

How can we finance retrofitting?

'Solarisation' – an affordable proposal by Dr Andrew Blakers

Director, Centre for Sustainable Energy Systems, Faculty of Engineering and Information Technology, Australian National University, Canberra

The turnover of building stock (demolition followed by new construction) is low. Even if all new buildings have excellent energy ratings, there is only a slow reduction in average greenhouse intensity. Mass retrofitting of buildings is the only way in which rapid reductions in greenhouse gas emissions can be achieved in the building sector.

Mass retrofitting of roof, wall and floor insulation, draught proofing and solar water-heaters to existing buildings ('solarisation') will yield large greenhouse gas reductions. In a typical brick veneer house the cost of thorough solarisation is about \$8,000. The reduction in energy bills pays for solarisation well within the lifetime of the solar water-heater and insulation.

The barriers to mass solarisation are the need for up-front capital and the lack of information on the part of building owners. This paper suggests a practical and commercially attractive method of removing these obstacles.

Australians move houses frequently. An investment in solarisation is often not recognised in the sale price of the house. There is no incentive for a landlord to invest in solarisation because they do not pay the energy bills.

There is no incentive for a tenant to invest in solarisation because they do not own the house. How to pay for solarisation, up front? The key to an effective solarisation funding model is that the debt belongs to the house, not the homeowner.

I propose the following mechanism for funding solarisation. Consortia would be established (e.g., 'Solarisation Pty Ltd'), comprising a solar water-heater company, a house-insulation installer, a billing agency, and a financier.

Solarisation P/L would contract its members to retrofit solar water-heaters, insulation and draught proofing in houses and commercial buildings. The company could also install double-glazing, gas heaters and photovoltaic systems.

The house owner would not be required to put up the cash. Instead, Solarisation P/L would recover its investment (at normal commercial rates of return) over 8–12 years through quarterly bills to the house owner. This is equivalent to the way in which electricity companies recover their investment in a new power station.

House owners (and tenants) would enjoy reduced overall energy costs (comprising gas, electricity and the solarisation quarterly repayments) and improved thermal comfort and noise insulation. A much better greenhouse outcome per dollar would be obtained than from 'green electricity'.

The uptake will be high if Solarisation P/L provides a fast, efficient turnkey service for a range of energy technologies and services — a single visit by an assessor skilled in all of the energy technologies, followed by a well-managed and rapid implementation including easy financing. A low-cost financing option is to draw additional funds from a mortgage.

Solarisation P/L would construct alliances with insulation and solar suppliers that includes the supply of equipment and services at a substantial discount to reflect reduced advertising costs and increased sales volume.

It would be very helpful if the state government were to pass legislation to allow the debt for solarisation to be easily attached to the house (without incurring a second mortgage) rather than the house owner.

The debt would need to be disclosed each time a house was sold — like disclosing rates or electricity bills or the House Energy Rating. This legislation is not essential, but would be helpful because the risk of default would be almost eliminated, allowing Solarisation P/L to charge a low interest rate on the debt.

Companies involved in solarisation would benefit from a low-risk investment, because the equipment to be installed has a long guarantee period and the debt is against the house rather than house owner.

Gas and electricity companies would experience reduced sales of energy. However, solarisation would provide replacement revenue and profits. They would have an opportunity to 'lock-in' customers for long periods (an important consideration in the era of contestability), and would acquire a large supply of RECS from the solar water-heaters.

Solarisation of 100,000 homes in Canberra over a decade would be worth around \$80 million/year and would lead to the creation of about 800 new jobs. Electricity utilities would benefit from mass solarisation through a reduction in peak loads, because better insulation would reduce the space heating peak-load in winter and the air-conditioning peak-load in summer, while solar water-heaters would have gas or off-peak electric boosting.

Solarisation would also help energy companies (e.g., in NSW) cope with any government requirements that the greenhouse intensity of their products must decline each year.

A large majority of local government districts in Australia have no gas, coal or electricity production. In these districts there are few economic losers from tough greenhouse targets. On the contrary, there are many winners. Solarisation is more labour-intensive than electricity or gas production, and most of the jobs are local. Tenants living in uninsulated homes will be big winners, since it gets around the problem that the landlord has no incentive to invest in energy efficiency because the landlord does not pay the energy bills.

Solarisation is one of the rare occasions when employment, social, economic and environmental objectives are aligned — and is therefore politically attractive, particularly at a local level.

Government moral support would be valuable, in order to give credibility to this new idea. A modest initial government subsidy could also accelerate uptake. In return for a modest subsidy Solarisation P/L would promise to solarise a specified number of buildings to a specified standard (e.g., five stars).

15-6 Who benefits and who pays?

Solarisation – *Dr Andrew Blakers* (cont)

The government might also include a tender provision that rewards local manufacturing. Alternatively, councils could offer modest revenue-neutral rate relief that is linked to the star rating of a building.

Initial solarisations could focus on the items with the most clear-cut financial benefit. This would increase the probability that the scheme would be commercially successful. In approximate order this would be ceiling insulation, draught proofing, house zoning and low-flow shower heads, followed by solar water-heaters and wall and floor insulation, followed by photovoltaic systems and double glazing.

Solarisation will create a substantial number of new jobs in the local community. The scheme fits very well with the building energy-rating scheme in several states. Early solarisation companies will be well placed to dominate the national solarisation market that is likely to develop in a few years' time.

The risk will be low because of the debt being secured against the building, and being repayable within the guarantee period of the equipment. Large reductions in greenhouse gas emissions are likely.

Solarisation can be tested on a small scale in a few suburbs or in a regional centre. Early adopters could be the 2–3% of customers who purchase 'greenpower'. Housing trusts for low-income tenants and upper-income, busy professionals are two other groups of potential early adopters.

The key to successful solarisation is that the service be provided by well-known companies offering a very smooth, no-fuss service — e.g., one phone call, one house-assessment visit, one contract, rapid and trouble-free installation of insulation and equipment, and good after-sales service.

Andrew Blakers
2002

What Canada is doing ...

The Canadian government is promoting a scheme to pay homeowners \$CD1000 to retrofit their homes to increase their energy efficiency. It aims to contribute to Canada's Kyoto commitment to achieve a 6% reduction in greenhouse gas emissions by 2012.

The program is very simple:

- 1 An energy adviser carries out an audit of the house to assess its suitability for retrofitting,
- 2 The houseowner carries out the recommended improvements,
- 3 The energy adviser makes a post-retrofit audit to assess the *actual* results,
- 4 A pro-rata cheque is in the mail.

What the UK is doing ...

An Energy Efficiency Commitment is operating which 'allows owners to take advantage of a range of energy efficiency offers and subsidies through their energy supplier'.