

DSM Spotlight

The Newsletter of the International Energy Agency Demand-Side Management Programme June 2003



Australian State Institutes White Certificates Scheme

An energy efficiency certificates (white certificates) scheme is currently underway in New South Wales, Australia. These white certificates are part of a larger Greenhouse Gas Abatement Scheme introduced by the State Government of New South Wales, the most populated state in Australia.

Under the New South Wales Greenhouse Gas Abatement Scheme, electricity retailers and other parties are required by legislation to meet mandatory targets for reducing the emission of greenhouse gases resulting from the electricity they supply or consume. To achieve the required reduction in emissions, eligible parties purchase and surrender tradeable certificates called New South Wales Greenhouse Abatement Certificates (NGACs). NGACs can be created in several ways, one of which is by undertaking 'demand side abatement' which includes energy efficiency projects.

Greenhouse Benchmark

The state-wide benchmark for reducing greenhouse gas emissions in New South Wales is 7.27 tonnes of carbon dioxide equivalent per capita by 2007. This is 5% below the per capita emissions in the Kyoto Protocol baseline year of 1989/90. To ensure that progress is made towards this goal, progressively tighter annual targets have been set, commencing with a target of 8.65 tonnes per capita in 2003 and ending at the final benchmark level of 7.27 tonnes per capita in 2007, which will then be maintained until at least 2012.

Benchmark Participants

Under the New South Wales Greenhouse Gas Abatement Scheme parties who are required to meet targets for greenhouse gas emissions are called "benchmark participants". Each year, the Scheme sets individual benchmark reductions of greenhouse gas emissions for each benchmark participant based on their contribution to the supply of electricity in New

South Wales. Each benchmark participant then has to reduce the average emissions of greenhouse gases from the electricity they supply or use to the pre-set individual benchmark level. Benchmark participants comprise:

- Electricity retailers;
- Electricity customers taking supply directly from the Australian National Electricity Market;
- Electricity generators with contracts to supply electricity directly to customers;
- Other parties who consume large volumes of electricity in New South Wales, and who elect to participate directly in the Scheme rather than have their electricity retailer manage the emission reduction obligation in relation to the electricity they consume.

If a benchmark participant does not reduce the average emissions of greenhouse gases from electricity they supply or use to their pre-set individual benchmark level, they pay a penalty of AU\$10.50 per tonne of carbon dioxide equivalent above their benchmark.

Creation of NGACs

To achieve the required reduction in greenhouse gas emissions, benchmark participants purchase and surrender NGACs. These certificates are transferable and can be traded between any parties. One NGAC represents one tonne of carbon dioxide equivalent that would otherwise have been released into the atmosphere in generating electricity. The activities that allow persons to create NGACs include:

- Reduction in the greenhouse intensity of electricity generation;
- Activities that result in reduced consumption of electricity;
- The capture of carbon from the atmosphere in forests, referred to as carbon sequestration; and
- Activities carried out by elective participants that

COUNTRIES PARTICIPATING IN THE IEA DSM PROGRAMME

Australia

Austria

Belgium

Canada

Denmark

European Commission

Finland

France

Greece

Italy

Japan

Korea

Netherlands

Norway

Spain

Sweden

United Kingdom

United States

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Advanced Customer Services for Competitive Energy Markets

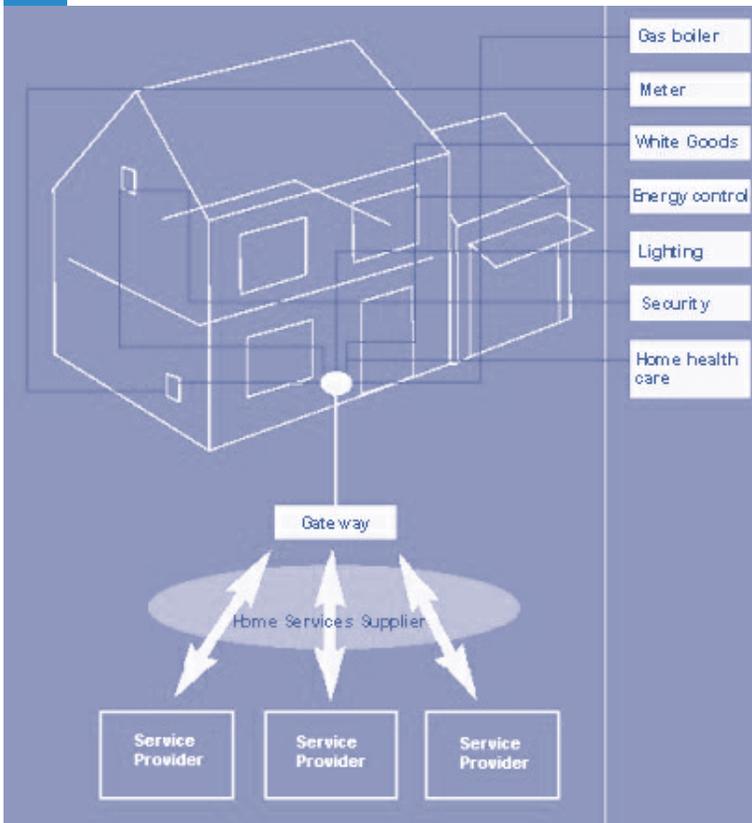
One of the first issues the IEA DSM Programme tackled when it began in 1993 was how to provide cost effective communication for energy management services in a utility environment. This work was undertaken by the participants in Task II, *Communications Technologies for Demand Side Management*. And for the following nine years, experts worked on a variety of communication issues as the energy and utility businesses made the transition from utilities with a single product to full commercial and market-driven companies.

remote diagnostics and audits of energy consuming appliances, remote CHP and embedded generation management, and provision of security and medical assistance. A business assessment study showed that the most effective way to achieve financial viability is to bundle multiple and diverse services and to target specific service bundles at individual customer groups when providing services to large populations. Another important aspect of this work was the identification of those that benefit from such services. For many services, the main beneficiary proved not to be the household or small business customer, but other organizations, such as governments, ESCOs, and utility and metering companies.

The next task the participants undertook was to develop specific technologies and household service access architectures. This collaboration led to the development of a flexible communications gateway prototype—FlexGate (see January 2001 Spotlight issue). The prototype was demonstrated by linking together external service providers with applications inside customers' homes. The services demonstrated were a remote metering service using Mbus protocol and a time of use energy price sensitive washing machine. Once the gateway prototype was demonstrated, Task participants then defined Field Trials to demonstrate the delivery of bundled services on a commercial basis and prime the market for wide-scale delivery. As this was the start of the market and competitive stage of the work, the Task participants agreed that it should be carried out on an individual basis and not under the auspices of the DSM Programme.

Field Trials have been developed and planned for implementation in the U.K. and Finland. These Trials will take the final step in marketing bundled services by identifying the most likely routes to commercial exploitation of technologies, systems, and services. Richard Formby, the Task II Operating Agent concludes, "The growth of communications for household services, including energy, will be rapid over the next few years. The potential is large for using these services via ESCOs and other organizations to assist energy efficiency and savings improvements. This Task has delivered cost effective systems and operational and business infrastructures to deliver these services."

For more information on the results of this Task visit the DSM web site at dsm.iea.org.



Services via a gateway are delivered to customers by a range of service providers.

The Task's first achievement was defining the required energy related services that could be viable through the use of low cost communications services in the participating countries. These services included energy management and advice,

NEW DSM PROGRAMME INITIATIVES

At the April meeting of the IEA DSM Executive Committee, a series of new activities were initiated to support the Programme's commitment to keep pace with the changes occurring in demand-side management.

TWO NEW TASKS INITIATED

Metering and Pricing

Many countries have established competitive energy markets where residential and small commercial and industrial customers can choose their energy supplier without needing to commit to real time metering. Energy suppliers instead use "profile metering" or simulated metering which is cheaper, but removes any incentives there may be for customers to modify their energy use. In addition, there are claims that by providing customers information on where the energy they buy is actually being used (such as lighting, heating, appliances, etc.) motivates them to make savings or modify use.

To address these issues, the IEA DSM Programme has started Task XI, *Energy Use, Metering and Pricing for Demand Management Delivery*. This new Task will quantify the impact that time of use and end-use metering and pricing can have on customer energy costs, energy savings, and supplier risks if applied on a wide scale. The objective of this international project is to:

- Gain a better understanding of the advantages and disadvantages of real time metering, pricing and demand disaggregation for small customers in competitive energy markets.
- Conduct an independent review of the technology available to implement real time metering, pricing and demand disaggregation.
- Assist in the development of national policies to encourage real time metering, pricing and demand disaggregation within competitive energy markets.

The results of this work will feed into the proposed new Task on demand response.

For more information contact the Task XI Operating Agent, Richard Formby of E.A. Technology, the U.K., e-mail: richard.formby@eatechnology.com, fax: +44-151-347-2411.

Coordination of Energy Standards

Energy standards underpin energy efficiency policies and programs ranging from new technology deployment programs, energy audits, and labeling to financial and rebate programs and demonstration programs. Their importance will continue to increase as countries work to achieve their Kyoto goals.

The impact energy standards can have on the reduction of greenhouse gases (GHG) is significant—studies show that strengthened standards and labeling policies and programs alone can achieve about one-third of the necessary GHG reductions. Once combined with other energy standard based policies and programs, it is estimated that these measures will account for the majority of energy efficiency GHG reductions worldwide.

Bi-lateral and regional activities in this area have been underway in APEC (Asian Pacific Economic Co-operation), the EU and North America for about 10 years. Currently, work is in progress to scope, clarify and reach consensus on the strategic international context for policies and programs that rely on energy standards. As part of the current activities, the first of a series of proposed regional meetings was held March 2003 in Australia to begin to develop a "Strategic Vision and Road Map."

To support this effort, the IEA DSM Programme is planning to provide the structure for the formal strategic coordination of the different regional and international activities. This new Task XII, *Energy Standards*, will hold meetings, conduct studies and prepare reports on specific issues that emerge from the road map meetings.

For more information contact the Task XII Operating Agent, Frank Pool of Frank Pool Consulting, Australia, e-mail: frank.pool@paradise.net.nz, fax: +64-21-291-7786.

TWO CURRENT TASKS EXTENDED

Branding and Marketing EE

To build upon the work of Task VII, *Market Transformation*, participating countries will work collectively to hold a series of meetings with international manufacturers and retailers of energy using products. The goal is to engage industry in a productive dialogue about marketing and branding the concept of energy efficiency and encouraging the sales of such products. Initially, the meetings will involve those companies that are producing the best EE products as part of their product portfolio. Industries involved in this work will be encouraged to use the research results in their own marketing campaigns in return for sharing their information. This new work will continue until April 2004.

Performance Contracting

Due to the very positive reception of the work of Task X, *Performance Contracting*, the participating countries will continue to collaborate for an additional year until April 2004. The new work will focus around three workshops. The first workshop was held in May 2003 in Italy. It focused on Energy Performance Contracting (EPC) project initiation, process and procurement. The second workshop will be held in October 2003 in either the Czech Republic or Austria, and it also will address EPC as well as building refurbishment. The third workshop will be held in January/February 2004 in the United States and will focus on performance guarantees, certificate trading, and measurement and verification.

For more information on the two current Tasks please visit the DSM Programme web site at dsm.iea.org.

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reduce on-site greenhouse gas emissions not directly related to electricity consumption.

Demand Side Abatement

Activities that result in reduced consumption of electricity are termed demand side abatement. Demand side abatement (DSA) refers to actions to reduce electricity consumption that occur on the 'demand side' of the electricity meter, that is at the point where electricity is consumed.

Under the Scheme, a demand side abatement project comprises the alteration of an installation that results in reduced greenhouse gas emissions compared with the emissions without that project.

The Scheme identifies five types of demand side abatement projects:

- modifying an installation, or the usage of an installation, resulting in a reduction in the consumption of electricity;
- replacing an installation with another installation that consumes less electricity;
- implementing a new installation that consumes less electricity than other installations of the same type;
- fuel switching—substituting another energy source for electricity, or vice versa, where the substitution results in reduced greenhouse gas emissions;
- substituting electricity generated on-site for electricity supplied from the grid, where the substitution results in reduced greenhouse gas emissions.

Boost to the Energy Services Industry

The right to create and sell NGACs rests with the person who owns the equipment or process associated with the DSA activity. That person may transfer the right to create and trade NGACs to other parties including, but not limited to, electricity retailers and other benchmark participants. The ability to assign the right to create NGACs to third parties creates an opportunity for firms providing energy management services to offer the creation of DSA NGACs as an additional attraction. For example, an energy management firm which specialises in undertaking energy efficiency projects can offer a discounted price to carry out an energy

efficiency upgrade at a site if the site owner agrees to assign the creation of NGACs from the project to the energy management firm. Therefore, one result of the introduction of the New South Wales Greenhouse Gas Abatement Scheme may well be an increase in activity in the energy services industry in the State.

For more information, see the New South Wales Greenhouse Gas Abatement Scheme web site at: <http://www.greenhousegas.nsw.gov.au>.

This article was contributed by Dr. David Crossley, Managing Director, Energy Futures Australia Pty Ltd. Dr Crossley is advising on the implementation of the demand side abatement component of the Scheme. His email address is: crossley@efa.com.au.

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FOUR NEW ACTIVITIES TO BE DEVELOPED

Topics being further developed are:

Demand Response – To promote best practice demand response models as tools for simultaneously improving electricity system reliability, reducing system costs, and managing and reducing electricity demand and associated greenhouse gas emissions.

White Certificates – To reduce primary energy consumption and CO₂ emissions through global market mechanisms connected to Energy Efficiency trading, Renewable Energy Commitment trading and carbon trading schemes (White, Green and Black Certificates).

Network-Driven DSM – To address how to achieve load shape changes to relieve network constraints at particular times of the day or in particular geographical locations.

Energy Efficient Lighting for DSM – To focus on how DSM-type programs can address issues, such as improving performance, quality and costs of lighting products, and their application by utilities or other energy service providers in liberalized and more traditional markets.

The DSM Spotlight is published four times a year to keep readers abreast of recent results of the IEA Demand-Side Management Programme and of related DSM issues. The viewpoints or policies expressed in this newsletter do not necessarily reflect those of the International Energy Agency, the IEA Demand-Side Management Programme member countries, or the participating researchers.

For more information on the Programme, its work and contact addresses, please visit our website at <http://dsm.iea.org>

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