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Newsletter of the International Energy Agency Solar Heating and Cooling Programme

INTERNATIONAL ENERGY AGENCY
Solar Heating & Cooling Programme

In This Issue

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Sustainable Solar Housing
moving from a niche market

Experts in the joint work of the IEA Solar Heating and Cooling Programme and the IEA Energy Conservation in Buildings and Community Systems, SHC Task 28/ECBCS Annex 38: Sustainable Solar Housing, collaborated to research how better to build very low energy, solar housing. Technologies investigated for application in such housing included: passive solar design, active solar systems for domestic hot water and space heating, photovoltaic electric supply systems, improved daylighting, and natural cooling. In this Task, special attention was given to the marketing aspects of low-energy housing. The work of Subtask A, described in this article, systematically investigated the marketing of exemplary projects and used this information to write a compact and practical guide for marketing of low-energy housing.

Forty experts from 17 countries have spent the past four years investigating diverse packages of solutions that achieve superior comfort and only consume one-fourth the primary energy for space heating compared to conventional building practice. The work of SHC/ECBCS Task 28, Sustainable Solar Housing was divided into four subtasks—Subtask A: Marketing and Communication, Subtask B: Design and Analysis, Subtask C: Construction and Demonstration, and Subtask D: Measurement and Evaluation. In addition, three working groups focused on specific aspects. One group researched the environmental impact over the housing life cycle of selected demonstration projects. Another group focused on sustainable housing solutions for cooling dominated climates, drawing on the experience from built projects. And the third working group developed a design review process to assure quality and that the original goals defined at the beginning of a project were maintained through the construction process.

The movement to build ecological housing with extremely low energy consumption for heating and cooling is continuing to grow. In this Task, many of the technical aspects of sustainable solar houses were investigated in order to improve their performance. Continual technical research is essential for the development of sustainable housing. However, the technical aspects are no longer the main obstacle to achieve greater market penetration. In several countries, sustainable housing is already entering the main building market. In

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2005 SHC Solar Award
Presented to Dr. Jan-Olof Dalenbäck

SHC Chairman, Mr. Rantil presents SHC Solar Award to Dr. Jan-Olof Dalenbäck at the 2nd European Solar Thermal Energy Conference in Freiburg, Germany in June 2005.

This year's SHC SOLAR AWARD was presented to Dr. Jan-Olof Dalenbäck, Professor at Chalmers University in Sweden, at the 2nd European Solar Thermal Energy Conference in Freiburg, Germany.

The award is given to an individual, company, or private/public institution that has shown outstanding leadership or achievements, with links to the IEA SHC Programme, in the field of solar energy at the international level within one or

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other countries, it is confined to a niche market. To penetrate the market further, it is necessary to concentrate on the marketing aspects of sustainable housing.

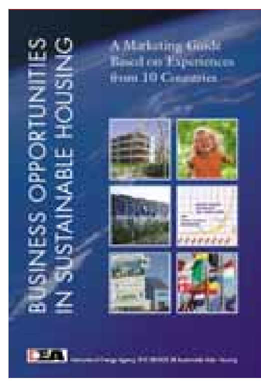
To investigate the marketing aspects of sustainable housing, Task experts in the field of sustainable housing collaborated with marketing experts to gain insight in the marketing process for "low-interest" items, such as low energy housing. Marketing experiences from 18 sustainable building projects in 10 countries were systematically collected and analysed. These experiences form the basis of the practical guide for the marketing of low-energy housing: "Business Opportunities in Sustainable Housing".

Marketing Successes

Marketing successes in sustainable housing have been achieved, and in many of the countries projects have surpassed their expectations. How did this happen? Of course the boundary conditions had to be fulfilled, that is, the technical aspects in these projects were in perfect order. This is a prerequisite, but not a guarantee for success. In most of the successful projects marketing aspects played a main roll in achieving the success. In order to analyse the marketing process, a template was developed, which helped Task experts to look with a marketing view to the projects. Experts used the following template to describe the success stories:

1. Introduction
   - What was the goal of the project?
   - What was the marketing concept?
2. Promoted item (the housing)
   - What type of housing is it?
   - What is the market opportunity?
   - What are the market threats?
3. Target market
   - What was the political, economical, social and technical situation?
   - Who were the target group?
4. The players
   - Who were important in the process?
5. The strategy
   - What was done and why?
6. Results
7. Final analysis
   - What went well, what went wrong?
   - What can be learned from this project?

By looking at the projects differently (from a marketing point of view) and by analyzing the information with marketing experts, new insights in the reason for the marketing successes were gained. This formed the basis of the report, "Business Opportunities in Sustainable Housing."



Exemplary Projects

Today, there are many examples of high performance houses. Based on the template above, a series of housing projects were documented, for example:

Konstanz Passive Housing Estate, Rothenburg, Switzerland

Konstanz was built by a private company that wanted to build homes that were not well known in the Swiss hous-

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Sustainable Solar Housing publications

Available on the SHC Web Site

The following publications are available on the Task 28 web page under Outcomes, http://www.iea-shc.org/task28/index.html

Business Opportunities in Sustainable Housing–A Marketing Guide Based on Experiences from 10 Countries. A "how to" guide on developing a marketing strategy and success stories. Available in October 2005.

Exemplary Sustainable Solar Houses. A series of 40 brochures describing demonstration sustainable solar housing projects.

Innovative Components and Systems. Guidelines for components and systems.

Design Insights from the Analysis of 50 Sustainable Solar Houses. Project descriptions with supporting data. Available in September 2005.

Available from Commercial Publishers & Bookstores

The Environmental Brief. Available in December 2005 from EF&S Spons Press, UK (ISBN: 0-419-24490-5).

Sustainable Solar Housing–A Reference Book for Planers. Insights from monitoring, simulation and the experts with sections on Strategies, Solutions, Exemplary Buildings and Technologies. Available in February 2006 from James & James Science Publishers, Ltd. at www.earthscan.co.uk.

Sustainable Housing in Warm Climates–Learning from Innovative Projects. Trends in approaches taken to build sustainable solar housing in cooling dominated climates are examined and illustrated with built housing projects. Available in January 2006 from James & James Science Publishers, Ltd. at www.earthscan.co.uk.

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The Konstanz project is a good example of the importance of knowing and defining the needs of the market combined with strong sales points.

ing market. To achieve this objetive, the needs of the market were defined and strong sales points were developed. The success of this project is illustrated by the fast sales of 32 apartments in eight blocks, and the construction of five more blocks. The main reasons for the success were:

- They used the companies strong points effectively:
  - a good reputation in the market
  - a good business philosophy and motivation of the whole crew.
- They made effective alliances to gain credibility for their product.
- They defined the target group and identified the needs of this group.
- They differentiated their product so that buyers had a choice. This also minimised the company's risk.

WWF Housing Project, The Netherlands

The Dutch branch of the World Wildlife Fund (WWF) started a campaign to stimulate the construction of sustainable housing in the Netherlands. This effort soon evolved into a collaborative project with the WWF, five major property developers, and energy experts. Working together, this group developed the WWF-label for housing. Over 10,000 homes that meet the label requirements have been built throughout the Netherlands.

The WWF Housing Project is a good example of how brand name can help to market houses.

do's & don'ts

Marketing is a process. It is not just making a nice brochure at the end of a building process. Marketing starts the moment a project starts. The process starts with a thorough investigation of the housing market and the players on the market. From this a target group has to be selected. It is essential to know what the target group wants and how the product (the house) can fulfil these needs.

To achieve success it is important to follow the agreed upon steps in the marketing process. In addition to the specific process, some general do's and don'ts were distilled from the success stories:

Do:

- Ride on the wave of increasing public awareness of environmental issues
- Join other players in the marketplace – commercial / interest groups / local, regional, national, and international authorities – and develop win-win alliances
- Think strategically:
  - accept the fact that you cannot sell to everyone
  - know your target group preferences
  - clearly define how you differentiate yourself from others
  - focus on added value.

Don't:

- Have a one-sided focus on 'additional investment cost resulting in annual energy savings'
- Start immediately with communication without having done a strategic analysis.

The main reason for the success of the WWF project was the making of win-win alliances. All parties involved gained by participating in the project:

- The WWF achieved more sustainable housing and better awareness in the building sector.
- The project developers improved their image and gained experience in new techniques. They also made useful new contacts at local government level.
- Local government got high-quality housing, which contributed to the Kyoto objectives (also national goals).
- House buyers bought a high-quality, feel-good house.

The Future

Sustainable solar housing is a great business opportunity. Although continuing research will be necessary, techniques in use today have proven their worth. They are reliable and can be applied without risk in building projects. Sustainable housing is ready to enter the main building market and attain a substantial market share. To achieve this market share, a professional marketing process is necessary.

Sustainable housing is the next growth business in the building sector!

This article was contributed by Task expert, Edward Prendergast, moBius consult bv, the Netherlands, Edward@moBiusconsult.nl. The Operating Agent for SHC Task 28/ECBCS Annex 38, Solar Sustainable Housing, was Robert Hastings, Architecture, Energy & Environment GmbH, Switzerland.

Sustainable Solar Housing
lessons learned from SHC work

The work of SHC Task 28/ECBCS Annex 38, Sustainable Solar Housing has contributed significantly to moving high performance (hp) houses further into the market.

Key lessons learned from the work of 40 experts in 17 countries include:

Performance

- Heating needs of high performance (hp) houses often exceed planning value. Frequent causes: room temperature exceeds 20°C and fewer occupants than assumed. Still, energy consumption can be 1/10 of conventional houses.
- House life-time energy use (construction + operation + demolition) has new meaning in (hp) houses. Since energy use for operation is so small, energy embodied in materials, manufacturing and transportation are proportionally more significant.

Envelope

- Generous windows are needed because deep cross sections of thick insulated walls reduce light penetration. Flared window openings can counter this tunnel effect.
- Useful passive solar gains compensate for increased heat losses, even in hp houses. Daylight is an essential quality for interior spaces (marketing and quality of life).
- High performance isn't free, hp houses can cost up to 10% more than conventional houses. However, as more components are standardized costs will decrease.

Space heating

- Heat transport via ventilation systems is economical if the capacity is less than 10 W/m2.
- Wall radiators are unnecessary, except in bath rooms where focused heat is appreciated.
- Thermostats set lower at night saves little or no energy in hp houses.

Ventilation

- Compact do-everything systems (60 x 60 x 180 cm) simplify installation, require less "engineering" and can be more reliable than custom-assembled systems.
- The location of ventilation supply and extraction openings can be flexible. Monitoring shows outlet louvers can achieve good air mixing in a room.

Domestic Hot Water

- 3-5 m2 of collectors and 300-500 liter tank package systems are adequate, such systems are highly optimized today.
- A small solar system allows heating and ventilation system to take a summer vacation.
- Roof collectors are a prestige item by making the statement that environmentally conscious family lives here.

Acoustics

- Sound dampers in air ducting are effective. Sizing and placement should follow standard engineering practice.
- Ventilation noise can be managed by isolating fan units and limiting air flows to under 3m/s.
- Occupants of hp houses are sensitive to internal noise because the houses are so well isolated from ambient noise.

Summer comfort

- High performance houses are potentially cooler in hot weather than conventional houses—daytime heat is better isolated and night time "cool" is held longer. Prerequisites are effective window shading and ventilation operation.
- Earth to air heat exchanger for supply air provides weak but useful cooling power.

Mr. Robert Hastings, the Task Operating Agent, remarks that "the challenge to planning sustainable solar housing is to find a superior combination of energy conservation, using renewables and 'Lebensfreude' (the joy being alive in a place) all at an affordable price."

To increase the impact of what has been learned from this Task, a new Task is in the planning phase that would apply this know-how to the renovation of the existing building stock. The objective is renovating houses to achieve at least a factor three reduction of primary energy use for space heating, water heating and supporting technical systems while providing superior comfort and quality of life for the occupants.

Thanks To…

Robert Hastings, who as Operating Agent lead the joint SHC/ECBCS Task on Solar Sustainable Housing. As a veteran to the Programme, the Executive Committee thanks him for his dedicated and valuable work in skillfully managing this Task.

Colin Blair, of Standards Australia International, who served as the Australian Executive Committee member for the past two years.

Dr. Isaac Pilowtowsky, of the Universidad Nacional Autónoma de México, who served as the Mexican Executive Committee member for four years.

Welcome To…

Dave Renné, of the National Renewable Energy Laboratory in the United States, who will lead the new Solar Resource Knowledge Management Task.

Max Maffucci, of Standards Australia International, who has replaced Mr. Blair as the Australian Executive Committee member.

Dr. Claudio Estrade Gasca, of the Universidad Nacional Autónoma de México, who has replaced Dr. Pilowtowsky as the Mexican Executive

SHC new work

The Solar Heating and Cooling Programme initiates new work that is proposed by participating countries and fulfils the Programme's strategic plan.

Solar Resource Knowledge Management

The new Task, Solar Resource Knowledge Management, began in July 2005. Collaborating with the IEA SolarPACES and Photovoltaic Power Systems Programmes, experts will provide the solar energy industry, the electricity sector, governments, and renewable energy organizations and institutions with the most suitable and accurate information on spatial and temporal solar coverage. The information will be derived from historic data sets, from currently derived data products using satellite imagery and other means, and from short-term forecasts and scenarios on the future availability of solar resources in a changing climate. The work will be divided into three subtasks: standardization of solar resource products to insure worldwide intercomparability and acceptance; development of a common structure for archiving, processing, and accessing solar resource information, such as through a single portal; and improvements in techniques for solar resource characterization and forecasting.

For more information contact the Operating Agent, David Renné, e-mail: david_renne@nrel.gov.

Solar Thermal Cooling and Air Conditioning

The work of SHC Task 25, *Solar-Assisted Air Conditioning of Buildings,* concluded at the end of 2004, but set the framework for further work in this area. To continue this work, a new Task is underway on solar (thermal) cooling and air conditioning. The proposed work will focus on 1) the development of standardized systems for solar heating, cooling and DHW in the small capacity range with a strong involvement by the industry and the results of SHC Task 25 and SHC Task 26, Solar Combisystems; 2) further development of standardized systems for commercial buildings in co-operation with professionals (planners); and 3) support the "market entry" of solar cooling technology and assure a high technical and economical level.

For more information contact Hans-Martin Henning, Fraunhofer ISE, e-mail: hans-martin.henning@ise.fraunhofer.de

Solar Renovation

Following on the work of *Sustainable Solar Housing*, a new Task is under development on Sustainable, Solar Renovation of Housing. The goal of this work is to increase the number of housing renovations achieving a minimum factor three reduction of primary energy use (space heating, water heating and their technical systems) while also offering superior comfort and living quality. To achieve this, it is proposed to focus on five areas: 1) building stock analysis, 2) demonstration projects analyses, 3) development of innovative concept packages, 4) environmental impact analysis, and 5) marketing and communication strategies. A workshop was held 2-4 October 2005 in Vienna, Austria, just prior to the European Conference on Sustainable Energy Systems for Buildings and Regions http://www.irca.at/energy.

For more information contact Robert Hastings, Architecture, Energy & Environment GmbH, Switzerland, e-mail: robert.hastings@aeu.ch.

Polymeric Materials for Solar Thermal Applications

New work in the area of polymeric materials is being explored as these materials offer potentially lower costs, easier processing, lighter weight, and greater design flexibility than materials currently used. The economic viability of solar collector systems for domestic hot water systems is strongly linked to their cost. By replacing the glass and metal parts with less expensive, lighter weight polymeric components system costs will decrease. It is proposed to focus the work on identifying and determining the feasibility of replacing traditional materials with polymeric-based materials in components, such as reflector substrates, glazing for collectors, absorbers, insulation materials, tubes, casing for collectors, and sealants.

For more information contact Michael Köhl, Fraunhofer ISE, e-mail: michael.koehl@ise.fraunhofer.de.

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more of the following sectors:

- Technical developments
- Successful market activities
- Information

Dr. Dalenbäck is the third recipient of the Award. He was selected for his significant contributions to the realization of large-scale solar district heating networks, the development of a roof module with an integrated solar collector, and the renovation of buildings using solar applications. His work over the past 20 years has resulted in the successful transfer of solar thermal technologies in Sweden as well as in other countries.

Dr. Dalenbäck contributed his expertise to three successful IEA SHC Programme projects in the areas of central solar heating plants with seasonal storage, solar energy in building renovation, and solar water heater procurement.

In addition to his contributions to the IEA SHC Programme, Dr. Dalenbäck is a Professor of Building Services Engineering at Chalmers University in Göteborg, serves as the national liaison officer for ISES Europe, the ISES Vice-President of Industries, and is a member of the SEAS Board of Directors.

solar collectors

new test procedure for collector absorbers

Solar absorber coatings have become more advanced thus making collectors more efficient. To determine the durability and life of these improved collectors, the participants in IEA SHC Task 27, Performance of Solar Façade Components, developed a test procedure based on an absorber's optical properties (solar absorptance and thermal emittance). By accounting for the absorber coating's optical properties, the stagnation temperature can be determined, which is the main cause of temperature degradation. This new procedure is based on simulated load profiles that depend on the optical properties (solar absorptance and thermal emittance) of the absorbers.

The job of a solar collector's absorber is to transform the incident solar irradiation into heat and to limit heat loss due to thermal radiation. To maximize the absorption of the solar irradiation (in the wavelength range from 0.29 mm – 2.5 mm) and minimize the emission of the thermal infrared (> 2.5 mm), a spectrally selective coating is applied to the absorber's substrate material of copper, aluminum or steel.

For a long time, the primary coatings have been made of thin black chromium layers (chromium particles embedded in a chromium oxide, electro-deposited on nickel-plated copper) or nickel-pigmented alumina (on aluminum). However, more advanced coating processes, such as physical or chemical vapor deposition, are now on the market and a number of new coatings are under development. Whether they can meet expectations is yet to be confirmed.

The optimization of a solar absorber relies heavily on the function of the optical characterizations of the coating—solar absorption and thermal emission. During production, these values are optimized and monitored, but once the solar collector is installed even a leading product can lose its superiority after several years due to micro-climatic degradation. High thermal load, condensation and high humidity, and atmospheric corrosion by sulphur dioxide are considered as possible causes for the degradation. To avoid such surprises, it is necessary to predict the aging behavior of these coatings.

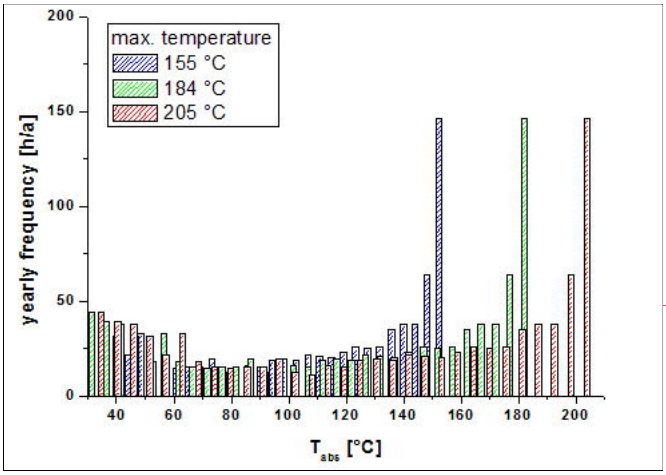
The process of coil-coating highly selective solar absorbers using the self-constructed sputtering plant at the Interpane factory in Lauenfoerde, Germany. (Source: Interpane Solarbeschichtungs GmbH)

Methods for accelerating the aging process of solar absorber coatings were introduced in SHC Task 10, Solar Materials R&D, and then continued by the SHC Working Group, Materials in Solar Thermal Collectors. The current SHC Task 27, Performance of Solar Façade Components, is now continuing this work. Predictions of the long-term stability of a collector coating made in SHC Task 10 were confirmed by field examples in the late 1990s. A procedure for performing constant load tests in the laboratory also was developed to assess the suitability of a solar absorber surface for use in a single glazed, flat-plate collector for domestic hot water systems. "Suitability" means that the solar fraction of the system would decrease less than 5% due to degradation of the coating within an in-service time of 25 years.

SHC Task 27 has modified the temperature test procedure developed in SHC Task 10 to allow for a more sophisticated testing of coatings with different absorption and emittance values. By adjusting the test-conditions to the load-profile that can be expected in real application (see Figure 1), the test-conditions are more rigorous than the Task 10 temperature test, but possible to pass if the product is good.

The benefits of this new test procedure are that it helps manufacturers reduce their risks and warranties as well as it increases consumer confidence. The Task participants plan to submit this test procedure to the appropriate international standardization organizations.

For more information contact Michael Köhl, Operating Agent for SHC Task 27; e-mail: michael.koehl@ise.fraunhofer.de. Also, visit the Task 27 web page at www.iea-shc-task27.org.



This graph illustrates the distribution of flat plate absorber temperatures for 30 days of stagnation. The data for the maximum temperature 155°C is for a low efficient absorber. The data for 205°C is for a high-efficient absorber. These were computed from the measured data of a 184°C maximum temperature.

australia

solar water heaters second largest source of RECs

Renewable energy certificates (RECs are a tradable certificate scheme used by Australia's Commonwealth Government to deliver renewable electricity. Solar hot water systems are included based on the amount of electricity displaced under a calculated deeming scheme. At the end of 2004, solar water heaters were the second largest source of RECs—21% of the certificates created—preceded only by hydropower at 42%.

Australia's Renewable Energy Certificates

As part of the Australian Government's Mandatory Renewable Energy Target (MRET), a legal liability is placed on electricity retailers to contribute towards the generation of an additional 9,500 gigawatt hours of renewable energy per year by 2010. This figure is estimated to deliver an additional 2% of the electricity consumed in 2010.

To support MRET, the Government created a tradable renewable energy certificate (REC) scheme in 2001. These certificates are based on the generation of accredited renewable electricity or the displacement of electricity by installing eligible solar water heaters. A certificate is equivalent to one megawatt hour and is traded in a market or in bilateral trades. Liable parties (generally electricity retailers) are required to surrender renewable energy certificates equivalent to their total liability in that year. Their liability is proportional to their electricity sales. A penalty of AU$40/REC applies for liable parties unable to surrender sufficient RECs (due to the tax implications the effective penalty is closer to AU$56).

Renewable certificates are valid until surrendered and therefore can to be banked for use in the future. The liability increases each year until 2010 and then remains constant after that until 2020 (see Figure 1).

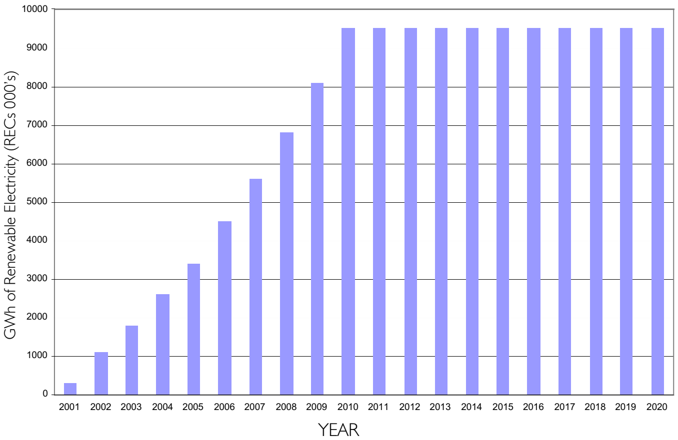


Figure 1. Number of renewable energy certificates required to be surrendered each year.

A typical solar water heater.

Based on the breakdown of RECs registered by December 2004, solar water heaters have been the second largest source of RECs—21% of the certificates created (see Figure 2).

RECs for Solar Water Heaters

Typically, a solar water heater will be eligible for between 10 and 64 RECs, depending on the system type and location. Certificates for solar water heaters are claimed once for each installation (equivalent to 10 years of electricity displacement); and must be created within 12 months of the solar water heater installation date. The deemed amount is calculated using a TRNSYS model to compare the performance of the solar water heater to a conventional water heater in four different climatic zones.

A list of the eligible solar water heater models is included in the regulations. It lists the number of RECs that can be created when installed in each climatic zone for each eligible model, and is updated approximately twice a year.

In order for a solar water heater to be eligible for RECs, the unit must meet one of the following criteria:

- Be installed replacing an existing electric water heater installed in the same location for over 1 year; or
- Be installed replacing an electric-boosted solar water heater installed in the same location for over 1 year (in this case a reduced number of RECs can be created); or
- Be installed in a new building; or

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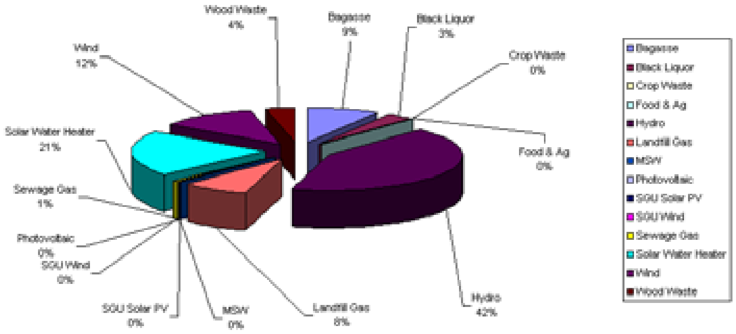

Figure 2. Breakdown of RECs by Eligible Renewable Energy Source as at 31 Dec 2004. (Source Rossiter, ORER: www.orer.gov.au)

- Be the first installation of a hot water system in an existing building.

Solar water heaters replacing gas water heaters, gas-boosted solar water heaters or water heaters using any fuel other than electricity are not eligible for RECs. There is speculation that this will change with a revision of the Act and the regulations.

Market impacts

Until recently, most manufacturers could sell RECs to electricity retailers at a price of AU$36/ REC. A solar water heater installed to provide hot water to an average family would be eligible for around 25 to 30 RECs or a REC value per system of about AU$1000.

The market for solar water heaters continues to grow, but the growth rate has slowed as the price of RECs has dropped. Currently, the subsidy is approximately AU$700.

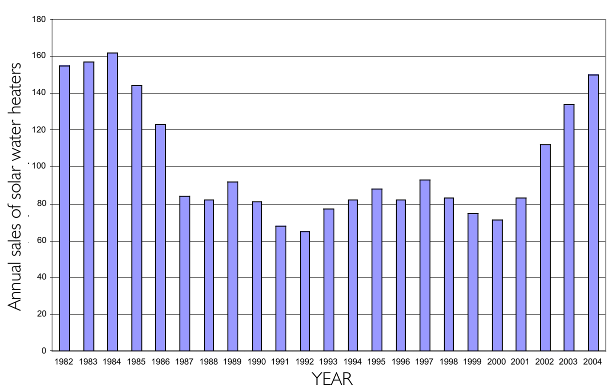

Figure 3. Sales of solar water heaters by year

The Future of RECs

In August 2004, the Commonwealth (Federal) Government responded to the Review of MRET. The Government rejected a recommendation by the review panel to continue the increase in REC liability past 2010 in order to maintain support for additional new renewables after 2010. The Australian Business Council for Sustainable Energy estimates that the power plants currently committed to come on line in 2006 will provide most of the RECs required to fulfil current liabilities until 2020.

Consequently, REC values have dropped to about AU$24/REC, reducing the support to AU$700 for a typical solar water heater. Whether REC prices will recover depends on the response of the market to the new supply of renewable electricity generation and the possibility of increasing the mandatory renewable energy target.

A recent development is the high level of support by State governments for the expansion of the target. And, a number of State governments are taking steps to ensure that the mandatory renewable energy target is increased. One example is in Victoria, the State's 'Greenhouse Challenge for Energy Position paper' states.

"Expansion of the mandatory renewable energy target. The Victorian Government remains committed to its position that the mandatory renewable energy target should be expanded to 19,000 GWh by 2010. In the absence of a federal commitment, Victoria will work with other States and Territories to drive the growth of renewable energy through cooperative action, including the consideration of a State and Territory based mandatory renewable energy target."

Despite the uncertain future of RECs in Australia, the scheme has already doubled solar water heater sales over the past four years.

Conclusion

The Australian RECs scheme is a successful certificate trading scheme model for other countries to consider. The methodology developed by the IEA SHC Programme and trade associations in Europe and North America for converting square meters of installed capacity to kW will facilitate the inclusion of solar thermal technologies, such as solar water heaters, in RECs schemes.

Resources

- Office of Renewable Energy Regulator http://www.orer.gov.au
- Victorian Government, Greenhouse Challenge for Energy Position Paper, December 2004 http://www.greenhouse.vic.gov.au/challengeforenergy.htm

This article was contributed by Ken Guthrie of Sustainability Victoria and the alternate SHC Executive Committee member for Australia; e-mail: ken.guthrie@seav.vic.gov.au. For additional information on government support of solar water heaters in other countries see the article, How Government Can Support Solar Water Heating, *in the October 2004 issue of the SHC Solar Update, http://www.iea-shc.org/newsletter/2004_Oct_SolarUpdate.pdf.*

IEA SHC programme

The International Energy Agency was formed in 1974 within the framework of the Organization for Economic Cooperation and Development (OECD) to implement a program of international energy cooperation among its member countries, including collaborative research, development and demonstration projects in new energy technologies. The 20 members of the IEA Solar Heating and Cooling Agreement have initiated a total of 36 R&D projects (known as Tasks) to advance solar technologies for buildings. The overall program is managed by an Executive Committee while the individual Tasks are led by Operating Agents.

Current Tasks and Operating Agents

Performance of Solar Facade Components
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S●LARUPDATE
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