce electricity. A system occupying the available roof area would generate 10,000 Kw hours per year (approximately 12% of the total energy required to run the CFC) and would cost approximately \$250,000 to supply and install. A \$8,000 (maximum) cash rebate would apply under the NSW solar rebates programme.

The \$2,000 annual saving on the energy bill and the \$350 annual income from carbon credits would mean a 100 years period for return on procurement investment at the local level assuming that the life of the installation could be extended well beyond the nominal 40-50 years via vigorous maintenance programmes. On a global scale, 8t of coal & 15t of CO<sub>2</sub> could be saved annually. The return period would be even greater if unspecified maintenance, operation and increased insurance costs are taken into account. The increased insurance alone could be of the order of \$500 per year. There would also be a real potential for attraction of vandalism upon the clearly visible panels.

The energy payback in terms of the recovery of the energy required to manufacture the system is about 5 years. Ideally, solar systems return power to the electricity grid during peak daylight hours and draw power from the grid at night. The CFC has a converse mode of operation. Most of the Centre's load is variable air conditioning that is not conducive to solar-generated energy. Returning energy to the grid can be a complex issue in terms of metering and negotiating fair prices and credits. Access charges may still apply to customers, even during times of supplying to the grid.

Because the CFC will not be producing excess electricity, the electricity Service Provider sees no issues with a grid-connection of this size because a nett meter would, at times, credit the "electricity usage account" at the same price rate as the power withdrawn.

Overall the CFC does not lend itself to the use of solar systems. Most of the roof faces SW rather than north and is poorly inclined. The array frames needed to correctly face the panels towards the sun would need to be strengthened for wind loading and corrosion protection would be required for contact with a metal roof. This would add to the overall cost by an unspecified amount. It is considered that the installation of solar voltaic cells on the CFC would not be a cost-effective exercise.

Newcastle City Council (NCC) has achieved an overall savings in its annual electricity bill (\$1million down to \$600,000) through the use of efficient devices (eg globes and air conditioners) and management control systems (eg automatic on/off switches). Solar systems have been avoided because of a lower efficiency from a pay-back point of view. NCC offers a consultancy service to

other Councils in the area of financial loss control as relevant to energy, water and waste management with an emphasis on mentoring support and experiential learning programmes.

## **REPORT IMPLICATIONS:**

- ***Environmental***

***An energy audit and savings report should realise a 240 tonnes reduction in coal consumption and a 480 tonnes reduction in carbon emissions annually.***

- ***Social***

***The production of an energy audit and savings report is an identified action in Council's draft Ecologically Sustainable Development Strategy.***

- ***Economic (Financial)***

***A one-off expenditure of \$30,000 on an energy audit and savings report should realise a \$60,000 permanent annual reduction in the usage component of Council's overall annual energy bill.***

- ***Policy or Statutory***

***Nil.***

- ***Director's Review***

***Preliminary investigations indicate that, from a financial perspective, the installation of solar cells at the Customer First Centre is not viable. A more cost effective approach of reducing total electricity consumption and costs by the use of energy efficient devices and control systems is favoured.***

## **RECOMMENDATION:**

**That the provision of funding in the amount of \$30,000 to undertake an energy audit be considered in the 2007/2008 budget estimates.**

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**A P Vermeulen  
DIRECTOR SHIRE SERVICES**