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E2WG Secretariat
National Framework for Energy Efficiency
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11 October 2007

Dear Sir or Madam,

Stage 2 National Framework for Energy Efficiency

Thank you for the opportunity to make a submission regarding the Stage 2 development of the National Framework on Energy Efficiency (NFEE). I apologise for my delay in lodging a submission.

Minimum Energy Performance Standards and E3 Program

In relation to the Minimum Energy Performance Standards (MEPS) and E3 Program WWF submits:

- That the MEPS program adopt a benefit-cost ratio of close-to 1:1. The current benefit-cost ratio of 1:2.4 is too lenient on inefficient models and allows the continued sale of uneconomic devices to the detriment of the environment and the consumer. A target benefit-cost ratio of close to 1:1 would reduce consumption, emissions and costs to the consumer;
- That all future economic analyses of MEPS rely on long-run marginal energy costs rather than average energy costs. This will give a better indication of the value of higher efficiency standards;
- That in the period leading up to the commencement of the Australian Emissions Trading Scheme and perhaps for a period of time afterwards if the emissions price is artificially low, MEPS incorporate an explicit emissions cost set at global emissions cost (about \$30 per tonne) so that emission reduction is given full consideration in the MEPS development process;
- That all MEPS be reviewed and up-dated every two years. This field is subject to very rapid technological advance with new models reaching the market frequently. In many cases the new models and products are significantly more energy efficient than existing ones. It is in the public's interest that MEPS promotes the best products in the market as soon as practical after their release;



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- That the energy rating label, which allows consumers to compare energy efficiency of appliances, be extended beyond the existing five products to all household and common commercial appliances;
- That implementation of the program is accelerated so that MEPS for all the categories listed on page 16 of the Consultation Paper are finalised by the end of 2009.

Finally, while not within the current terms of reference, WWF submits that Australia should lead in this field rather than follow and therefore that Australian legislation should prevent the sale of any appliances and equipment that is not amongst the 10% most energy efficient in their MEPS category. There is very little disadvantage to Australia in adopting this course of action. It would lead to very significant reductions in energy consumption, emissions and costs while affecting very few manufacturers in Australia (and those that are affected could be provided with transitional assistance to enable them to up-grade their models to satisfy the new test). Adopting this course of action, which effectively replicates the Japanese Top Runner program, would support improvements in energy efficiency overseas by creating a small but rich market for highly efficient products.

Incandescent Lighting Phase Out

WWF-Australia submits that the planned incandescent lighting phase-out strategy be broadened so as to include halogen lamps. Halogens, which unfortunately are the flavour of the month amongst architects and builders, are very inefficient, are a fire-hazard if badly installed and greatly reduce the effectiveness of ceiling insulation because gaps must be left between the light fittings and the insulation. WWF further submits that the incandescent (and halogen) phase out strategy be extended to the commercial and industrial sectors,

Buildings and Green Leases

WWF-Australia submits that all Australian governments should lead by example, including by adopting the same standard Australia-wide, and that the appropriate standard to adopt for all large new or leased buildings is the Australian Property Council's voluntary design standard of 343-527MJ/year/m². This would reduce energy consumption (and emissions) about 50%-70% below the existing Building Code of Australia standards.

WWF further submits that:

- That the Green Lease energy standards be subject to biannual review and revision to ensure that new developments in building energy efficiency are adopted as quickly as practical;
- That all government-leased buildings disclose their energy design standard and their Australian Building Greenhouse Rating prominently in the foyer;



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- That compliance with the program is subject to regular audit. Anecdotal evidence suggests that officials charged with finding new premises have tried to adopt measures to avoid compliance with the program in order to save costs.

Solar Hot Water

WWF believes that up to 2% of Australia's emissions could be eliminated simply by switching households to solar hot water. The challenge is to do so quickly and at lowest cost. WWF submits that the approach proposed by the Consultation Paper should be replaced by a more ambitious nationwide, mass-deployment program. A costed, mass-deployment program proposal for solar hot water heaters prepared by the energy consultancy NEXT ENERGY is attached to this submission.

Residential buildings

I note that the issue of minimum energy and greenhouse building and planning standards with respect to new residential buildings will be the subject of a separate strategy. WWF would very much like to participate in the development of the strategy.

If you have any queries please contact either myself on 0410 086 986 or Nicole Ikenberg, Policy Manager Climate Change, on 0414 417 959 or nikenberg@wwf.org.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Paul Toni'. The signature is fluid and cursive, with a large initial 'P' and 'T'.

Paul Toni
Program Leader – Development & Sustainability

CONFIDENTIAL DRAFT FOR DISCUSSION

100% Solar Water Heating in Australia: 5,000,000+ Solar Rooftops

Produced for WWF Australia by Next Energy

Disclaimer: This draft for discussion document is intended to provide general guidance in the development of greenhouse gas abatement policy and prior to implementation should be supported by more detailed commercial and technical pre-feasibility analysis. While the authors endeavour to provide reliable information and believe the information contained in this report is accurate, they will not be liable for any claim by any party acting on this information.

POLICY SUMMARY

Most of Australia is ideally suited to solar water heating, but take-up has been hampered by the high costs of small-scale manufacturing, marketing and installation. This policy seeks 100% take-up of solar water heating wherever it is technically feasible and economically sound, amounting to over 5 million solar rooftops in total. This deployment will reduce Australia's greenhouse emissions by over 10 million t/yr CO₂-e.

The policy involves four strategies to deliver significant cost reductions of some 50% for solar water heating through mass production and deployment:

- a) **'Golden Carrot' grants for mass production** of solar water heaters, delivering large manufacturing cost reductions through economies of scale (\$20 million);
- b) **Golden Carrot grants for large scale, efficient installation and financing** of solar water heaters, delivering further cost reductions (\$30 million);
- c) **Mass marketing and sales grants** to State and local governments to work in concert with local Golden Carrot installers to communicate and promote the benefits to households and businesses, and to offer financing packages to allow immediate savings, delivering further cost reductions (\$10 million); and
- d) **Enhanced mandates** for solar water heating in public buildings and in new and refurbished homes, benefiting from and contributing to mass deployment-based cost reductions. \$10 million will be invested to accelerate the installation of solar water heaters in schools, hospitals and other public buildings.

These strategies will enable households and business to install solar water heaters with no up-front cost (net of Renewable Energy Certificates). Households and businesses will receive energy cost savings right from the outset that exceed the financing costs of the solar water heaters.

The policy will greatly benefit householders and businesses, create new manufacturing and installation jobs, and reduce emissions.

By adopting the same approach, and using the same tradespeople, a mass rainwater tank deployment in drought-exposed areas could be cost effectively run in conjunction with this program, bringing some further greenhouse benefits and significant water savings to Australia.

Background

Australia has an ideal climate for solar technologies, and an established solar water heating (SWH) industry. However, while SWH is a relatively mature technology and already moderately cost effective for homeowners, it has not as yet been adopted as a mainstream water heating technology. Indeed, only some 5%¹ of homes have solar water heaters.

State government water heater rebates and incentives under the Commonwealth MRET program have increased take-up in recent years. Further, recent regulations in some states requiring the use of either SWH or gas water heating in new construction should increase SWH take-up rates yet further, although it appears the large majority of new homes are using gas. Overall, existing measures are highly unlikely to be sufficient to see widespread mainstream adoption of SWH, particularly in the established stock.

Absent further government policy measures, the reasons that widespread adoption of SWH is unlikely include:

- Higher capital costs for SWH compared to conventional water heaters and the propensity of consumers to apply a high discount rate to such purchases;
- The satisfactory performance of conventional alternatives and some lingering doubts about whether SWH performs adequately; and
- The relatively complex and time-consuming steps in selecting a SWH and determining whether it is a good investment.

Current domestic SWH installations cost some \$3000-\$6000² depending on the type of system, size and method of boosting used. As such, SWHs have an incremental cost of some \$2000-\$4000 over fossil fuel alternatives and, net of current rebates, an incremental cost of some \$500-\$2000. With annual savings of \$200-\$500 depending on size and type of system being replaced, SWH already represents an economic investment for homeowners, assuming complexity in selection and lingering doubts about performance are addressed. In its 2004 report, *Solar Hot Water Pilot Project for SA*³, Deloitte suggested typical paybacks of 1-5 years, which is consistent with these figures.

Implementation Approach

The Girardet Report, *Making Adelaide a Green City*⁴ and the Deloitte report, *Solar Hot Water Pilot Project for South Australia*⁵ both called for large-scale deployment of SWHs.

This policy proposal builds on these reports and proposes four implementation strategies to deliver significant cost reductions of some 50% for solar water heating through mass production and deployment:

- a) **'Golden Carrot' grants for mass production of solar water heaters - SWH**
manufacturing today is characterised by small-scale batch production of a wide variety of models (eg the three leading manufacturers in Australia collectively produce hundreds of

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www.abs.gov.au/AUSSTATS/abs@.nsf/mediareleasesbyReleaseDate/BAAAE864345CC4A5CA2570C7007B67D8?OpenDocument indicates 4% in 2005.

² <http://www.sustainability.vic.gov.au/www/html/1379-rebate-eligible-solar-hot-water-heaters.asp?intSiteID=4>

³ http://www.environment.sa.gov.au/sustainability/pdfs/solar_power_report.pdf

⁴ <http://www.thinkers.sa.gov.au/hgirardet.html>

⁵ http://www.environment.sa.gov.au/sustainability/pdfs/solar_power_report.pdf

- different models⁶). Focusing on large orders for a limited number of basic models of SWH systems suited to typical Australian homeowner needs, possibly with external boosting, has the potential to significantly reduce manufacturing costs.⁷ Up to 3 grants totaling \$20 million will be awarded to manufacturers offering the highest performance, lowest cost models for mass production.
- b) Golden Carrot grants for large scale, efficient installation and financing** – SWH today typically involves relatively low volume, dispersed installations of a wide variety of models, resulting in a high degree of customised site work. Focusing on the deployment of large numbers of installations to a relatively standardised specification has the potential to significantly reduce installation costs. Grants totaling \$30 million will be awarded to installers on a regional basis within each state, for those offering the best terms for mass installation, including financing packages.
- c) Mass marketing and sales grants to State and local governments to work in concert with local Golden Carrot installers to communicate and promote the benefits of solar water heating to households and businesses.** SWH installations today are characterised by small-scale distribution through dedicated re-sellers and a relatively high degree of custom engineering for each customer. Sales costs currently may account for some 30-50% of total delivered costs. Marketing and promotional efforts involving local and state government support, coupled with low prices, should significantly reduce sales costs. In particular, working with local governments should significantly increase consumer confidence and reduce their information and hassle costs, as well as their perception of risk.
- d) Enhance mandates.** – With the very low costs achieved through high volume, it will be feasible and attractive to enhance the current mandates for the use of solar water heating, as discussed in the Table 1 below. This includes mandating solar water heating in both public buildings and in new and refurbished homes. \$10 million will be invested to accelerate the installation of solar water heaters in schools, hospitals and other public buildings, providing a cornerstone early outlet for Golden Carrot recipients.

Overall, total cost reductions of 40-60% for mass SWH deployment compared to current costs should be achievable and would deliver 'negative cost' greenhouse gas emissions reductions abatement as well as significant financial benefit to homeowners and GDP.

<i>Market</i>	<i>Size</i>	<i>Key Mechanisms</i>
New Homes and major home renovations	Some 150,000 new housing units per year ⁸ and some 40,000 major renovations per year ⁹	Further strengthen Building Code Australia ¹⁰ provisions to make gas-boosted SWH the default water heating choice for both new homes and major renovations
Public Housing (retrofits)	~350,000 public housing	Stage bulk multi-year supply and installation

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[http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrumentCompilation1.nsf/0/F6290CEF5FFBC37ECA257248007BDE4B/\\$file/RenewEnerElec2001.pdf](http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrumentCompilation1.nsf/0/F6290CEF5FFBC37ECA257248007BDE4B/$file/RenewEnerElec2001.pdf)

⁷ See <http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/93/930116.html> for an example of a highly successful Golden Carrot program that delivered significant cost and performance gains for household refrigerators in the US in the 1990s.

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www.abs.gov.au/Ausstats/abs@.nsf/e8ae5488b598839cca25682000131612/f956c0d2e4e7fea0ca2568b7001b4594!OpenDocument

⁹ hia.com.au/hia/news/article/MR/National/EC/High%20Land%20Prices%20Fuel%20Major%20Renovations.aspx

¹⁰ dataserver.planning.sa.gov.au/publications/1078p.pdf

	units ¹¹	tenders, building on Golden Carrot recipients
Schools (retrofits)	7000 public schools ¹²	As above
Fast Food Chains (retrofits)	>10,000 outlets	Target major chains for mass retrofits with funding to assist with tendering costs, technical advice and possible government funding support for initial installations
Existing Homes	~5,000,000 homes with potential to be suitable	Coordinate with local councils for joint low-cost rollout of retrofits. Key to success in non-mandated retrofit residential sector will be very low cost (\$0 to \$300) consistent with pricing consistent with mass deployment and high trust factors engendered by state and local government support.

Possible Enhancements

- Mandate the use of SWH wherever technically feasible on all new commercial buildings and those under-going major renovations
- Leverage on the logistics and core tradespeople, a mass rainwater tank deployment could be cost effectively run in conjunction with this program, bringing some further greenhouse benefits and significant water savings to Australia.

Proposed Timetable

The above implementation is proposed over a 6-year timeframe with 100,000 units in Year 1, 600,000 in Year 2 and 900,000+ units in Years 3-6.

¹¹

www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/1301.0Feature%20Article172001?opendocument&tabname=Summary&prodno=1301.0&issue=2001&num=&view=

¹²

[www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/9DDA83611950C66FCA25728B000CFC92/\\$File/42210_2006.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/9DDA83611950C66FCA25728B000CFC92/$File/42210_2006.pdf)