

International Energy Agency

Implementing Agreement on Demand-Side Management Technologies and Programmes

2006 Annual Report

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Executive Secretary
IEA Demand-Side Management Programme

January 2007

Foreword

This report is the thirteenth Annual Report of the IEA Implementing Agreement on Demand-Side Management Technologies and Programmes, summarising the activities performed in 2006.

The report was published by the Executive Committee and was edited by the Executive Secretary, with contributions from the Operating Agents.

Stockholm, January 2007

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Overview of the IEA and the IEA Demand-Side Management Programme

The International Energy Agency

The International Energy Agency (IEA) acts as energy policy advisor for its 26 member countries in their effort to ensure reliable, affordable and clean energy for their citizens. Founded during the oil crisis of 1973-74, its initial role was to coordinate measures in times of oil supply emergencies. But during the last decades, the energy markets have changed, and so has the IEA. It now focuses well beyond oil crisis management on broader energy issues, including climate change policies, market reform, energy technology collaboration and outreach to the rest of the world. With a staff of around 150, mainly energy experts and statisticians from its 26 member countries, the IEA conducts a broad programme of energy research, data compilation, publications and public dissemination of the latest energy policy analysis and recommendations on good practices.

To support these core issues, the IEA created a contract – the Implementing Agreement – and a system of standard rules and regulations, that would allow interested Member and non-Member governments to pool resources and research the development and deployment of particular technologies. The basic aims of the IEA are:

- To maintain and improve systems for coping with oil supply disruptions;
- To promote rational energy policies in a global context through co-operative relations with non-member countries, industry and international organizations;
- To operate a permanent information system on the international oil market;
- To improve the world's energy supply and demand structure by developing alternative energy sources and increasing the efficiency of energy use;
- To assist in the integration of environmental and energy policies.

To achieve these goals, the IEA carries out a comprehensive program of energy cooperation and serves as an energy forum for its member countries.

For more than 30 years, technology collaboration has been a fundamental building block among IEA Member and non-Member countries in facilitating progress of new or improved energy technologies. There are currently 40 Implementing Agreements working in the areas of Fossil Fuels, Renewable Energies and Hydrogen, End-Use (Buildings, Industry and Transport), Fusion and Cross-Sectional Activities.

The IEA Committee on Energy Research and Technology (CERT) and its Working Parties review the effectiveness, achievements and strategy of each Implementing Agreement.

IEA Demand Side Management Programme

The Demand-Side Management (DSM) Programme, which was initiated in 1993, deals with a variety of strategies to reduce energy demand. The following 17 member countries and the European Commission have been working to identify and promote opportunities for DSM:

Australia	Finland	Netherlands
Austria	France	Norway
Belgium	Greece	Spain
Canada	Italy	Sweden
Denmark	Japan	United Kingdom
European Commission	Korea	United States

Programme Vision: Demand side measures should be the first choice in all policy decisions designed to create more reliable and more sustainable energy systems and markets.

Programme Mission: To deliver to our stakeholders useful information and effective guidance for crafting and implementing DSM policies and measures, along with the necessary technologies and applications, which together can transform markets and facilitate energy system operations.

The Programme's work is organised into two clusters:

- The load shape cluster, and
- The load level cluster.

The "load shape" cluster includes Tasks that seek to impact the shape of the load curve over very short (minutes-hours-day) to longer (days-week-season) time periods. The "load level" cluster includes Tasks that seek to shift the load curve to lower demand levels or shift loads from one energy system to another.

A total of 17 projects or "Tasks" have been initiated since the beginning of the DSM Programme. The overall program is monitored by an Executive Committee consisting of representatives from each contracting party to the Implementing Agreement. The leadership and management of the individual Tasks are the responsibility of Operating Agents. These Tasks and their respective Operating Agents are:

- Task I** International Database on Demand-Side Management & Evaluation Guidebook on the Impact of DSM and EE for Kyoto's GHG Targets – *Completed*
Harry Vreuls, SenterNovem, the Netherlands
- Task II** Communications Technologies for Demand-Side Management – *Completed*
Richard Formby, EA Technology, United Kingdom
- Task III** Co-operative Procurement of Innovative Technologies for Demand-Side Management – *Completed*
Hans Westling, Promandat AB, Sweden
- Task IV** Development of Improved Methods for Integrating Demand-Side Management into Resource Planning – *Completed*
Grayson Heffner, EPRI, United States

- Task V** Techniques for Implementation of Demand-Side Management Technology in the Marketplace – *Completed*
Juan Comas, FECSA, Spain
- Task VI** DSM and Energy Efficiency in Changing Electricity Business Environments – *Completed*
David Crossley, Energy Futures, Australia Pty. Ltd., Australia
- Task VII** International Collaboration on Market Transformation – *Completed*
Verney Ryan, BRE, United Kingdom
- Task VIII** Demand-Side Bidding in a Competitive Electricity Market – *Completed*
Linda Hull, EA Technology Ltd, United Kingdom
- Task IX** The Role of Municipalities in a Liberalised System *Completed*
Martin Cahn, Energie Cites, France
- Task X** Performance Contracting *Completed*
Hans Westling, Promandat AB, Sweden
- Task XI** Time of Use Pricing and Energy Use for Demand Management Delivery
Richard Formby, EA Technology Ltd, United Kingdom
- Task XII** Energy Standards
Under development
- Task XIII** Demand Response Resources
Ross Malme, RETX, United States
- Task XIV** Market Mechanisms for White Certificates Trading *Completed*
Antonio Capozza, CESI, Italy
- Task XV** Network-Driven DSM
David Crossley, Energy Futures Australia Pty. Ltd, Australia
- Task XVI** Competitive Energy Services,
Jan W. Bleyl, Graz Energy Agency, Austria and Seppo Silvonen, MOTIVA, Finland.
- Task XVII** Integration of DSM, Energy Efficiency, Distributed Generation and Renewable Energy Sources
Seppo Kärkkäinen, VTT, Finland

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Also, visit the IEA DSM website: <http://dsm.iea.org>

CHAPTER I

Chairman's Report

DSM turns Energy Efficiency into Big Business

The Stern Review,¹ that was delivered late October 2006, was more than just another report in a long line of evidence delivered on the changing climate that has made decision-makers in politics and industry more aware and more determined to actually take action on the issues. This review was both comprehensive and explicit in painting the full picture. Climate change is already here; it is developing faster than expected; the effects can be reduced but not avoided; no one is spared but some will be more severely hurt and earlier; if we act now and with determination we may with a low cost (1 % of GDP) prevent the enormous losses (more than 20 % of GDP) that will otherwise occur – says the review. And – it continues – those who act early will even be winners in the industrial change that is needed when energy efficiency and renewable energy will turn into BIG business.

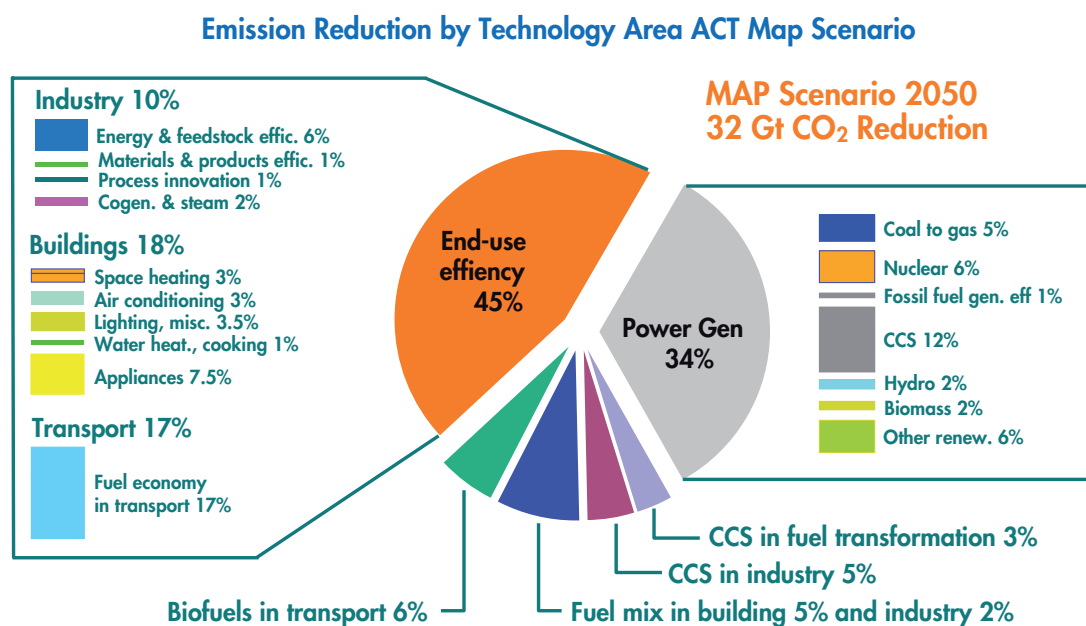
Boosting the markets for Energy Efficiency and Renewable Energy requires Demand Side Management in the broad sense of the word. In particular, delivery of energy efficiency has to be recognised as a branch of business in its own right even if the delivery could be in many different forms like insulation, lighting, heating, cooling, monitoring, services etc. and even if the delivery comes in small packages at different times. Just as renewable energy systems have identities of their own related to the sort of energy or technology they represent (biomass, solar, wind etc.) it is necessary to give a brand and an identity to energy efficiency, an identity that enables this branch to act more consistently. It has to do so because:

- The potential is enormous
- The potential is dispersed in small everyday opportunities that are hard to recognise
- The delivery has to be more organised for the potential to be harvested

The IEA secretariat has delivered reports that underline the opportunities for business. The Energy Technology Perspective, ETP, shows how energy efficiency improvements are the biggest single resource to reduce Greenhouse Gas Emissions, by some 40–50 %, see figure 1, which is far more than any measure on the supply side. The World Energy Outlook, WEO, continues with the statement that investments with 1 dollar in energy efficiency saves 2 dollars in energy supply (generation, transmission and distribution) and at the same time saves the fuel for that generation.

¹ <http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm>

Figure 1: The IEA Energy Technology Perspective (ETP) Scenario for reduction of GHG-emissions.



Improved end-use energy efficiency is the most important contributor to reduced emissions

The prescription that the Stern Review gives to the world deals with three measures:

- Carbon Pricing that provides incentives to invest in low-carbon technologies
- Development of a range of low-carbon technologies
- Removal of barriers for a behavioural change to encourage take-up of opportunities for energy efficiency

“Greater International co-operation is necessary to accelerate technological innovation and diffusion that reduce the cost of mitigation”, says the Review.

The Efficiency Business and the IEA DSM Programme

All these aspects are indeed familiar to the DSM-Programme that has worked on both measures and technologies to make incentives work, and on how the technologies can be adapted to appeal to the user’s way of acting.

The Review therefore carries a strong signal that the activities in the IEA DSM-Programme are exactly the right ones and that it is now up to us, with the other members of the IEA-family, to intensify our efforts and make our products useful and used.

The recent contacts we have had with new countries interested in joining the IEA DSM Programme are therefore important and crucial. South Africa and India have both important experiences of their own from DSM in a context of fast-growing economies with vulnerable systems where DSM, as a fast-deployed resource, is very interesting opportunity. The discussions we have with many other new countries, among them China, could also develop in a way that might be more useful than only the short-term tasks indicate. The Stern Review anticipates that the economies that are first to embrace the technological change will get an advantage. And the countries that are on the threshold to join the DSM-Programme are exactly such – fast-growing and innovative!

The work in the DSM-Programme has focused both on the *load-shape issues*, to adapt the load to the capacity of the systems, and on the *load-level issues*, to adapt the systems to the environmental requirements. During the years of existence of the programme there has been a shift in focus from level-issues to shape-issues and that now seems to shift back because of the climate concerns.

The DSM experiences and challenges

The load-shape tasks in the DSM-Programme deal with the technologies, the user behaviour and the governance of the systems. All over the world there have been system black-outs and close calls that could have been prevented or at least alleviated by a more deliberate use of DSM-measures. Unfortunately much of the attention to these issues has been focused on partial problems such as the need to reinforce transmission and/or to build more generation. Even on the demand side the focus has been simplistic, for example advocating smart meters or pricing systems to give incentives. But the answer to the problems is not that simple.

No doubt more transmission and more generation could solve the capacity problems but it would just create new problems in term of land-use, waste and emissions. If the basic problem is that the gap between the capacity and the load is too narrow, it can be solved also by reduction of the load at least in times of constraint. For this reason, as is stated in the Programme's strategy, the DSM-option should be the first concern for decision makers when they consider how they should arrive at a secure and sustainable energy system

The load-level tasks were more dominant in the past but need to make a comeback taking into account that the incentive systems have changed or are changing in most countries of the world. The introduction of international incentives within the framework of the Kyoto agreement gives new opportunities and new challenges. It has been recorded that only a minor part of the CDM-projects deal with energy efficiency and that the lion's share deal with supply of renewable energy. Or, put differently, many climate-related projects feed an inflated demand with a scarce resource. A more consistent DSM-approach would have avoided such problems.

The two cases mentioned show how DSM-measures provide a framework to enable companies and governments to capture the huge potentials there are for energy efficiency improvement. The new European Union directive on Energy Services is based on this way of thinking big, i.e. think DSM. It is a pity that the acronym is still shunned, but on the other hand it does not matter if the cat is black or white or what name it has as long as it catches the rat.

DSM does not only have the inherent characteristic to be useful to reduce the effects of climate change. It also has the opportunity to assist countries in their development of standards of living and of the industry for the future – the energy efficiency industry!

The IEA DSM Programme provides tools and information on a wide range of energy efficiency and demand reduction issues. Key areas are:

- Integrating DSM and EE into restructured electricity industries
- Giving utilities and ESCOs the necessary tools to utilize DSM
- Marketing DSM technology to large and small customers
- Innovative approaches to DSM
- Utilizing DSM to shave peak power demand
- Creating data bases on national DSM programs and various DSM mechanisms
- Practical guidelines for demand-side bidding

To better serve stakeholders, the IEA DSM Programme work is divided into two clusters:

Load shape cluster – This cluster includes projects (Tasks) that seek to impact the shape of the energy load curve over periods of minutes to months. The load curve is flattened by activities or incentives that encourage users to shift or defer energy use during periods of peak demand or in an emergency.

Load shaping activities are of greatest interest to market operators, system operators, distribution network operators, policy-makers and regulators, traders/suppliers, and customers who have an economic benefit from participating in DSM programs.

Load level cluster – This cluster includes Tasks that seek to shift the load curve to lower demand levels or shift loads from one energy source to another. This is accomplished by using energy-efficient products and various energy-reduction efforts.

Load-leveling activities are of greatest interest to governments, energy agencies, Energy Service Companies (ESCOs), and regulators, as well as to customers when an economic benefit is offered.

Highlights

One Task completed work in 2006. Highlights of this Task are presented below.

Task XIV – Market Mechanisms for White Certificates Trading

Task XIV started in June 2004 and was completed in June 2006. Six countries participated in the Task – France, Italy, Netherlands, Norway, Sweden and the United Kingdom. This Task has successfully gathered experiences gained in operating White Certificates or related schemes in countries where this policy is practised (as in Great Britain and Italy) or is to be applied (as in France) or is under discussion (as in the Netherlands)

White Certificates allow the low-hanging, but rarely enjoyed fruit to be picked by creating an incentive for market actors within a mandatory framework.

The key issues addressed were:

- Whether and how, a scheme involving the issuing and trading of White Certificates has effective chances of attaining previously identified and assigned targets of reduction of primary energy consumption
- What the possible different formats are for such a scheme
- What implementation problems are involved, at national and international levels; and
- How it can interact with other energy efficiency policies.

To foster this exchange, the Task was organised around five workshops. Each workshop was structured the same – one day of open discussion with national practitioners (e.g. top policy makers in ministerial and regulatory organisations) and national Experts and one day reserved for Task Experts to process, discuss and synthesise the workshop results. Each workshop also explored the same set of issues: expectations, policy/principle issues, organisation/practical issues, and interaction with other trading schemes and with other EE policies.

White Certificates offer a number of practical benefits for all parties involved. For regulatory authorities, they provide an easily verifiable means to track compliance with policy targets. For parties obliged to comply with targets, they offer a means to achieve compliance at least cost, and also offer the flexibility to comply either through “in-house” action, by contracting with other obliged parties or with other market parties for their supply. For those able to create and sell certificates, they offer an additional revenue stream which is independent of their other business activities, thus offering hedging and risk-management benefits in addition to direct financial rewards.

The results of Task XIV – Market Mechanisms for White Certificates Trading are collected in the Task’s Final Report and can be downloaded from the publications page under Task XIV on the IEA DSM web site: <http://dsm.iea.org>

Achievements

The major accomplishments of the Tasks that were ongoing in 2006 are summarised below. Additional details can be found in Chapter II.

Task XI – Time of Use Pricing and Energy Use for Demand Management Delivery

Task XI started in February 2004. Key accomplishments in 2006 include:

The Task participants from the Netherlands, Spain and the United Kingdom have recently started to study the constraints of profile settlements and demand validation on dynamic demand management for smaller customers. An Expert group has been formed and data collection instruments are being developed.

Task XIII – Demand Response Resources

Task XIII started in February 2004.

Key accomplishments in 2006 include:

- The Country Comparison Report was completed
- The DR Market Potential Report was completed
- The DR Valuation Report (volume 1 & 2) was completed
- DR Technology case studies have been collected and a draft report was issued
- DR Business Issues draft report was issued
- An Online DR Product Database was created and a draft report was issued
- Final Regional Conferences took place during the year in Melbourne, Australia in October, and in Copenhagen, Denmark in November. In addition the Operating Agent spoke at a KEPCO sponsored DR conference in Korea in November.
- An article for Public Utilities Fortnightly was published, highlighting how the Task XIII valuation methodology can be used to make business decisions
- A joint DR Technologies white paper with CESI (Italy) was produced.

The Task on Demand Response Resources is sharing knowledge and best practices in planning and deploying effective, reliable demand response resources within the participants' markets in several innovative ways.

One tool that has been created to facilitate the sharing of information is the Demand Response Resources Portal. This web-based portal serves as a virtual center of knowledge for all the participating countries. Several of the tools included in this portal are the DR (demand Response) Market Potential Calculator which will translate basic market demographic information into Demand Response market potential benchmarks for their market. Another tool on the portal is a database of case studies from countries including, Australia, Denmark, Italy, Netherlands and Norway. There is also a database of nearly 100 DR products from Australia, Denmark, Norway, Spain, Sweden and the US. The online tool allows a user to search for specific products using selective search criteria. The information highlights strong performing and innovative products that others should consider during any product design discussions in their country.

Making demand more flexible requires concerted actions where hardware, software and business models are developed together. By doing so, the demand side will enable systems with greater margins of safety to be implemented that would otherwise require more expensive new generation, transmission and distribution.

Task XV – Network-Driven DSM

Task XV started in October 2004. Key accomplishments in 2006 include:

- Completion of a detailed case study, significantly expanding and updating three other case studies, and carrying out numerous minor corrections and amendments.
- Completion of a report on “Worldwide Survey of Network-Driven DSM Projects”.
- Completion of a report on “Assessment and Development of Network-Driven DSM Measures”.
- Completion of a survey of the interaction between network-driven DSM, electricity markets and regulatory regimes in the countries participating in this Task.
- Commencement of a survey of network planning processes implemented in the countries participating in this Task.
- Completion of two presentations on the work done in Task XV to date. The first presentation was given at a workshop on demand response organised in Melbourne by the Task XIII Australian team. The second presentation was given at a public seminar in Port Macquarie, Australia organised in conjunction with the fourth Task XV Experts meeting.
- Ongoing updating of the on-line database containing relevant information about network-driven DSM projects and measures.

Task XVI – Competitive Energy Services

Task XVI started in July 2006.

- The main focus during the year has been to set up the Task and make it operational. Work on the different Subtasks began on July 1st. The Task held its kick off meeting in Helsinki, Finland, in September, 2006, where first drafts of National Implementation activities were presented and decisions for the Think Tank topics were taken. Also a Task information flyer has been produced.

The Task is still open to accommodate new participants. A number of countries have expressed concrete interest to join the Task.

Task XVII – Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Renewable Energy Sources

As this Task began in November 2006, the only accomplishment since then, was to initiate plans for the first experts meeting.

Work in preparation

Advanced Lighting

Lighting programs have been in focus for DSM activities for a long time. In the climate related work and in the work related to e.g. rural electrification in the third world, it has been observed that the DSM-programmes for lighting could serve as models both for new work on lighting and for dissemination of other technologies. Work continues to identify an appropriate Task on Advanced Lighting.

DSM Participation in System Operations

A new Task is under development that would bring together Experts and people from different countries to contribute to the implementation of the demand side in electricity system operation. The intent is to hold four Forums to develop and identify routes to implementing demand side participation in system operation for all types of customers, both large and small, and to create market places for tools enabling Demand Side Operation.

The suggested objectives are: (1) to determine, quantify and value the requirements of system operators to enable the demand side to participate in system operation and determine levels of payment; (2) estimate the total potential for different types of demand to participate in system operation and the reliability and predictability of that participation; (3) the stating of technical solutions and experiences which have proved their viability in different systems. The intent is also invite developing countries to attend and to collect information on their needs and experiences to contribute to the Forum results. The results of each Forum will be documented and a report produced.

Each Forum and follow up report would be a Subtask within the Task framework: (1) Subtask 1 is proposed to contrast and compare experiences of system operators and regulators regarding the requirement of demand in order for it to participate in system operation and estimate levels of payment available; (2) Subtask 2 is proposed to contrast and compare experiences of customers regarding their ability and willingness to include their demands in system operation and estimate levels of motivation required; and (3) Subtask 3 is proposed to identify mechanisms and technical solutions to meet requirements of system operators and customers in their demand side participation.

Initially four Forums are proposed, each one and a half days long. The proposed Forums will be aimed at all the agents and institutions wishing to sell, buy or develop demand side management solutions within the market. Expected participants are; (1) clients such as system operators, regulators and other entities responsible for energy efficiency; (2) commercial agents such as distribution utilities, transmission utilities, ESCO's, suppliers, aggregators and consultants; (3) demand providers such as large, medium and small residential, commercial and industrial customers; and (4) demand

side participation infrastructure providers such as communication companies, security companies, demotic companies, efficient appliance companies and managed appliance companies.

DSM and Climate Change

On a global basis, electricity production is estimated to contribute about 25 % of the human-induced increase in greenhouse gas emissions. However, the IEA DSM Programme has not so far carried out any work on the impact of DSM on emissions.

Currently, DSM and emission mitigation measures are implemented quite independently. DSM measures are implemented primarily to assist and improve the operation of electricity systems. Any impacts (positive or negative) of DSM measures on climate change are very much a minor consideration, if they are considered at all. Efforts to mitigate greenhouse gas emissions from electricity production have focussed on improving the efficiency of both electricity generation and end-use. However, emission mitigation measures focussed on increasing end-use efficiency, have usually not considered any benefits to the electricity system (e.g. peak load reduction) that might be gained through implementing the measures.

The objective of the proposed new Task will be to reconcile these two different approaches so as to identify areas and circumstances in which DSM can contribute to mitigating greenhouse gas emissions. Ideas for topics which could be covered:

- Analysis of the impacts of different types of DSM on greenhouse gas emissions;
- Identification of circumstances in which DSM may help to mitigate emissions and of situations in which DSM may contribute to increasing emissions;
- Modifying DSM programs so they contribute to mitigating greenhouse gas emissions;
- Modifying emission mitigation programs so they deliver benefits to electricity systems.

Visibility

Maintaining and increasing visibility of the Programme among its key audiences continues to be a major activity of the Executive Committee. The principal tools available at present are the website the electronic news mail, the Annual Report, the Spotlight Newsletter and Task flyers.

The Annual Report for 2005 is now produced and distributed to approximately 300 recipients in January 2006. It pulled together in one substantial document overviews of the programme's activities and details on each of the individual Tasks.

The Spotlight Newsletter is now produced in electronic format only, designed as a printable newsletter. It is distributed by e-mail to a wide list of contacts. Executive Committee members forward the newsletter to those national contacts who used to receive the printed version or they print and distribute hard copies. Two issues were produced in 2006. Articles covered include:

- DSM Gets a Makeover in the EU
- R&D Focus on Market Based Demand Response (Norway)
- Energy Efficiency the Danish Way

- New Work – Task XVII – Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Renewable Energy Sources
- DSM Programme Identifies Challenges Facing DSM and EE
- Essential Functions of any Demand Response Technology
- Korea Takes on DSM
- White Certificates – results
- Ireland Considers IEA DSM Membership
- Who benefits From Demand Response Activities?
- Time of Use Pricing & Energy Use – new publications

At the start of a new Task, a flyer is produced to stimulate interest in participating in the Task. When the work is completed, a flyer is produced highlighting the results and directing the reader to the Task products.

During 2006, a Programme brochure has been completed and distributed. The colourful brochure gives brief outlines of the current and completed Tasks, and is accompanied by the Task flyers that describe the Tasks in more detail and give relevant contact details.

The website (<http://dsm.iea.org>) continues to serve as a vital window on the Programme's activities. Analysis of visits to the site shows a worldwide readership. During 2006 a competitive tendering process took place to select a new webmaster. Solstice Associates Limited, Suffolk, in the United Kingdom were selected. A complete new layout has been developed and further improvements on the content have been made. The website has a "shop front" in which the Programme's principal outputs can be displayed in a manner relevant to non-participants.

Participation in the IEA DSM Programme as of December 2006

COUNTRY	Task I		Task II	Task III	Task IV	Task V	Task VI	Task VII	Task VIII	Task IX	Task X	Task XI	Task XII	Task XIII	Task XIV	Task XV	Task XVI	Task XVII
	Indeeph subt. 8	subt. 9	compl.	compl.	compl.	compl.	compl.	compl.	compl.	compl.	compl.				compl.			
Australia			✳		✳		✳							✳		✳		
Austria					✳					✳	✳						✳	
Belgium	✳	✳					✳										✳	
Canada		✳	✳											✳				
Denmark	✳	✳		✳	✳		✳	✳				✳		✳				
European Commission				✳		✳	✳		✳						✳			
Finland			✳	✳	✳	✳	✳	✳	✳		✳	✳		✳			◆	✳
France	✳	✳	✳		✳		✳			✳					✳	✳		
Greece							✳		✳		✳	✳						
Italy		✳	✳		✳						✳			✳	✳			
Japan	✳		✳		✳		✳				✳			✳			✳	
Korea	✳	✳		✳	✳		✳	✳						✳				
Netherlands	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳		✳	✳		✳	
Norway	✳		✳		✳	✳	✳		✳		✳			✳	✳			
Spain			✳	✳	✳	✳	✳		✳	✳		✳		✳		✳		
Sweden	✳	✳		✳	✳	✳	✳	✳	✳	✳	✳	✳		✳	✳			
Switzerland*			✳		✳													
United Kingdom			✳	✳	✳		✳	✳	✳			✳			✳			
United States	✳			✳	✳						✳			✳		✳		
World Bank/ Tanzania						✳												

■ Operating Agent and participating country

■ Completed Tasks

■ Participating country

* Withdrawn

◆ Co-operating Agent and participating country

Benefits of participation

- **Enables complex and/or expensive projects to be undertaken.** Many countries do not have the expertise or resources to undertake every desirable research project. A collaborative project enables the strength and contribution of many countries to undertake collectively what individually would be prohibitive.
- **Enhances national R & D programmes.** National researchers involved in international projects are exposed to a multiplicity of ideas and approaches.
- **Promotes standardization.** Collaborative work encourages the use of standard terminology, notation, units of measurement, while also encouraging the portability of computer programs, and common methodology, procedures and reporting formats make interpretation and comparison easier.
- **Accelerates the pace of technology development.** Interaction among project participants allows cross-fertilization of new ideas, helping to spread innovative developments rapidly, while increasing the range of technologies and approaches employed.
- **Promotes international understanding.** Collaboration promotes international goodwill, and helps participants broaden their views beyond their national perspective.

The IEA DSM Programme provides an international platform of work. This is the only international organization that addresses management of energy on the demand side of the meter in a collaborative manner.

Reflects latest trends and issues

New areas of work are continually added to the Programme's scope to address changes in the energy market.

Enables complex and/or expensive projects to be undertaken

Collaborative projects allow countries to undertake projects that otherwise would be prohibitive due to lack of expertise and/or resources.

Saves time and money

Countries fund a portion of the international team's work, but have access to all project results.

Creates important networks

Specialists active in Demand Side Management, Demand Response, and Energy Efficiency, have the opportunity to work with other key experts from around the world.

Increases the size of the technology database

Collaboration among multiple countries creates a pool of information much larger than a single country could assemble by itself.

Permits national specialization

Countries can focus on particular aspects of a technology's development or deployment while maintaining access to the entire project's information.

Promotes standardization

Encourages the use and diffusion of standard terminology, notations, units of measurement, methodologies, and procedures and reporting formats to make interpretation and comparison easier.

To learn more

Visit the IEA DSM Programme web site <http://dsm.iea.org> to view:

- Project publications – handbooks, guidelines, technical reports and data bases
- IEA DSM newsletter, Spotlight
- IEA DSM Annual Report
- Contact information
- Conferences, workshops and symposia

Streamlined Steps for Joining the IEA DSM Implementing Agreement

If you are from a country that is a member of the IEA or that is currently participating in an Implementing Agreement, take these three steps and you can join the IEA DSM Programme:

1. Talk to Us
2. Meet with Us
3. Write to Us

And You Are In!! Details below:

Interested Country	IEA DSM Programme
1. <i>Talk to Us</i> – Your country expresses interest in joining the Implementing Agreement by contacting an Operating Agent, the Chairman or the Executive Secretary	The Executive Committee promptly provides information on activities, participation obligations, benefits and the process to join the Programme. The Executive Committee also invites country to attend Executive Committee meetings and Task meetings of interest.
2. <i>Meet with Us</i> – Your country attends Executive Committee meetings and Task meetings as an Observer.	
3. <i>Write to Us</i> – If your country is interested in joining the DSM Programme, your country's Minister sends a letter to the IEA Executive Director identifying the contracting party, who will sign the Implementing Agreement, the Executive Committee member from that country, and the Task or Tasks that country will participate in.	Immediately upon receiving a copy of that letter, the IEA DSM Programme will consider your country to be a participating country.

If your country is not a member country of the IEA or not participating in an IEA Programme, after Step 1 the Executive Committee will forward your country's expression of interest in joining the DSM Programme to the IEA Secretariat for consideration and approval. Once that approval has been received, the IEA DSM Executive Committee will vote to invite that country to join the Implementing Agreement. If favourable, the Executive Committee will invite your country to the next Executive Committee meeting, leaving Step 3 to complete the process to join.

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CHAPTER II

Task XI: Time of Use Pricing and Energy Use for Demand Management Delivery

Operating Agent: Mr. Richard Formby, EA Technology, United Kingdom

Description

Successful implementation of Demand Side participation in competitive energy markets is an essential process for world energy sustainability and system security. In this regard, a major impact of implementing competitive markets in energy supply and demand management is to expose energy suppliers and traders to the cost of their own energy and demand imbalance against agreed contracts. In this trading environment, flexible, responsive and low cost demand side participation processes, based on accurate customer consumption data, are very attractive options for reducing imbalance risk and improving system security. Interruptible contracts and Demand Side Bidding (DSB), together with standby and interruption payments, are used by larger customers to take advantage of time of use energy pricing. Feedback of end use energy consumption data to customers and their energy management systems helps in reducing energy use and also in moving elements of demand to lower cost periods. It also allows any significant changes customers make in their energy use pattern to be fed back to them so that they can see the results and value of their efforts. The main benefits of providing this information are to focus customers' attention on their energy use, its specific impact on the environment and in encouraging savings. Many liberalised market structures and operating systems mitigate against Demand Side participation by smaller customers, with "profile metering" an obvious example. "Profile metering" offers some of the benefits of time of use metering at lower cost but removes any incentive for customers to modify their energy demand profile through demand management.

Task XI has addressed the issues of Time of Use Pricing, Energy End Use and Feedback mechanisms and Demand Side Bidding by smaller customers in energy markets. It is now addressing the issue of "profile metering" constraints on the development of demand response by smaller customers. It is also addressing possible validation mechanisms which can be used to quantify smaller customer demand "available" and demand "turned down" so as to provide equitable rewards to customers.

Objectives

The overall objective of Task XI is to increase the motivation of smaller customers to save energy through energy end use presentation, modify their energy demand profile through time of use pricing and provide mechanisms for their bidding demand into competitive energy markets.

Progress

Energy End Use Monitoring and Feedback (Subtask 1)

This Subtask has analysed work carried out and results of trials involving customer groups to quantify their responses to end use energy saving motivators. It has also assessed the impacts on different customer responses and energy saving from different levels of end use demand disaggregation and the way information is presented. Feeding back disaggregated energy end use information to smaller customers using a range of methodologies has been shown to motivate energy savings of the order of 10%.

Direct measurement of specific customer, end uses of energy on a continuous basis is generally too expensive for wide scale application to smaller customers. Estimates of the costs of face to face and Internet interviews with customers to collect data and feedback end use information and advice have shown this to be an attractive option.

It is recommended that end use disaggregated energy data statistics, available for national populations in many countries, should be added in simple form to smaller customer energy bills.

Time of Use Pricing (Subtask 2)

This Subtask has related together three main types of TOU pricing: Tariff, Dynamic and Real Time, with particular concentration on whether customers are allowed to manually override remote demand switching commands. If no override option is allowed, single rate tariff metering may be used for billing. Individual end use demands are considered for their potential to be remotely switched and their possible use inhibited for infrequent, short periods. Notice times required by customers in order to accept remotely switched demand changes as well as reward mechanisms are considered. Quantification of the benefits of Dynamic TOU pricing in reducing peak demands and the costs of implementing individual end use switching have been carried out.

The study has estimated the financial viability of implementing different TOU pricing regimes by equating reliable and flexible demand shift, including operation of embedded generation, with scheduled generation, transmission and distribution network construction costs.

Other than direct space and water heating demand shift carried out by reducing thermostats, the study has identified air conditioning, lighting and some domestic appliances as potential end uses, which could be moved off-peak. Customer small scale micro generation also has an important role to play in generating outside normal heat led times, and made responsive to TOU pricing.

The study concluded that Tariff, Dynamic and Real Time TOU pricing could deliver valuable demand reductions depending on the end use demands being controlled. Combinations of Tariff, Dynamic and Real Time pricing can be considered where different demands in the same household are managed by each mechanism. This is particularly the case where no customer override is allowed and single rate metering can be used. Customer acceptance of infrequent and short duration end use inhibits requires evaluation.

Demand Side Bidding for Smaller Customers (Subtask 3)

This Subtask has considered mechanisms for enabling the demand side to participate in energy markets. The study has analysed requirements for validating “available” blocks of smaller customer demands and the possible impacts of dynamic demand profiles on Supplier settlement systems. Analysis has been carried out of potential end use demands which could be aggregated and made available by customers. Consideration has been given to payments for demand “turndown” by smaller customers and possible costs of implementing automatic systems.

Smaller customer demands between 0.5kW and 3kW per customer have been shown to be potentially “available” for aggregation. Targeting high demand, smaller customers using electric space heating and cooling, water heating and embedded generation is the most attractive starting point for DSB cost effectiveness. Refrigeration and lighting are also shown to be attractive targets for DSB implementation.

The study has shown that, in principle, DSB for aggregated smaller customer demands is technically feasible and would contribute significantly to system management. However, a number of areas requiring further study have been identified.

Activities completed in 2006

Profile Settlements and Validation (Subtasks 4 and 5)

New Subtasks have recently started to study the constraints of profile settlements and demand validation on Dynamic Demand Management for smaller customers. An Experts group has been formed and data collection instruments developed. Netherlands, Spain and UK are participating countries.

Activities planned for 2007

Subtasks 4 and 5 dealing with profile settlements and demand change validation will be completed.

Reports

Reports completed

Subtask 1 – Smaller Customer Energy Saving by End Use Monitoring and Feedback

Subtask 2 – Time of Use Pricing for Demand Management Delivery

Subtask 3 – Demand Side Bidding for Smaller Customers

Reports planned for 2007

- Subtask 4 – Profile settlement systems for smaller customer dynamic demand management
- Subtask 5 – Demand availability and demand shift validation mechanisms for smaller customers

Meeting schedule

Meetings held in 2006

None

Meetings planned for 2007










17–18 January, 2007, United Kingdom

21–22 May, 2007, Netherlands

17–18 September, 2007, Spain

Activity time schedule

Task XI was entered into force in October 2003 and will be completed by 31 October 2007.

Activity	2006	2007
Subtask 4 – Quantify the potential for existing “profile” settlement systems to deal with dynamic profiles created by bidding smaller customers demands into markets. Propose new systems		
1.1 Liaise with profile settlement implementors		
1.2 Identify possible options for including different levels of dynamic profiles		
1.3 determine methodology for new profile settlements implementation		
1.4 Estimate techno/economic feasibility of smaller customer settlements involving dynamic profiles.		
1.5 Determine overall feasibility of smaller customer dynamic profile settlements		
Subtask 5 – Evaluate demand “available” and demand “shift” validation mechanisms which can deal with aggregated demand of smaller customers.		
1.1 Quantify the potential for demand Aggregators to deliver validation of smaller customer demand “available” and demand “turndown”.		
1.2 Liaise with System Operators and Demand Aggregators to identify demand validation methods for smaller customers.		
1.3 Evaluate systems and technologies to deliver acceptable validation accuracy		
1.4 Determine the techno/economic feasibility of smaller customer demand shift validation		

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Task XIII: Demand Response Resources

Operating Agent: Mr. Ross Malme, RETX Energy Services, United States

Objectives

1. Identify and develop the country-specific information needed to establish the potential for demand response.
2. Perform the market and institutional assessment needed to set realistic goals for the contribution of DRR to sector objectives.
3. Mobilize technical and analytic resources needed to support the implementation of DRR programs and track their performance.

Executive Summary

Task XIII was officially approved at the March 2004 Executive Committee meeting. The Task issued its final report in December, 2006.

Initial participating countries in the Task are Australia, Denmark, Finland, Italy, Japan, Korea, Netherlands, Norway, Spain, Sweden and the USA. Unfortunately, Japan decided to withdraw from the IEA DSM Programme effective September 2005, and therefore they have withdrawn from Task XIII. Canada officially joined Task XIII around the same time.

Task XIII held one Experts Meeting in 2006. The meeting was hosted by the Netherlands Expert Team in Amsterdam on June 14-15, 2006. Representatives from all participating countries attended the meeting except for Korea, Italy, and United States. The Korean representatives were planning to attend, but they had to withdraw shortly before the meeting due to important business issues back home. The Italian representative was unable to join due to a corporate travel freeze. The US representative was unable to join for budgetary reasons. This meeting focused on reviewing issues related to Subtask 5 (DR Technologies) and Subtask 6 (DR Products and Market Barriers).

Each Task XIII subtask investigates a different element of DR. By following each of the steps it is possible to analyze the market, assess the benefits of DR, select appropriate DR product solutions, and develop corresponding business practices. We have used this information to create the Task XIII Project Guidebook. The Project Guidebook has a chapter related to each project subtask. The Project Guidebook can be used in the future as a DR training tool. The Guidebook is expected to be finalized prior to the October ExCo meeting.

In November 2006, Task XIII posted an updated version of its DRR Project Guidebook ("Guidebook") on the project portal. In addition to describing the Task's organization, objectives, and project management issues, the Guidebook provides a methodical way for a user to develop a demand response business case or implementation strategy. Task XIII's subtasks were designed to walk the participant through the business case development process. The Guidebook provides a way for subsequent readers to learn from our experiences and use the business tools developed therein.

For example, Task XIII developed a tool called the Online DR Market Potential Calculator. This tool provides a first level estimate of the available technical potential for demand response in a given market. The tool uses the benchmark analysis created in Subtask 3 and provides a way to translate the benchmark to the market in question by converting the market demographics. Admittedly, the tool is very simplistic, but it does a good job in providing a reasonable estimate. The estimate can be developed with a few hours of work versus the traditional market potential study that will take a few months (and cost many multiples more). Therefore, the tool provides a quick and easy way to determine if the market in question has a reasonable DR base prior to making a major investment.

Task XIII facilitated the creation of a regional workshops in Europe (Denmark) and Australia. These workshops were designed to share the task results with the people in those regions. Preliminary feedback indicates that the information and workshops were very well received by those in attendance.

Activities completed in 2006

The following information summarizes the Task activity by Subtask.

1. The final Country Comparison report (*Subtask 2*) was issued for review and final approval. The DR Research Library continues to be updated with information when it is provided by the country experts.
2. The final DR Market Potential report (*Subtask 3*) was issued for review and final approval. The report contains information on market potential benchmarks, modeling techniques, and consumer survey tools. As previously reported, Task XIII developed an Online DR Market Potential Calculator. With this tool, a user can input some basic market demographic information, and the tool will translate the DR market potential benchmarks to their market. Thus far, completed calculations have been received from Australia, Canada, Denmark, Italy, Korea, Spain and Norway. As a general rule, they have reported that the tool appears to provide a reasonable first level market potential estimate.
3. The final DR Valuation reports (*Subtask 4*) were issued for review and final approval. There are two versions of the report. One version is written as a guide for someone that is well versed in valuation and modeling techniques. The second version is written more for the energy industry or regulatory lay person. In other words, it is written for someone that is familiar with the energy industry, but may not be intimately familiar with technical valuation processes.

In a nut shell, the recommended valuation methodology utilizes probabilistic modeling techniques to value the future impact DR can have in a liberalized market. In addition, the OA Team collaborated with the Australian Expert Team to create a scope of work document that can be used for "Request for Proposal" purposes when hiring someone to complete the valuation analysis. Australia, Canada, Denmark, and Norway have completed or are working on DR valuation efforts in their respective markets. In June, Norway shared its analysis with the other Experts. Australia recently completed its analysis and it will be shared with the other Experts after final authorizations to do so.

4. Fifty DR Technology case studies (*Subtask 5*) from Australia, Canada, Denmark, Finland, Italy, Korea, Netherlands, Norway, and the USA. These case studies are organized into a database on the project portal. The case studies are incorporated into the technology chapter of the Project Guidebook.
5. An Online DR Product Database (*Subtask 6*) has been created. The database contains over 100 DR products from Australia, Canada, Denmark, Finland, Italy, Norway, Spain, Sweden, and USA. The online tool allows a user to search for specific products using selective search criteria. This information has been used for part of a report that is used to cover the DR business issues chapter (e.g. business models, DR products, and market barriers) in the Project Guidebook.
6. As part of the Task communication plan (*Subtask 7*), the OA Team performed the following:
 - Posted an updated Task XIII: DR Project Guidebook on the project portal.
 - Facilitated regional DR workshops in Europe (Denmark) and Australia.
 - Drafted an article for Public Utilities Fortnightly highlighting how the Task XIII valuation methodology can be used to make business decisions.
 - Led one Expert meeting in conjunction with our local host.
 - Held teleconferences with Country Experts as they were willing and able to do so.
7. The OA Team continues to discuss and encourage the Country Experts to formulate in-country implementation plans (*Subtask 8*). The Task facilitated regional workshops in Europe (Denmark) and Australia to share the results from the Task in November. The Operating Agent team expects to participate in a web conference for the USA team in February. The Canadian team may also host a North American workshop in Toronto sometime in early 2007.

Reports

Reports completed in 2006

Country Comparison Report

DR Market Potential

DR Valuation (volume 1 & 2)

DR Technologies (draft)

DR Business Issues (draft)

Public Utilities Fortnightly (September 2006)

Joint DR Technologies white paper with CESI (Italy) November 2006

Presentations held in 2006

North America

- US DRCC Town Hall Meeting
- FERC Demand Response and Advanced Metering Technical Conference
- Canada Task XIII Briefing
- Distributech 2006

- PLMA 2006 Spring Conference
- Fall 2006 Peak Load Management Alliance Conference

Europe

- Spain DR conference (in coordination with Madrid ExCo meeting)
- Netherlands DR conference (in coordination with Amsterdam Expert meeting)
- Regional Project Delivery Conferences: Europe (Denmark - November 2006)

Asia

- KEPCO Briefing on North American DR/DSM activity and Task XIII

Australia

- Joint development of DR valuation RFP scope of work
- Regional Project Delivery Conferences: (Melbourne – November 2006)

Meeting Schedule

Meetings held in 2006

The sixth Experts Workshop for Task XIII was held in Amsterdam, Netherlands on June 14 –16. This meeting focused on finalizing all project deliverables and planning the final project delivery conferences.

Activity time schedule

Task XIII came into force in February 2004 and was completed 31 December, 2006.

Activity	2004	2005	2006
Phase 1 Subtask 1 – Project Objectives	—		
Subtask 2 – Country Objectives Market Characterisation	—		
Phase 2 Subtask 3 – Market Potential of DRR	—		
Subtask 4 – DRR Valuation		—	
Subtask 5 – Role and Value of Technologies		—	—
Subtask 6 – Business Plan Development			—
Phase 3 Subtask 7 – Communication, Collaboration and Workshops	—	—	—
Subtask 8 – Implementation			—
Education, Management and Administration	—	—	—
Executive Relations, Education and Evangelising	—	—	—
Project Management and Administration	—	—	—

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Task XIV: Market Mechanisms for White Certificates Trading

Operating Agent: Dr Antonio Capozza, CESI S.p.A., Italy¹

Objectives

This Task aimed to address:

- whether – and how – a scheme involving the issuing and the trading of White Certificates provides an effective means of attaining targets of reduction of:
 1. primary energy consumption (main concern)
 2. CO₂ emissions (secondarily)
- what is the most suitable format for such a scheme
- what implementation problems are involved, at national and extra-national levels
- how it can interact with other schemes.

Market-based policy instruments are increasingly being favoured in a wide range of energy and environment policy fields, due to their economic efficiency, benefits for competition, positive incentives for cost reduction and continuous improvement and ability to minimise and equalise costs of compliance with policy targets. They are particularly applicable where Countries have mandatory quantitative targets for the actors concerned that must be met in a verifiable way, inside national or extra-national obligation programmes, and within a fixed period.

Examples of this policy approach include:

- White Certificates: Energy Efficiency trading schemes – end-use energy efficiency programmes;
- Black Certificates: Carbon trading schemes – programmes for reducing CO₂ emissions;
- Green Certificates: Renewable Energy Commitment trading schemes – increased use of renewable energy sources in power generation.

The focus of the present Task was on White Certificates.

From a general viewpoint, certificates offer a number of practical benefits for all parties involved. For regulatory Authorities, they can be an easily-verifiable way to track compliance with policy targets. For parties obliged to comply with targets, they offer a means to achieve compliance at least cost, and also offer the flexibility to comply either through 'in-house' action, by contracting with other parties for their supply, or simply by purchasing certificates in a third-party marketplace. For those able to create and sell certificates, they offer an additional revenue stream which is independent of their other business activities, thus offering hedging and risk-management benefits in addition to direct financial rewards.

¹ Working at present (2006) at CESI RICERCA.

Progress

The considered key concerns were subdivided into issues of “principle” and “practical” issues.

Principle (Policy) issues

1. Specificity and effectiveness of a certificate trading mechanism to promote energy efficiency projects
2. Obligation-bound actors
3. Who can buy and who can sell
4. Targeted sectors and energy efficiency programmes
5. How to create demand for White Certificates trading
6. Possible cost-recovery mechanisms
7. Competition issues
8. Interactions with other policy tools for the promotion of energy efficiency
9. Interactions with other trading schemes
10. Prospects for an enlarged extra-national market for tradable certificates

Practical (Operational) issues

1. Criteria for design and development of projects for energy efficiency in end-use
2. Valuation issues
3. Monitoring mechanism and non-compliance regime
4. Trading mechanisms
5. Rebound effects

The Task was based on regular workshops to be held in the participating Countries at four months' intervals. Each workshop explored a set of issues coming under one of the following main headings:

1. Expectations and already gained experiences
2. policy/principle issues
3. organisation/practical issues
4. national and international systems for White Certificates
5. interaction with other Energy Efficiency policies and with other trading schemes

The Task XIV started in June 2004 at a kick-off meeting and the first workshop was held in November 2004. All the other workshops were held between 2005 and 2006. The Task concluded its activities in June 2006 with the issuing of a Final Report.

Activities completed in 2006

Enova (Norway) offered to host the fifth and last **workshop**. The event took place in Trondheim on March 23rd 2006. The title was: “Interaction of White Certificates with other trading schemes and with other EE policies”. The workshop was open to all the local stakeholders and interested people; it considered in particular:

- updating of White Certificates national schemes in France, Italy, the Netherlands and UK

- interaction with other policy instruments, such as subsidies, tax exemptions, voluntary agreements, energy labelling, encouragement to energy audits, etc.
- review of the Task performed activities: comparisons among different national approaches on:
 - obliged and eligible operators (competition issues)
 - procedures for M&V energy savings (additionality)
 - direct and transaction costs

The presence of:

- Enova,
- SSB – Statistics Norway,
- ADAPT Consulting,
- Sintef Energy Research,
- Norwegian University of Science and Technology

as well as the attendance of the Task XIV experts and guests, assured a meaningful audience.

The above workshop was followed by a one day's Task experts meeting, devoted to setting up the Task XIV Final Report and agreeing on organisation and contents.

Activities planned for the future

The Task concluded its activities on June 2006. At present no continuation is planned until more experience is gained on existing and ongoing schemes.

Involvement of industry and other organisations

Four national Energy Agencies (ADEME for France, SenterNovem for Netherlands, Enova for Norway and STEM for Sweden), a National Environmental Department (DEFRA for UK) and a Research Centre in the energy sector (CESI for Italy) participated to the Task. In addition, the following organizations participated in the Task:

France

- French Ministry of Economy, Finance and Industry
- EdF – DER – Power Systems Technology and Economics Department
- EdF – Corporate Strategy Division

Italy

- AEEG, the Italian Authority for Electricity and Gas, with a regulatory role in the fields of Energy Efficiency and White Certificates issuing and trading
- GME, the national Electricity Market Operator, who is in charge of handling the market of White, Green and CO₂ Certificates

Netherlands

- Ministry of Economy – Netherlands
- CEA and EBM (two Dutch consulting organisations in the field of sustainable development)
- ECOFYS (a Dutch organisation specialized in energy saving and renewable energy solutions)

Norway

- SSB – Statistics Norway, a statistics company devoted to collect and process information about the structure and development of Norwegian society
- ADAPT Consulting
- SINTEF Energy Research – The SINTEF Group is the largest independent research organisation in Scandinavia; they operate on research and development in technology, the natural sciences, medicine and the social sciences.
- Norwegian University of Science and Technology

Sweden

- University of Lund, also present EC SAVE and EIE projects
- Elforsk, a centre for industrial R&D
- Swedenergy, the trading organisation of the Swedish power producers, distribution companies and electricity traders, managing CEN-CENELEC groups for standards issuing on REC, ET and White Certificates
- The National reference group on White Certificates (including STEM, University of Lund, Elforsk, Swedenergy)

EU

- Co-ordinators of SAVE “White&Green” and EIE “EuroWhiteCert” projects

Many of these involved organisations sent their experts to the workshops and/or the Task experts meetings.

Reports

The content of the contributions and of the discussions relevant to the five task workshops was processed and synthesised in corresponding Critical Synthesis (CS) Reports under the responsibility of the Operating Agent (OA). After approval, each of the five CS reports became a Task report.

Reports produced in 2006

- Critical Synthesis Report relevant to the Netherlands workshop
- Critical Synthesis Report relevant to Norway workshop
- Final Synthesis Report (FR), containing a summary and a review of all the activities undertaken and experiences gained during the progress of the Task.
- Final Management Report

Meeting schedule

Meetings held in 2006

23 March, 2006 – Enova, Trondheim, Norway – 5th national open workshop

24 March, 2006 – Enova, Trondheim, Norway – 6th Task Experts meeting

Activity time schedule

Task XIV came into force 1 June, 2004 and was completed 30 June, 2006.

Activity Time Schedule	2004	2005	2006
Task organisation – preparation of 1 st workshop	■		
Report 1 st workshop – preparation of 2 nd workshop		■	
Report 2 nd workshop – preparation of 3 rd workshop		■	
Report 3 rd workshop – preparation of 4 th workshop		■	
Report 4 th workshop – preparation of 5 th workshop		■	■
Report 5 th workshop – Final report			■

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Task XV: Network-Driven DSM

Operating Agent: Dr. David J. Crossley; Energy Future Australia Pty, Ltd.

Why Network-Driven DSM?

‘Network-driven’ demand-side management (DSM) aims to reduce demand on the electricity network in specific ways which maintain system reliability in the immediate term and over the longer term defer the need for network augmentation.

While network-driven DSM can also lead to lower prices in a wholesale electricity market, increased energy efficiency and/or reduced greenhouse gas emissions, these are not the major objectives of this type of DSM. The two prime objectives for network-driven DSM are:

- to relieve constraints on distribution and/or transmission networks at lower costs than building ‘poles and wires’ solutions; and/or
- to provide services for electricity network system operators, achieving peak load reductions with various response times for network operational support.

Task XV is identifying and developing DSM measures that can contribute to achieving these two objectives.

Network problems are becoming significant in countries where electricity demand is increasing and network infrastructure (‘poles and wires’) is ageing. As loads grow and infrastructure reaches the end of its economic life, the potential cost of augmenting networks is increasing exponentially. In many situations, DSM can delay the need for network augmentation. In certain limited situations, DSM may even be able to cost-effectively eliminate the requirement to build a ‘poles and wires’ solution.

Task XV is identifying and developing a wide range of DSM measures which can be used to relieve network constraints, whether these constraints are time-related (eg occurring at times of the network system peak) or location-related (eg associated with particular lines or substations) or both. All types of constraint are addressed, including capacity limitations, voltage fluctuations, reliability issues, etc. Such network-driven DSM measures are often more cost-effective, and may also have lower environmental impacts, than network augmentation (ie building ‘poles and wires’).

In addition to relieving network constraints, DSM can also provide services for electricity network system operators, achieving peak load reductions with various response times for network operational support. Task XV is also covering DSM measures which provide network operational services.

Network-driven DSM measures include:

- distributed generation, including standby generation and cogeneration;
- energy efficiency;
- fuel substitution;
- load management, including interruptible loads, direct load control, and demand response;
- power factor correction;
- pricing initiatives, including time of use and demand-based tariffs.

Objectives

The objectives of Task XV, as approved at the October 2004 Executive Committee meeting, are as follows:

- to identify a wide range of DSM measures which can be used to relieve electricity network constraints and/or provide network operational services;
- to further develop the identified network-driven measures so that they will be successful in cost-effectively achieving network-related objectives;
- to investigate how existing network planning processes can be modified to incorporate the development and operation of DSM measures over the medium and long term;
- to develop “best practice” principles, procedures and methodologies for the evaluation and acquisition of network-driven DSM resources; and
- to communicate and disseminate information about network-driven DSM to relevant audiences.

Activities during 2006

- Completion of the report on “Worldwide Survey of Network-Driven DSM Projects” including preparing an additional detailed case study (to increase the total number to 45), significantly expanding and updating three other case studies, and carrying out numerous minor corrections and amendments.
- Completion of all three activities in Subtask 2 on Assessment and Development of Network-Driven DSM Measures, including carrying out numerous minor corrections and amendments in response to comments from the Experts and Executive Committee members.
- Submission of the report on “Worldwide Survey of Network-Driven DSM Projects” and the report on “Assessment and Development of Network-Driven DSM Measures” for approval for distribution. All participating Executive Committee members finally approved these two reports.
- Completion of Activity 3-1 of Subtask 3, a survey of the interaction between network-driven DSM, electricity markets and regulatory regimes in the countries participating in Task XV.
- Commencement of Activity 3-2 of Subtask 3, a survey of network planning processes implemented in the countries participating in Task XV.
- Completion of two presentations on the work done in Task XV to date. The first presentation was given at a workshop on demand response organised in Melbourne by the Task XIII Australian team. The second presentation was given at a public seminar in Port Macquarie, Australia organised in conjunction with the fourth Task XV Experts meeting.
- Ongoing updating of the on-line database containing relevant information about network-driven DSM projects and measures.

Meeting schedule

Meetings held during 2006

22–24 March, 2006, Port Macquarie, Australia.

Meetings planned for 2007

No further Experts meetings are planned.

Activity time schedule

Task XV came into force in October, 2004 and will be completed 31 March, 2007.

The timetable for Task XV is shown below. Subtasks 1 and 2 have been completed. Subtask 3 is expected to be completed by the end of January, 2007 and Subtask 4 is expected to be completed by the end of March, 2007. Subtask 5 is an ongoing subtask involving the dissemination of information about Task XV which will finish when Subtask 4 is completed.

Subtasks	2004	2005	2006	2007
1. Worldwide Survey of Network-Driven DSM Projects		—————		
2. Assessment and Development of Network-Driven DSM Measures			—————	
3. Incorporation of DSM Measures into Network Planning			—————	
4. Evaluation and Acquisition of Network-Driven DSM Resources			—————	
5. Communication of Information about Network-Driven DSM		—————	—————	

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Task XVI: Competitive Energy Services

Operating Agent: Jan W. Bleyl, Graz Energy Agency Ltd, Austria

Co-Operating Agent: Seppo Silvonen, Motiva Oy, Finland

Task XVI is a new Task in the IEA-DSM Implementing Agreement and is still open to accommodate additional participants. The Chairman and Operating Agent are inviting member countries and sponsors to consider their participation.

Please contact Jan W. Bleyl (Bleyl@grazer-ea.at) or Seppo Silvonen (seppo.silvonen@motiva.fi) for a Task flyer and for further details on the Task Work Plan.

Objectives

Energy Services (ES) are a well proven instrument to implement energy efficiency measures such as lighting, HVAC, comprehensive refurbishment of buildings or heat recovery in industrial processes. An Energy Service Provider (ESCO) takes over the technical and economical implementation and operation risks and has to guarantee for the results and savings. ES are also well suited to implement renewable energy systems.

In order to contribute to the future market development of innovative energy services the objectives of this new IEA DSM Task are:

1. To initiate and support country specific activities for developing the market for competitive energy services (with a focus on individually selected market segments)
2. To initiate and establish an IEA DSM Energy Services Expert Platform
3. To design, elaborate and test innovative energy services and financing models (published in a series of manuals)
4. To position the expert platform as a competence centre for energy services for international dissemination and assistance services (e.g. coaching, training courses)

Expectations and results

The benefits for the participating countries and for the DSM agreement will be:

- ✓ Enlarging the market for energy services
- ✓ Participation in the IEA DSM energy services expert platform and communicating with external stakeholders
- ✓ Mutual feedback, coaching and experience exchange for country specific market development activities (NIA's)
- ✓ Know-how and capacity building on innovative and competitive energy services and financing models from the Think Tank
- ✓ EU countries can prepare for the EU-directive on "energy end-use efficiency and energy services" and help closing the gap between policy targets and the "real world"
- ✓ Task XVI will play an active role in the international dissemination of competitive ES and offer assistance services for the market development in other countries

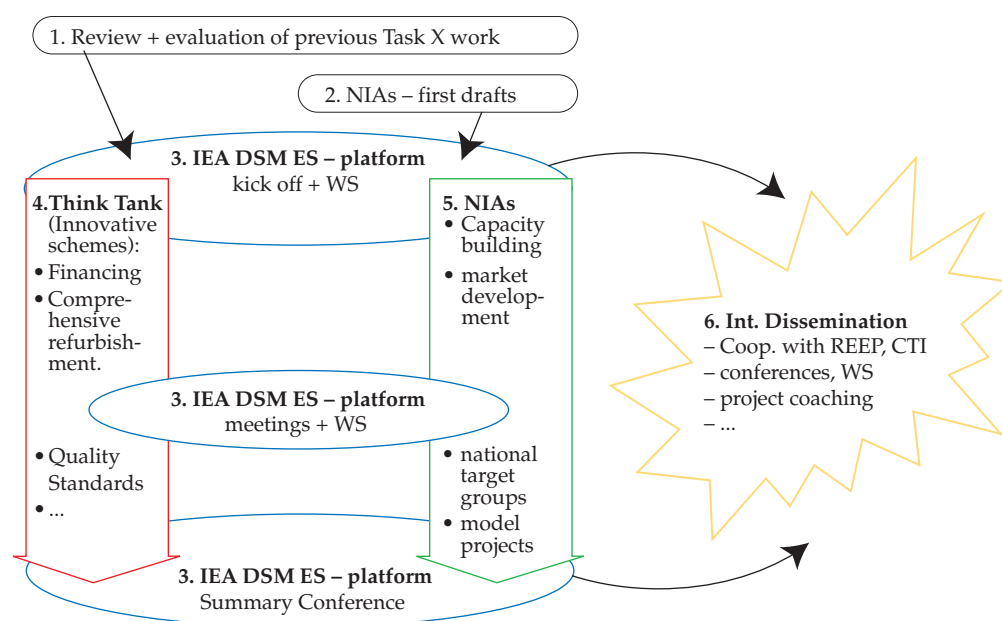
- ✓ Developing business opportunities for internationally acting ESCOs
- ✓ Contributions to an IEA DSM competence centre

Structure of the work

The proposed Task XVI Work Plan consists of four main components:

1. IEA DSM energy services expert platform (ES-platform, subtask 3)
2. Innovative and competitive energy services think tank (think tank, subtask 4)
3. National implementing activities (NIAs, subtask 5)
4. International dissemination activities (subtask 6)

The following scheme illustrates the general structure and workflow of the proposed Task:



Subtask 1: Review and evaluation of the previous Task X work

Subtask 2: National implementation activities – first drafts

Subtask 3: IEA DSM energy services expert platform

Subtask 4: Innovative and competitive energy services Think Tank

Subtask 5: National implementation activities (NIA'S)

Subtask 6: International dissemination

A more detailed description of the above organisational structure and subtasks can be obtained from the Task work plan (exerts printed in the 2005 annual report).

Activities completed in 2006

The main focus of the past reporting period was to set up the new Task and make it operational.

Work on the different subtasks began on July 1st. The Task held its kick off meeting in Helsinki in September, where first drafts of National Implementation activities were presented and decisions for the Think Tank topics were taken. Also a Task information flyer has been produced.

In addition to the existing participants, the following countries have expressed interest to join Task XVI (in alphabetical order):

1. Australia
2. Denmark (participation confirmed)
3. Egypt
4. Germany (observer at the kick off meeting)
5. India (observer at the kick off meeting)
6. Korea
7. Norway
8. South Africa

Decisions should be finalised in the next few months.

Activities planned for 2007

During the next reporting period, the following activities will be carried out:

1. Subtask 1: "Review of Previous Task X – Work" will be completed
2. Subtask 2: "National Implementation Activities – first drafts" will be completed
3. Subtask 3. The second and third meeting of the Expert Platform and external workshops will be held (see meeting schedule)
4. Subtask 4: Work on the think tank will start, dealing with the topics:
 - ✓ Educating our clients: info material and arguments how to convince the customer (Collection of materials)
 - ✓ Integrating dsm measures into supply contracting models (manual)
 - ✓ Collection of Model Contracts (translated into English, for own use only) on the intranet (Collection of materials)
 - ✓ Support national implementation of EE/ES service directive (Collection of possible activities for national action plans)
5. Subtask 5: Plans for the National implementation activities will be finalized and work started (depending on the individual activities of the country experts)
6. Subtask 6: Presentations at various international conferences and seminars, publications (e.g. energy policy) organized and planned

Meeting schedule

Meetings held 2006:

21–22 September 2006, Helsinki, Finland – Kick off meeting.

22 September 2006, Helsinki, Finland – Workshop with national stakeholders.

Meetings planned for 2007

10–11 May 2007, Graz, Austria, Energy Services Expert Platform.

11 May 2007, Graz, Austria, Workshop with national stakeholders.

October, 2007, Maastricht, Netherlands, Energy Services Expert Platform.

October, 2007, Maastricht, Netherlands, Workshop with national stakeholders.

Activity time schedule

Task XVI came into force 1 July 2006 and will be completed 31 June, 2009.

Subtasks	2006	2007	2008	2009
1. Review of previous Task X work	—————			
2. National implementation activities – first drafts	—————			
3. IEA DSM Energy Services expert platform		—————	—————	—————
Expert meetings/workshops	◆	◆ ◆	◆ ◆	◆
4. Energy Services and financing Think Tank		—————	—————	
Manuals		◆ ◆	◆	
5. National Implementation Activities		—————	—————	—————
6. Intern. Dissemination		—————	—————	—————
7. Management & Reporting	—————	—————	—————	—————

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CHAPTER IV

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