



**International Energy Agency**  
Implementing Agreement on  
Demand-Side Management  
Technologies and Programmes

**2003 Annual Report**

**International Energy Agency**

**Implementing Agreement on  
Demand-Side Management  
Technologies and Programmes**

**2003 Annual Report**

Edited by Anne Bengtson  
Executive Secretary  
IEA Demand-Side Management Programme

January 2004

# Foreword

This report is the tenth Annual Report of the IEA Implementing Agreement on Demand-Side Management Technologies and Programmes, summarising the activities of the tenth year.

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

*Stockholm, January 2004*

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

## The International Energy Agency

The International Energy Agency (IEA), founded in 1974, is an autonomous agency within the framework of the Organization for Economic Co-operation and Development (OECD) which carries out a comprehensive programme of energy cooperation among its 26 member countries. The European Commission also participates in the work of the Agency.

The policy goals of the IEA include diversity, efficiency, and flexibility within the energy sector, the ability to respond promptly and flexibly to energy emergencies, the environmentally-sustainable provision and use of energy, more environmentally-acceptable energy sources, improved energy-efficiency, research, development and market deployment of new and improved energy technologies, and cooperation among all energy market participants.

These goals are addressed in part through a programme of international collaboration in the research, development and demonstration of new energy technologies under the framework of over 40 Implementing Agreements. The IEA's R&D activities are headed by the Committee on Energy Research and Technology (CERT) and supported by a small Secretariat staff headquartered in Paris. In addition, four Working Parties (in Conservation, Fossil Fuels, Renewable Energy and Fusion) are charged with monitoring the various collaborative energy agreements, identifying new areas for cooperation and advising the CERT on policy matters.

## 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	Japan
Austria	Korea
Belgium	The Netherlands
Canada	Norway
Denmark	Spain
Finland	Sweden
France	United States
Greece	United Kingdom
Italy	

A total of 13 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, Harry Vreuls, NOVEM, the Netherlands
- Task II** Communications Technologies for Demand-Side Management, Richard Formby, EA Technology, United Kingdom – *Completed*
- Task III** Cooperative Procurement of Innovative Technologies for Demand-Side Management, Dr. Hans Westling, Promandat AB, Sweden – *Completed*
- Task IV** Development of Improved Methods for Integrating Demand-Side Management into Resource Planning, Grayson Heffner, EPRI, United States, – *Completed*
- Task V** Techniques for Implementation of Demand-Side Management Technology in the Marketplace, Juan Comas, FECSA, Spain – *Completed*
- Task VI** DSM and Energy Efficiency in Changing Electricity Business Environments, David Crossley, Energy Futures, Australia Pty. Ltd., Australia, – *Completed*
- Task VII** International Collaboration on Market Transformation, Verney Ryan, BRE, United Kingdom
- Task VIII** Demand-Side Bidding in a Competitive Electricity Market, Linda Hull, EA Technology Ltd, United Kingdom, – *Completed*
- Task IX** The Role of Municipalities in a Liberalised System, Martin Cahn, Energie Cites, France
- Task X** Performance Contracting, Dr. 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, Frank Pool, New Zealand
- Task XIII** Demand Response Resources, Ross Malme, Retx, United States

*For additional information, see the DSM website:*

<http://dsm.iea.org>

## CHAPTER I

# Chairman's Report

## A New Dawn for the Demand Side

For quite some time the thinking and actions as regards energy systems have been focused on the “restructuring of business” and its supply side consequences. Recently both incidents and political initiatives have put the demand side in focus again. The system disturbances in energy supply all over the world have raised the issue of what could be done both on the supply side and the demand side, either to prevent future system failures or to reduce their consequences. The ongoing work to fulfil the Kyoto-agreement has brought the demand side and end-use energy efficiency higher on the political agenda. The European Union has issued a special directive to enhance energy services and to “request” that part of the energy deliveries should be changed to “energy service deliveries”, Negawatt-hours instead of kilowatt-hours. Many countries are testing new market-based instruments such as “White Certificates” to encourage the market to be more innovative and vigorous. There is a new dawn for the Demand Side and the DSM-Programme intends to brighten it further.

In our new Strategic Plan we have stated as our vision:

*Demand side activities should be active elements and the first choice in all energy policy decisions designed to create more reliable and more sustainable energy systems<sup>1</sup>*

and as our Mission to:

*Deliver to our stakeholders materials that are readily applicable for them in crafting and implementing policies and measures. The Programme should also deliver technology and applications that either facilitate operations of energy systems or facilitate necessary market transformations*

## Programme structure

This year, the CERT approved a new five year term for the IEA DSM-Programme. The Programme is about to finalise a new strategic plan and we are changing our structure of work as well. We are initialising new work to ensure that we are really building on experiences and developing the issues by taking links and dependencies into account. We have agreed to bundle our work into two clusters:

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

<sup>1</sup> Explanatory note: *Demand side options have to be expressed in terms, and made available, as equal to supply side options in order to facilitate a comparison. An energy system with a low demand requires less energy and hence allows for expanded use of renewable energy. The lower demand and the use of renewable resources should be promoted as a way to arrive at sustainable supply.*

With these distinctions it should be easier and more logical to oversee the work and to discuss its implications. There are of course overlaps between these two clusters but the new structure will mean the ongoing and completed Tasks can be sorted in those categories as shown in the following table:

Annex		Cluster		Crosscutting General aspect
		Load Shape	Load Level	
I	Data base and evaluation		X	X
II	Communication Technologies	X		
III	Technology Procurement		X	X
IV	Integrated Resource Planning			X
V	Marketing		X	X
VI	DSM on Liberalised Markets		X	X
VII	Market Transformation		X	X
VIII	Demand Side Bidding	X		
IX	Municipalities Role		X	X
X	Performance Contracting		X	X
XI	Metering and Pricing	X		
XII	Energy Standards		X	
XIII	Demand response	X		
<b>In preparation</b>				
	White Certificates		X	
	Advanced Lighting Programmes		X	
	Network-driven DSM	X		
	Contractors (ESCO)Toolbox		X	X
	Completed Tasks are shaded above			

### The load shape<sup>2</sup>

This cluster will include 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 interest in load shaping activities should be most important to:

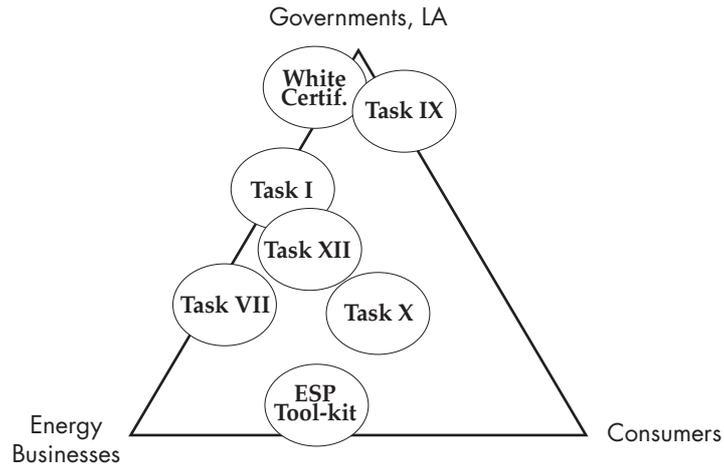
1. **Policy makers and regulator**, since it will increase the system security, improve economic efficiency and possibly also have positive impacts on the environment,
2. **Market operators**, because of effects on market prices (with a clear customer benefit) and the reduction of the influence (power) of the big actors,
3. **System operators**, because of system balancing and the handling of disturbances in generation and transmission. It could also have the potential of preventing blackouts and certainly the restoration of systems after a blackout. Bottlenecks in transmission will be easier to deal with and there will be a better use of existing generation and transmission capacity,
4. **Distribution network operator** who will find a tool to handle bottlenecks under peak periods and to utilise network capacity better. They will find it easier to handle distributed generation capacities and to increase the quality of supply,

<sup>2</sup> This text follows the presentation made by the Finnish representative, Seppo Kärkkäinen, during the 23<sup>rd</sup> ExCo meeting.



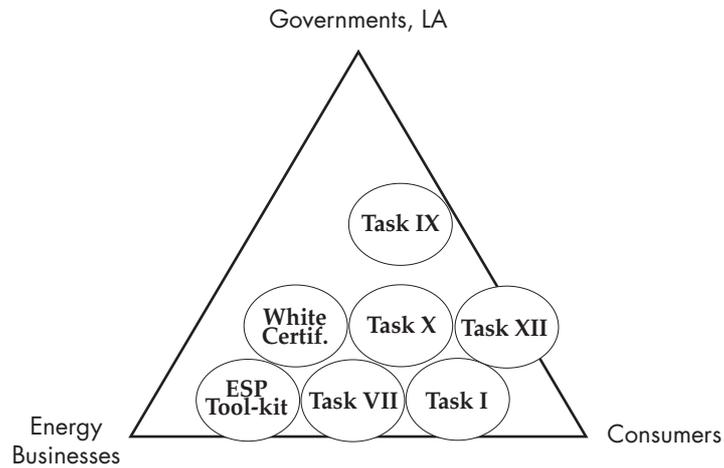
(2) the acting possibilities:

**Actors (who should act?)**



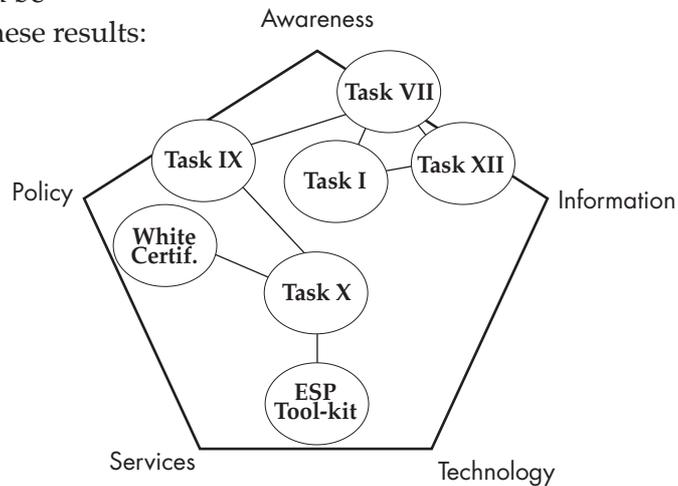
(3) where changes can take place:

**Target Groups (changes where?)**



And finally (4) what instruments can be used to reach these results:

**Impact on Load Level through:**



## **Conclusion**

With the new strategy and internal organisation, the DSM-Programme stands well prepared to drive the issue of releasing the huge energy efficiency potential in the interest of all.

## **Achievements**

The major accomplishments of the Tasks in 2003 are summarized below. Additional details can be found in Chapter II.

### **Task I – International Data Base and Evaluation Guidebook**

Key accomplishments include:

- International Data Base on DSM Technologies and Programmes: The INDEEP database has been made available free of charge to the public.
- Evaluation Guidebook on the Impact of DSM and EE Programmes on Kyoto's GHG Targets: Work has involved collecting relevant international literature to be used in the guidebook. The case examples are being used to complete draft chapters of the guidebook.

### **Task II – Communications Technologies**

This Task has been completed. Key accomplishments include:

- The benefits achieved by Task II are related to delivering energy related services, using communications, which contribute to energy savings.
- The Task has developed and delivered technology and systems for the delivery of energy services and evaluated the economic delivery of these services to a broad market.
- A communication gateway and a licence to use the technology was developed which overcomes many of the difficulties of providing wide ranging, diverse services particularly the issue of multiple media and protocols.
- Demonstration of these technologies and system architectures in real applications was carried out.

### **Task VII – International Collaboration on Market Transformation**

Key accomplishments include:

- Achieved a greater understanding of the need for marketing the concept of energy efficiency in alignment with peoples attitudes and values;
- Strengthened the understanding of the need for a "tool kit" of market transformation activities;
- Continued discussions with industry about marketing and branding energy efficiency;
- Completed market research in six of the seven participating countries that proved that cross country analysis of public attitudes to energy efficiency is useable as a common platform for collaborative work on market transformation

### **Task VIII – Demand-Side Bidding in a Competitive Electricity Market**

This Task has been completed. Key accomplishments include:

- A report covering DSB products, market surveys and barriers to DSB, based on surveys from market system operators, transmission operators and regulators, government and suppliers was produced and distributed. Generators were excluded as it was thought that generators would see DSB as a threat and be negative.
- A practical guide for DSB was produced and distributed. This guide focussed on the rules for DSB, particularly understanding market prices and how DSB fits within that market framework. The aim of the practical guide to DSB was to produce something reasonable and usable that presents many examples and pointers as to how DSB could function in the future. The guide has two sections; the first section provides background information, definitions of DSB and what the drivers for DSB are. The second section provides a step by step guide with different work examples.

### **Task IX – The Role of Municipalities and Energy Efficiency in a Liberalised System.**

**Key accomplishments include:**

- A third report which pulls together recommendations and guidelines for both national and local governments, regarding the support which can be provided for municipal actions and the legislative context which facilitates them. The report also provides illustrative examples from within member countries.

### **Task X – Performance Contracting**

The key accomplishments include:

- Uploading the Final Task Management Report (for subtasks 1–4) onto the open section of the Task X web site
- Making the Task country reports publicly available on the open section of the Task X web site
- Printing and distributing the Task X Summary Report

## **New Work**

During 2003 the Programme initiated three new Tasks.

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

The Task will: (1) quantify methodologies for implementing time of use pricing and DSB for smaller customers and (2) quantify the impact and benefit of DSB and demand dis-aggregation on smaller customer energy costs, demand profile, energy savings and supplier risks if applied on a wide scale. The scope of work will include three subtasks: (Subtask 1) quantify the impact of end use metering and feedback on energy saving and DSM processes for smaller customers; (Subtask 2) quantify the impact of demand response of time of use pricing for smaller customers and (Subtask 3) quantify the pricing, control and validation requirements and mechanisms to facilitate demand side bidding for smaller customers.

### **Task XII – Energy Standards and Labelling**

The primary objectives for the proposed new Task are to (1) expand the Energy Standards Information System (ESIS) detailed technical data on energy standards and

labelling programs within APEC economies to include all IEA countries and eventually to develop ESIS into a central global data base in this area; and (2) develop international comparisons and benchmarks for tracking and measuring the progress of energy standards based programs imposed on products to quantify the costs and benefits of such programs at an aggregate international level to increase their uptake and impact and promote global harmonisation of energy performance testing regimes.

The new Task will involve a mixture of data collection and analysis resulting in reports available initially to IEA member countries but eventually made public; regional and international workshops to explore harmonisation opportunities; and strategic reports. The results for the new Task would comprise a truly global and up-to-date web-based data base on technical energy standards; cross country and international comparisons of benchmarking energy savings from standards and labelling programs; specific recommendations and initiatives for international harmonisation of energy performance test regimes and reports and conclusions from the various Tasks and meetings.

### **Task XIII – Demand Response Resources**

The objectives are to: (1) identify and develop the country-specific information needed to establish the existing stock of and potential for demand response; (2) perform the market and institutional assessment needed to set realistic goals for the contribution of demand response to sector objectives and (3) mobilise technical and analytic resources needed to support the implementation of demand response resources (DRR) programs and track their performance.

These objectives will be met by undertaking eight subtasks: (1) finalize global and country-specific objectives; (2) define the DR resource base and market characterisation; (3) quantify the market potential of DRR; (4) evaluate the demand response valuation; (5) define the role and value of enabling technologies; (6) characterise priorities and barriers and develop solutions and recommendations; (7) develop DRR network of methods, tools and applications and (8) deliver products and intellectual property to IEA DSM Programme and Task participants. The Task work will create a portal (data base web application) that will allow any number of participants to be involved anywhere in the world. It will be accessible through a browser and it will be flexible, well organised and accessible.

## **Work In Preparation**

During 2003, the Programme considered new work on four topics:

### **White Certificates**

This proposed new work will focus on the pros and cons of using a trading mechanism to promote energy efficiency projects; how to create a demand; interactions with other trading schemes (e.g. tradable permits, green certificates); and interactions with other policy tools for the promotion of energy efficiency. The proposed new work will address the following practical issues: (1) criteria for EE projects design and development (e.g. eligibility criteria, size, distortions in competition, avoiding double counting); (2) valuation issues, i.e. how to measure or how to evaluate the saving impact of projects; (3) monitoring mechanism and non-compliance regime (e.g. how to assess the persistence of an energy saving project, how to handle the inability of a distributor to fulfil his energy efficiency goals); (4) possible cost-recovery mechanisms (e.g. public benefit

charges, direct support mechanisms, fiscal incentives: which funding level, which mechanism(s), how to deal with projects which receive funding from more than one public source); (5) issuing and use of certificates (e.g.: ex-post or ex-ante, metric, accounting rules, etc.); (6) trading mechanisms (e.g.: participants, tools, etc.); and (7) responsible entity/ies (i.e. which body/ies should be responsible for the different activities, i.e. issuing, monitoring and verification, validation, etc.).

### Advanced Lighting Programmes

Lighting Programmes have been a major aspect of DSM activities for a long time. In climate related work and in work related to rural electrification in the third world, it has been observed that the DSM-programmes for lighting could serve as models for new work on lighting and for dissemination of other technologies.

It is important that the three Implementing Agreements shown in the table below (ECBCS - Energy Conservation and Building Community Systems, SHC - Solar Heating and Cooling, and DSM) and the IEA secretariat work together in a fashion that enables dissemination of results and that the results be used as input to be further distilled in an ongoing process. The table proposes a division of labour in the case of lighting (X=Responsible party):

Issue	ECBCS	SHC	DSM	IEA Secretariat
Technologies and applications	X	X	Candidate technologies for programmes	<ul style="list-style-type: none"> <li>• Useful policy mechanisms,</li> <li>• Blocking institutions</li> </ul>
Programmes and measures for aggregated dissemination	Features of technologies			
Policies and Measures	Important technology gains and trends		Market organisation development	X

### Network-driven DSM

To date the DSM Programme has not undertaken any work on the potential for DSM to cost-effectively relieve network constraints. Such constraints are becoming a significant problem in countries where electricity demand is increasing and network infrastructure is ageing. The focus of the proposed work is to identify the most appropriate DSM measures to overcome network constraints, all types of capacity limitations, voltage fluctuations and reliability issues. The objectives are to (1) identify a wide range of DSM measures which can be used to relieve constraints, (2) further develop those identified measures so that they will be successful in relieving constraints cost effectively; (3) develop business models, rules and procedures to achieve a successful implementation of network driven DSM measures; and (4) communicate and disseminate information about network driven DSM.

The benefits of participation are: countries will understand the advantages and disadvantages of network driven DSM measures as alternatives to network augmentation; they will gain information of network driven DSM measures currently in use in other countries and the effectiveness of these measures; they will understand the factors which

lead to network driven DSM measures being effective and also understand the interaction between network driven DSM and the operation of liberalised electricity markets.

### **Contractors (ESCO) Toolbox**

The proposed new work is to develop a practical tool-kit to provide support to ESCOs and end users, allowing for more detailed energy systems assessment, better understanding of the available technologies and their level of maturity, accurate replacement technology benchmarking and economic guidance. The objectives are to (1) develop energy assessment and analysis methodologies, analytical, experimental and field evaluation tools allowing for energy conservation with rational capital investments for different types of buildings and (2) evaluate and select mature energy savings technologies and suggest a road map for retrofitting existing aging energy systems. The work will cover commercial and industrial buildings, however, the types of buildings may be expanded if there is an interest from participating countries.

The deliverables will consist of: (1) ESPC tool kits; (2) organisational and financial strategies with examples of best practices; (3) application of developed methodologies for 2–3 demonstration/show cases and (4) a training course for end-users and ESCOs. The preparatory work will include a survey and description of how the results of Task X will be used and how the proposed work can be co-ordinated with or related to Task X.

## **Visibility**

Maintaining and increasing visibility of the programme among its key audiences continues to be a major issue. The principal tools available at present are the Annual Report, the Spotlight newsletter, the web site and an electronic news mail. In addition, though, in April 2003 the Programme was represented at an IEA ministerial meeting in Paris, where we displayed a new poster and an award-winning low-energy copier from Task III.

The Annual Report for 2002 was produced and distributed to approximately 300 recipients in January 2003. It pulls together in one substantial document both overviews of the Programme's activities and details of each of the individual Tasks.

Three issues of Spotlight were produced, in February, April and November, each issue highlighting particular topics of interest at the time. Articles covered, for example, white certificate trading, the marketing of energy efficiency, metering and pricing, customer communications and demand response resources. A print run of 1000 copies of each issue was distributed across the world through the Programme's participants.

At its meeting in October, however, the ExCo agreed to a suggestion from the Visibility Committee to stop producing paper copies of Spotlight and instead to make a pdf version available through the web site three or four times a year. This is more in keeping with modern methods of distributing newsletters. There remains, though, a clear need for a printed document for use in raising awareness of the programme as a whole and in encouraging new participants. We have therefore decided to produce a Programme brochure, which sets out the aims and objectives of the Programme and gives brief outlines of the current and completed Tasks. It could be accompanied by the flyers that describe each Task in more detail and give relevant contact details.

The web site (<http://dsm.iea.org>) continues to serve as a vital window on the programme's activities. Further improvements to its layout and content have been made and a great deal of information can be obtained from this single source. Analysis of visits

to the site shows a world-wide readership. Of particular interest to visitors is the 'e-news' page that is regularly updated and also sent out by email every two or three months to over 700 targeted contacts. One area in need of development is a 'shop front' in which the Programme's principal outputs can be displayed. To this end, improvements are in hand in the way final Task reports are presented and made more relevant to non-participants.

## Participation in the IEA DSM Programme as of December 2003

COUNTRY	Task I		Task II	Task III	Task IV	Task V	Task VI	Task VII	Task VIII	Task IX	Task X	Task XI
	subt. 8	subt. 9	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

## Benefits of participation

The benefits of international collaboration and co-operative activities of this Programme will be of value in a number of additional important ways. The term Programme is used to describe the work to be done under the legal contract, the Implementing Agreement, and this Programme deals with data, software, analysis, strategy development and studies. A significant benefit for the participating countries is participation itself – the learning process.

- **Saves money.** Many types of activities can be carried out more economically in a collaborative mode than if conducted within one national program. Each country funds only a portion of the work, but has access to the entire results of the project.
- **Saves time.** Work can often be completed more quickly through task sharing and data sharing, accelerating the pace of technological development and application.
- **Increases the size of the technology data base.** The large number of countries included in a collaborative project enlarges the general pool of information available beyond what any one country could manage to assemble by itself.
- **Permits national specialisation.** As part of a collaborative effort, countries can specialise in certain aspects of a technology development or deployment while maintaining access to the larger pool of information from the entire project.
- **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 standardisation.** Collaborative work encourages the use of standard terminology, notation, units of measurement, while also encouraging the portability of computer programmes, and common methodology, procedures and reporting formats make interpretation and comparison easier.
- **Accelerates the pace of technology development.** Interaction among project participants allows cross-fertilisation 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.

## How to Participate

If your country has signed the Implementing Agreement, contact the Operating Agent of the Task(s) you are interested in, or the Executive Committee member from your country.

If your country has not signed the Implementing Agreement, and is an IEA-member country, contact the Executive Secretary, Ms Anne Bengtson, who will provide you with the name of your country's representative to the IEA/CERT. If your country has not

signed the Implementing Agreement or is not an IEA-member country, contact Mr. Phil Harrington, the IEA Secretariat, who will provide you with information on how to proceed.

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## **ACKNOWLEDGEMENTS**

The efforts of the following people continue to be essential to the Programme's success. The Operating Agents who are identified in Chapter III, the Executive Secretary, Anne Bengtson, the Advisor, Fred Morse, the Newsletter Editor, Pamela Murphy, and the Webmaster, Verity Saunders.

## CHAPTER II

# TASK I: International Database on Demand-Side Management Technologies and Programmes

## Description

At the moment two subtasks are operational. It is planned that both subtasks will be finalised in 2004.

In June 2001 Subtask 8 started. This subtask has a major element the maintenance of the INDEEP Database, developed in the first seven subtasks. The database information will be kept up to date, expanded to include new programmes from countries around the world and the analyses will be continued.

In May 2002 the work in this Task was enriched with a topic focussing on evaluation: subtask 9, to draft an Evaluation Guidebook on the Impact of DSM and EE Programmes for Kyoto GHG Targets. In this subtask a tool will be developed to judge the sustainability results of national and regional energy programmes, based on existing experiences in participating countries and on international work as well as related to the UNFCCC guidance and guidelines. The participating countries will provide case examples on the evaluation of different type of policy measures.

Task I was originally divided into seven subtasks during the period 1994–2001. These seven subtasks are finalised by 2001. The first Subtask was a pilot project to explore the feasibility and nature of an international database on DSM programmes. The second Subtask built on the results of the first, to identify DSM programmes for an international database. Participants distributed a questionnaire – known as a data collection instrument (DCI)- to collect information on DSM programmes and analyse the responses. The outcome of the first two Subtasks resulted in the design of an international database, the third Subtask, which produced a database that is accessible to all participating countries. The programme information is entered into the database and the quality of the data is improved under Subtask 4 (finalised in 1999). This information is used for analysis and dissemination of the results, Subtask 5. Annual updates have been implemented in Subtask 6, and international promotion has been carried out as part of Subtask 7. Subtasks 4 to 7 are interrelated and continue throughout the entire work plan period.

In October 2002 the Executive Committee decided that also the three most recent results from the first seven subtasks are public.

### Achieved results (from the first seven subtasks)

- INDEEP Annual and Progress reports
- INDEEP Analysis Report 1998 and 2000.
- Final Report Developing INDEEP 1994–2000.
- Multi-languages database at the IEA/DSM Web site at <http://dsm.iea.org/indeep>

**Expected results (from the subtasks eight and nine) include**

- Updated software for the online INDEEP Database at the IEA DSM Web site.
- Additional data collection on Energy Efficiency Programmes.
- Report analysis INDEEP database.
- Country reports on national evaluation methods and evaluation studies.
- Draft Evaluation guidebook on the impact of DSM and EE programmes on Kyoto's GHG targets.

*More information about Task I, reports and the INDEEP database can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/1/task1.asp>

# TASK II: Communications Technologies for Demand-Side Management

## Description

This Task is to assess the best available options and strategies for applying communications to DSM and customer services programmes in the Participants' countries, develop models to carry out evaluations, and specify and develop the technology and demonstration efforts which are required to bring these options to fruition. To date the assessment has covered communications technologies for load control, data transmission, data processing, load management, automated meter reading and billing, customer alarm services, customer generation management, remote diagnostics and audits. Separate subtasks have been to specify and implement in prototype form a customer, flexible gateway, through which the identified services can be provided. A business case evaluation has been completed which identified the most likely actors to provide bundles of services and infrastructure and assessed the commercial viability. The study showed that bundled services were required for financial viability. A field trial of the provision of advanced customer services is being planned with a project to define the scope and contents of co-ordinated trials and bundled services in partner countries in progress. The main criteria for evaluating these technologies is their potential to improve the efficiency of energy resource use and to provide customers with better services at lower cost.

## Delivered and expected results

- Report on communications requirements for utility/customer services
- Report on assessment of communications technology for meeting performance criteria in pursuit of demand-side management and customer services
- Report on assessment of harmonised standards for communications technology which would allow system compatibility across Participating countries
- Report on key research development, and demonstration to bring emerging energy management-related communications technologies to the marketplace
- Report on communications traffic and system costs calculation methodologies and algorithms
- Communications and costs evaluation model – report and software
- Report on specification for customer flexible gateway
- Report on migration strategies from narrowband to wideband communications media
- Development of prototype, customer flexible gateway – hardware and software
- Report on business case assessment for the provision of customer services

## Expected results

Report on definition of field trials of bundled services.

*More information about Task II can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/2/task2.asp>

# Task III: Co-operative Procurement of Innovative Technologies for Demand-Side Management

## Description

The work on this Task was completed in 1999 and the final reports submitted to the Executive Committee in 2000. Eight countries – Denmark, Finland, Korea, The Netherlands, Spain, Sweden, United Kingdom, United States – and the European Commission participated. A process for collaborative procurement actions for introduction of innovative, more energy-efficient products was developed and tested in a number of pilot projects. A clothes drier with the energy use cut by half (the first “Class A” drier on the market), electric motors with losses reduced by 20–40 per cent and “copiers of the future”, where the energy use has been reduced down to 25 per cent, are concrete results of the Task III international procurement collaboration. After evaluation of proposals and prototypes, the suppliers of these products received the “IEA DSM Award of Excellence”, introduced by Task III. The products are now commercially available. Two international workshops were organised during the years – in Paris 1994 and in London 1999 – each with about 80 participants. A list of lessons learned and recommendations have been drawn up. Creation of buyer groups, formulation of performance criteria and creation of mechanisms for recognition are some of the important elements in co-operative procurement efforts.

## Achieved results

- Report on Co-operative Procurement – Market Acceptance for Innovative Energy Efficiency Technologies.
- IEA DSM Award of Excellence ceremony.
- IEA Drier Promotion Competition.
- IEA Hi-Motors Competition.
- IEA Copier of the Future Competition.
- Lessons learned summarised in the London Workshop proceedings and in the Final Management Report.

This Task is completed and therefore not included in the chapter on Task reports.

*More information about Task III, the pilot projects and lessons learned can be found on the web-site:*  
<http://dsm.iea.org> and [www.stem.se/IEAProcure](http://www.stem.se/IEAProcure).

<http://dsm.iea.org/NewDSM/Work/Tasks/3/task3.asp>

# TASK IV: Development of Improved Methods for Integrating Demand-Side Options into Resource Planning

## Description

This Task reviewed and documented utility structures and integrated planning approaches in IEA-member countries. Participants performed a review and comparative assessment of government and utility power sector planning priorities in IEA-member and non-member countries with a view to their implications for the integration of DSM options into resource planning. They also compiled information on the methods, techniques, and models for demand forecasting and integrated planning being used in their respective countries by utilities and government.

Based on this review, a guidebook was developed describing alternative approaches and summarising examples of how these methodologies have been incorporated. Case studies documenting successful applications from several countries were included.

Taking into consideration the factors influencing DSM in participating countries, guidelines were developed on how to transfer processes, methods, techniques, and models for incorporating DSM in resource planning from one country to another. Included in this book were issues related to differences in market conditions, supply characteristics, utility structure, regulatory environments, pricing and tariff structures and government policies.

Task IV also investigated mechanisms to promote DSM and energy efficiency in new business environments. This included a critical review mechanisms which have been used, or proposed for use, to incorporate DSM and energy efficiency into restructured electricity industries. The results were presented in three workshops and are available on the Programmes web site.

## Achieved results

- Report comparing utility structures and characteristics in different countries.
- Report on existing processes, models, methods, and techniques in various electric resource planning applications.
- Recommendations for development of improved methodologies.
- Guidelines on transfer methods, techniques and models.
- Guidebook approaches and methodologies for analysis and planning of demand-side programs and integration of DSM options in utility resource planning.
- Report on existing and new mechanisms for promoting DSM and energy efficiency in new electricity business environments.

This Task is completed and therefore not included in the chapter on Task Reports.

*More information about Task IV can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/4/task4.asp>

# TASK V: Investigation of Techniques for Implementation of Demand-Side Management Technology in the Marketplace

## Description

Participants developed a common methodology for implementing DSM technology with residential small commercial and small industrial customers. This methodology modelled small customer markets in basic units with objective characteristics such as kinds of end-use equipment, cost of network equipment, family or business types, and socio-cultural values. Participants also conducted a survey in their countries of the methods that utilities and governments have successfully used to market DSM technologies in residential, small commercial and small industrial markets.

Based upon the methodology developed above, each participant carried out a pilot project for a particular small customer market. The results of the pilot programmes were measured and their success evaluated. Results in different countries were compared, and their similarities and differences were explained. Within each country, results of the pilot programme were compared with results of previous programmes in order to document improvements realised in programme effectiveness.

## Achieved results

- Marketing methodology for implementing DSM technologies in small customer markets.
- Tools to analyse, follow-up and evaluate DSM programs in these markets, always from a marketing point of view.
- Analysis of previous DSM programs in the participating countries.
- Real pilot programs for effective implementation of DSM technologies in such markets and analysis and evaluation of pilot program results.
- Report on all these items.
- A better overall understanding of the actors in the small customer market for DSM technology has evolved.

This Task is completed and therefore not included in the chapter on Task Reports.

*More information about Task V can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/5/task5.asp>

# TASK VI: Mechanisms for Promoting DSM and Energy Efficiency in Changing Electricity Businesses

## Description

The objective of Task VI was to develop mechanisms for promoting the implementation of demand-side management (DSM) and energy efficiency in changing electricity businesses, such as in restructured electricity industries and competitive electricity markets.

During the Task, 99 existing mechanisms already in use in the countries participating in Task VI were identified and described. Twenty-five mechanisms were developed in detail and reviewed by practitioners who may be involved in using the mechanisms. The effectiveness of the developed mechanisms was assessed against a range of criteria.

### Four types of mechanisms were developed:

Control Mechanisms – these are used to direct energy businesses to change behaviour;

Funding Mechanisms – these provide funding for other mechanisms;

Support Mechanisms – these provide support for behavioural changes by end-users and energy businesses;

Market Mechanisms – these enable the use of market forces to encourage behavioural changes by end-users and electricity businesses.

Task VI also identified the public policy goals and objectives which governments may seek to achieve through the reform and restructuring of the electricity industry. It analysed how the effectiveness of mechanisms in promoting DSM and energy efficiency is influenced by different structural models for the electricity industry. Effectiveness was judged by analysing the effects of different electricity sector structural models on the mechanisms, and by reviewing the barriers to the implementation of DSM and energy efficiency, which were addressed by the mechanisms.

The developed mechanisms were subjected to review by a range of relevant practitioners through a series of Practitioners Workshops held in Australia, France and Japan. The purpose of the Practitioners Workshops was to present preliminary summaries of the mechanisms developed in Task VI for comment by a range of practitioners who may be involved in using the mechanisms. The Practitioners Workshops were designed to provide a “reality check” on the practicality of the developed mechanisms.

The products from Task VI constitute a comprehensive catalogue of information on incorporating DSM and energy efficiency into restructured electricity industries. The products will be of immediate practical use to government policy makers, industry regulators, electricity business managers, and analysts and commentators on the electricity industry.

### **Achieved results**

The major products from Task VI comprise:

- three Task VI Research Reports;
- two Task VI Working Papers;
- a database of 99 existing mechanisms for promoting DSM and energy efficiency;
- a database of 25 developed mechanisms for promoting DSM and energy efficiency.

This Task is completed and therefore not included in the chapter on Task Reports

*More information about Task VI can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/6/task6.asp>

# Task VII: International Collaboration on Market Transformation

## Description

The need to meet Kyoto targets and to reduce greenhouse gas emission through greater energy efficiency provides the driving force behind the Market Transformation Task. Utilising the forces of the market and transforming those markets to better respond to energy efficient products helps to contribute to a more sustainable path whilst still maintaining a future vision of economic prosperity. In the broadest sense the Task is expected to facilitate a new approach to market transformation in order to bring about the changes that are required in international markets so that new energy efficient technologies penetrate the market and start to achieve their true potential. If successful, the Task will contribute significantly to the accelerated take up of energy efficient technologies in the market place and will assist in the conservation of energy and reduction in the emissions of greenhouses gases.

### The Task will:

- Increase the market share of today's energy-saving products and practices
- Accelerate the use of the most efficient new technologies in order to reduce the use of energy and other primary resources, thereby reducing the emission of greenhouse gases and other potentially harmful pollutants.
- Provide an on-line forum for exchange of Market Transformation information

One important aspect will be the deeper involvement of retailers – both in the formulation of key criteria that will accelerate the acceptance of energy efficient products, and intensified targeting of the most appropriate methodology that will lead to an increase in sales. The involvement of multinational chains of distributors and retailers with business in a wide range of participating countries will be key to this process.

### Expected results include

- Shared knowledge of international approaches to market transformation
- Access to information about best practice and lessons learned in market transformation
- Access to, and contacts with, a wide variety of participating countries from which to draw project partners
- A conference dealing with Market Transformation and sharing international perspectives
- Regular briefings on current practices and latest knowledge of Market Transformation practice

*More information about Task VII can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/7/task7.asp>

# Task VIII: Demand Side Bidding in a Competitive Electricity Market

## Description

The objective of Task VIII is to evaluate and promote demand side bidding (DSB) as a means of improving the efficiency operation of the electricity supply chain. DSB is a mechanism that enables the demand side of the electricity market to participate in energy trading. More specifically, DSB allows electricity consumers to offer a specific reduction in demand, at a given time, in return for a specified income.

DSB can improve the efficiency of the electricity supply chain by increasing competition in the wholesale energy market and acting as an alternative to conventional generation. For example, DSB can be used to balance electricity supply and demand and also maintain the quality and security of supply. In addition, DSB can have important environmental and energy efficiency benefits in some situations when it is used as an alternative to conventional generation.

### The Task will:

- Evaluate and promote DSB as a means of improving the efficiency of the electricity supply chain and global environment
- Examine current DSB mechanisms and assess their strengths and weaknesses
- Identify the main barriers to DSB and assist in their removal through the provision of practical guidelines for the development of new schemes and enhancements to existing ones

### Expected results include:

- Characteristics and role of DSB in the electricity industry in each country participating in the Task
- Potential for DSB in each participating country
- Guidelines on the ability of specific customer types to participate in DSB and their opinions on participation
- Report aimed at potential demand side bidders on the different types of DSB and the necessary control and monitoring technology for participation
- Practical guidelines on the technical rules for DSB
- A practical guide for the development or improvement of DSB schemes

*More information about Task VIII can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/8/task8.asp>

# Task IX: The Role of Municipalities in a Liberalised System

## Description

This Task will investigate how the roles of local authorities in demand side management are affected by a liberalised market and in the light of these changes and examples of good practice, will prepare guidelines for improving the local authorities' service delivery in this field. Demand side management includes action to improve energy efficiency, load management and action to reduce CO<sub>2</sub> emissions by energy substitution. Local authority activities in this field will be assessed for replicability, choice of targets, effectiveness in producing long term results, response to social and political needs, response to conditions of the liberalised market and the likelihood of resources and financing being found on a long term basis. The Task will provide an up to date view of municipal action in the participating countries and the likely results that can be expected from such action.

### The Task will:

- Identify municipal roles and practices in DSM activity within the context of their national energy scene and evaluate their effectiveness
- Evaluate the impact of liberalisation of energy markets and identify how municipalities can respond to this
- Define priorities for municipal action on DSM
- Make recommendations how municipalities can improve their service delivery on DSM both in-house and to third-parties
- Propose an action guide relating to DSM at municipal level, presenting common factors and specific features and illustrated with examples.

### Expected results include

- Report on the roles and responsibilities of municipalities in the energy field and the participating countries role in promoting energy efficiency
- Report on different approaches to liberalisation and their impact on energy efficiency activity in participant countries, which will form the basis of an assessment of the situation faced by municipalities
- Report on best practice projects to promote energy efficiency which have been introduced by municipalities and action introduced in response to liberalisation
- Recommendations for guidelines at national and local levels regarding the role of municipalities in DSM and how the current restructuring process affects the role that they can play
- Publication of an action guide on local authority practice on energy efficiency including specific guidelines and recommendations and illustrated by practical examples

*More information about Task IX can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/9/task9.asp>

# Task X: Performance Contracting

## Description

The objective of this work is to facilitate the use of performance contracts and other energy service company (ESCO) contracts. Performance contracting is on some markets a well-established mechanism for promoting the installation of energy efficient building equipment and systems. For example, facility owners and energy service contractors use this method to retrofit equipment to save money on building operations. The savings in energy bills due to the installation of this more energy efficient equipment is then shared between the facility owner and the ESCO under the terms of the agreement they entered. In this scenario, the ESCO has taken on the project's performance risk by guaranteeing a specified level of energy savings. Its compensation for this risk is directly tied to achieving savings. The financing for such a project could come from the ESCO, the equipment supplier or a third-party company.

Reasons why a property owner may enter into a performance contract vary. It could be a financial reason – a property owner may lack the money to invest in new equipment. It could be a business strategy – a property owner only wants to pay for the equipment once the value-added functions, such as reduced energy bills, are demonstrated. For an ESCO, the motivation could be that it provides another way to connect with customers and initiate new business relations. For some companies and government organisations, performance contracts can be used to inspire innovations and encourage the use of more energy efficient equipment.

## Expected results

By building upon the experiences of those countries familiar with performance contracting, such as Canada, the United States and some European countries, and listening to the needs of countries that are developing such systems, the Task Experts will:

- Provide a better understanding of how performance contracts and other ESCO financial options and services can be used.
- Outline the benefits of performance contracting and their potential to promote energy efficiency and mitigate global climate change.
- Outline the regulatory and legal context for such contracts to function.
- Identify the market potential in countries that lack a mature performance contracting industry.
- Identify and share information on potential barriers and problems associated with implementing these contracts.
- Share success stories and solutions to problems that may arise.
- Formulate definitions of different types of performance contracting.
- Identify solutions and schemes on how to find suitable ESCOs and how to improve the tendering process.

*More information about Task X can be found on the web site:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp>

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

## Description

Successful implementation of Demand Side participation in competitive energy markets is an essential process for world energy sustainability. 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 improve 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. Many liberalised market structures and operating systems mitigate against Demand Side participation by smaller customers, with profile metering an obvious example. In this case, time of use metering used for larger energy users is replaced by “profile metering” for smaller customers. “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.

## The Task will

Verification of demand changes which result from DSB implementation requires time of use energy metering. Task XI will investigate “time of use metering” and developed “profile metering” for smaller customers as mechanisms for driving DSB and energy savings. 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. It also assists the demand aggregation process for smaller customer DSB. Task XI will address the issues of pricing and monitoring of energy end use and mechanisms for smaller customer, demand participation via DSB.

## Expected results

- Report to quantify the impact on energy saving and DSM processes of end use metering and feedback for smaller customers.
- Report to quantify the benefits of time of use pricing and their impact on demand response for smaller customers.
- Report to quantify the pricing, control and validation requirements and mechanisms to facilitate DSB for smaller customers.

*More information about Task XI can be found on the website:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/11/task11.asp>

# Task XII: Cooperation on Energy Standards

## Description

Task XII was formed in early 2003 and is currently gathering funding support for the start of its work. The objective for Task XII is to address the widespread problem of disjointed standards for energy using products and systems in different parts of the world. In an increasingly global market, enhancements are needed to current inadequate systems to facilitate mutual awareness and active co-ordination of different standards and standards setting procedures. The Task focus on energy standards is because energy standards underpin nearly all “hard” energy efficiency delivery programs. In particular, energy standards underpin programs on market transformation, tax incentives, rebates and voluntary endorsement labelling programs. Energy standards also are the core of regulated MEPS and labeling programs on electric and gas appliances and equipment underway in 50 countries – including nearly all developed countries – and applied on a regional basis in Europe and North America.

## The Task will

- Facilitate the formation of, and active participation in, a global energy standards information network to improve mutual awareness and cooperation.
- Hold meetings, conduct studies and prepare reports on specific opportunities and issues relevant to energy standards and the policies and programs that utilise them.
- Build on past and current regional efforts to promote mutual awareness and co-ordinate energy standards throughout the world.

## Expected results include

- Development of a global energy standards information system web site.
- Active notification of recent and planned energy standards developments.
- Case studies of areas where harmonisation or mutual acceptance of standards are possible.
- International comparisons for tracking progress of energy standards based programs.
- Alignment of energy performance testing regimes for specific product classes.

*More information about Task XII can be found on the website:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/12/task12.asp>

# Task XIII: Demand Response Resources

## Description

On October 15, 2003 the International Energy Agency Demand Side Management Program Executive Committee approved a new Task called Demand Response Resources. The project, which will be lead by the United States by the U.S. Department of Energy and is expected to involve at least 15 Member countries including the Australia, Austria, Canada, Denmark, Finland, France, Italy, Japan, Korea, Netherlands, Norway, Spain, Sweden, United Kingdom and the United States. The objective of the Task is to deliver the necessary methodology, business processes, infrastructure, tools and implementation plans for the rapid deployment of a demand response program into participating country electricity markets to meet the specific goals and policy objectives of that market.

Financing for the Task is currently being structured. Work on the Task is expected to begin in early 2004 after financing has been secured. The Task is organized into three phases over a 30-month project schedule.

## This Task will

- Establish a common methodology for estimating demand response potential.
- Create economic models to determine the impact of demand response programs on market prices, reserve margins, capacity markets and liquidity as well as the value of demand response from a private and public policy standpoint.
- Integrate previous work of the Programme on demand response and create a platform for future work particularly on enabling technologies for demand response.
- Allow for project participation by IEA Member Countries as well as Non Member Countries and third party sponsors on a global or local basis.
- Provide an extranet or Internet portal networking project participants into a project community of experts and as a platform for delivering intellectual property to the project participants.

## Expected Results Include

- Establish demand response potential by country and market sector.
- Determine specific objectives each country expects to achieve with their demand response programs.
- Determine demand response best practices from an application and technology standpoint.
- Identify the resources, infrastructure, investment and obstacles for each country in achieving their objectives.
- Provide an implementation plan and “toolkit” for each country to achieve their demand response objectives.
- Deliver the Intellectual Property created to project participants at the conclusion of each phase of the project.

*More information about Task XIII can be found on the website:*

<http://dsm.iea.org>

<http://dsm.iea.org/NewDSM/Work/Tasks/13/task13.asp>

## CHAPTER III

# Task I: International Database on Demand-Side Management Technologies and Programmes

**Operating Agent: Mr Harry Vreuls, Netherlands Agency for Energy and the Environment (Novem), the Netherlands**

## Objectives

The objectives of Task I are to establish and maintain an international database on demand-side management programmes and to improve the evaluation of DSM and energy efficiency improvement programmes and their international comparison.

At the moment two subtasks are operational. One (subtask 8) will pertain to maintenance of the data base and the other (subtask 9) will be to develop a draft evaluation guidebook on the impact of DSM and EE programmes related to Kyoto greenhouse gas targets. Both subtasks will be finalised in the year 2004.

The INDEEP database itself, the analysis report on the data collected, and the dissemination of the information resulting from the work and the analysis should help utilities and governments in participating countries to design demand-side management (DSM) programmes, which reach more customers and save more energy at lower cost.

The general objective for this subtask nine is to improve the common knowledge on evaluation and assist the national and internal evaluation process by an evaluation guidebook. The draft evaluation guidebook should give governments, energy and/or environmental agencies and utilities more insight in the contributions of national and regional programmes for reducing greenhouse gas emissions and international comparison for the impact of policies and measures.

In the year 2001 the development of the INDEEP database (subtasks 1–7) was finalised.

## Progress

### INDEEP database maintenance & analysis (subtask 8)

The maintenance of the INDEEP database and the analysis of the data is organised in subtask 8. In this work the following countries participate: Belgium, Denmark, France, Japan, The Netherlands, Norway, Republic of Korea, and Sweden.

In 2003 update of the contact information in the INDEEP database is continued. This update now including an option in case the (original) contact person is no longer available at the company or in case the company do not exist anymore. The update of the programme information is divided into two steps. By December 2003 the update on the contact information as well as on the programme information is finalised. At the end of 2003 also the data collection on new programmes is finalised.

INDEEP is an Internet database, but was till the end of 2002 restricted to the participating countries. In the first half year of 2003 July the use of the database is researched:

- about 120–170 sessions (i.e. that a person is doing more on the site then just a hit) per month;
- the time a session takes is around 10–15 minutes on average;
- about 3,500 hits per month.

Several options to host the database in the future are researched. The ECEEE board, the EnR network, the Building Co-ordination Group (BCG) and the project manager for the Odyssee and Mure database (EU-level) were contacted in this matter. For different reasons (budget problems, technical support, not strong related to the own objectives etc.) all could not offer a future hosting. Also the Executive Committee is not in favour of a continued hosting of the database as a (sub)task. In 2004 a decision will be taken in this matter.

### **Evaluation guidebook on the impact of DSM and EE programmes for Kyoto's GHG targets (subtask 9)**

Eight countries are participating in this subtask Belgium, Canada, Denmark, France, Italy, Korea, The Netherlands and Sweden.

The original work plan for this subtask holds two phases. The first phase is to develop a common framework, to clarify the function of scenarios and measurements for evaluation guidelines, to compile a draft international evaluation guidebook for energy efficiency programmes, focussed on GHG mitigation and also to communicate and promote the guidebook. The second phase holds activities to test, modify and finalise the evaluation guidebook. In 2002 the Executive Committee approved this first phase.

At the end of the year 2002 and early 2003 the experts discussed this work plan, work done and priority setting in the work needed to do and advised changes. In April the Executive approved a revised work plan. Now the main approach is to use national and international expertise to collect and judge the information on evaluating EE and DSM project, programmes and policy measures. Several round-table discussions and knowledge exchange meetings will be organised in combination with experts' to discuss draft versions of the guidebook. The project is clearly different from previous work in that it will focus on the evaluation *methods* currently used and not on evaluation results. Furthermore, it does not aim to present evaluation theory from A–Z. Instead the project will identify some of the most *critical points* related to evaluation of specific categories of EE policy measures, based on experience from the participating countries.

Expert meetings are organised in March, August and December 2003. At that meetings the experts discussed the specific the general framework, draft chapters of guidebook, the outline and content of country reports and the structure of the guidebook. They produced information for almost 30 draft case examples in different types of policy measures.

## Preliminary List of Policy Measure Types and Subcategories

<i>Type of Policy Measure</i>	<i>Subcategories</i>
Regulation	Building Codes and Enforcement Minimum equipment energy performance standards
Energy Audits	On-site energy audits Self-administered and internet-based surveys
Information Programmes	General Information Programs Labelling Information Centres Education and training
Economic Incentives	Project or product-related subsidies (rebates) Reduced-interest loans Financing guarantees Third party financing facilitation Targeted taxes, tax exemption, tax credits Bulk purchasing
Voluntary Agreements	Development, monitoring, and enforcement of negotiated energy reduction targets
Governing by Example	Energy management in public buildings Public procurement of energy efficient products and services
Combined Programmes	Combination of Promotion of efficient appliances and subsidies Combination of labelling of building and subsidies

In August 2003 the work for the evaluation guidebook is presented at the International Energy Programme Evaluation Conference (IEPEC) and in December at the WEC/Ademe Workshop on Energy Efficiency Policies.

### Activities completed in 2003

- An online method for updating data to the INDEEP database is operational
- The instruction 'How to use the INDEEP database' is available on the web site
- The updating of the contact information is finalised
- The updating of the programme information is finalised
- The data collection on new programmes is finalised
- The INDEEP database is general available on the IEA DSM web site
- A revised work plan on phase 1 for an evaluation guidebook
- A general framework for evaluating energy efficiency and DSM programmes
- Structure for the case examples, country reports and the draft evaluation guidebook

## **Activities planned for 2004**

### **INDEEP database maintenance & analysis (subtask 8)**

In 2004 programme data in the INDEEP database will be analysed and the results presented in the final report.

The Executive Committee will decide on the hosting of the database.

### **Evaluation guidebook on the impact of DSM and EE programmes for Kyoto's GHG targets (subtask 9)**

Each expert will prepare and finalise a country report on the evaluation methods that are used for energy efficiency programmes and the relation to GHG emissions. These reports will include also case examples on conducted evaluation in the country. The draft reports and case examples will be discussed at the experts meeting before publication.

The draft chapters for the evaluation of a specific type of policy measure will be drafted and discussed and finalised.

Relevant documents will be publicised on the web site.

Also an electronic new letter will be used to inform interested people and to get feed back on the drafts.

### **Involvement of industry and other organisations**

Each national expert is responsible for contacting utilities, governmental agencies, research institutes etc. within their country, to assess general DSM information needs and the specific need for (and usefulness of) an international database on energy efficiency programmes. In the subtasks representatives from energy agencies, energy utilities, universities, research institutes and ministries are involved.

## **Reports**

1. INDEEP Newsletter
2. Poster for the IEPEC conference

## **Meeting schedule**

### **Meetings in 2003:**

28–29 January, (subtask 8) Valbonne, France

24–25 April, (subtask 9) Gent, Belgium

4 June, (subtask 8) during the ECEEE summer study, St Raphaël, France

25–26 August, (subtask 9) Seoul, Republic of Korea

17–18 December, (subtask 9), back to back meeting with WEC workshop, Paris, France

1–2 July, Stockholm, Sweden (subtask 8)

## Meetings planned in 2004:

February (subtask 9)

## Activity time schedule

Task I came into force on 1 May 1994 and will be finalised in 2004.

Activity	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1. Programme Identification (participating countries)	■	■	■								
Additional programmes (including non-participating countries)		■	■	■	■	■	■				
2. INDEEP design planning Data Collection Instrument		■	■	■	■						
3. Design Database		■	■								
4. INDEEP data collection & entry		■	■	■	■	■	■				
5. INDEEP data analysis and report preparation				■	■	■	■				
6. Updates to the Database			■	■	■	■	■				
7. Promotion and Marketing		■	■	■	■	■	■				
8. Maintenance and update								■	■	■	
9. Evaluation Guidebook, phase 1									■	■	■

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# Task VII: International Collaboration on Market Transformation

**Operating Agent: Mr. Verney Ryan, BRE, United Kingdom**  
**Project deliverables and progress**

## Summary

2003 has been a year of adjustment for Task VII – part bringing the first phase of the Task to a conclusion, whilst at the same time evolving an ongoing plan to utilise the knowledge attained from the subtasks completed to date. The Task continues to encourage interest from a broad array of market actors from industry through to academic organisations. The results of Task VII research are still providing a stimulating level of discussion focussing on the brand approach to energy efficiency. A number of new organisations and industry specialists have expressed an interest in the work of Task VII. The development of a project proposal to interest industry in a ‘buzz’ marketing approach for energy efficiency has begun, which could progress the work of Task VII to new levels in terms of market engagement and industry support.

## Background

The IEA DSM Market Transformation Task VII has been supported by government agencies from 7 countries including Denmark, Finland, Netherlands, Norway, Sweden, Korea and the United Kingdom (Norway withdrew from the Task in 2003). Task VII seeks to find a way to encourage a greater market share for the most energy efficient appliances and products in the marketplace.

Task VII seeks to understand why it is that energy efficiency is so low down on the consumer’s hierarchy of needs. Why do some retailers and manufacturers shy away from selling the benefits of the energy efficiency of their products? Can we make ‘energy efficiency’, as a marketing concept, as popular or as strong as the brands of Nike or Adidas? And how might we do this?

To meet this challenge and to answer some of these burning questions, a variety of different subtasks have been undertaken. These range from the development of a unified policy approach to market transformation through to the development of procurement strategies.

One of the most important products produced by Task VII has been an extensive market research study focusing on the issue of branding energy efficiency in connection with consumers’ aspirations and values. The results of this multi-national research indicates that the marketing challenge for the branding of energy efficiency is not a question of spreading knowledge but of establishing image.

This critical marketing data enables Task VII participants and industry to explore new promotional ideas for energy efficiency and to seek solutions that will increase consumers’ desire for energy efficient products and services. The results of this market research, in conjunction with a cooperative industry, may provide the key to stimulate a demand for the ‘brand’ of energy efficiency that could be as strong as the demand for the brand of ‘organic food’.

It is hoped that industry will use the information from the market research to develop a 'brand' approach to energy efficiency. This 'brand' approach would focus more strongly on people as brand aware, self-conscious consumers. Thereby lifting promotion of energy efficiency beyond the usual 'save money and the planet' arguments and seeking to identify energy efficiency with the lifestyles, values and attitudes that currently drive consumer purchasing. This has the capacity to transform the chain of market actors, from manufacturing through to the selling and buying of products, as the demand for the most energy efficient products increases.

Utilising the results of the research, Task VII is now seeking a series of meetings with a few of the major electrical product manufacturers and retailers throughout Europe. Task VII experts seek to identify common barriers to the promotion of energy efficient products and explore the possibilities and opportunities open to an awakening market. Task VII shares a common goal with most of the appliance manufacturers – many of them already produce energy efficient products, and we simply want to increase that market share.

## **Activities completed in 2003**

- Organise a series of industry meetings
- Progress the enhanced Task VII work plan
- Develop support for a 'brand approach' to energy efficiency within the market place.

## **Industry meetings**

The deliverables suggested in the enhanced programme of work for Task VII included a minimum of three meetings with senior marketing executives from the appliance and energy products industry. These meetings are planned to come to a conclusion by April 2004, the official Task end date.

At the time of writing this report only one senior level meeting has taken place. However, several additional meetings have occurred during 2003 yielding positive results. These have involved a variety of actors within the market chain including marketing companies, government agencies and representatives from appliance manufacturing industries.

Additional meetings have included:

- Presentation of Task VII research made to industry conference 'Energieeffektivitet & Miljø' organised by Vekst and attended by the likes of GE lighting, Saint Gobain, Glamox lighting, Siemens, Philips etc
- Two meetings with a leading innovative marketing firm to discuss the development of a 'buzz' marketing approach for energy efficiency. This is leading to the development of an industry funded marketing proposal.
- Meeting with MMI - the main market research company who undertook the Task VII research to discuss updating the research results and a strategy for use of the results with industry.
- Meeting with New Zealand based Energy Efficiency Conservation Authority (EECA) to discuss brand approaches to energy efficiency marketing. EECA have expressed an interest in collaborating with Task VII and possibly conducting their own market research in line with the Task VII study.

## **Work Plan**

The majority of work conducted in 2003 has been involved with the strategy to set up the high-level industry meetings. To this end a task flier has been produced to explain the concepts dealt with under Task VII as well as a summary document outlining the results of the research. A memorandum of understanding has been developed for use with industry. The objective of this is to allow the research results to be shared in a collaborative environment whilst allowing Task VII access to the results of any 'brand' based approach to marketing developed by the organisation involved.

The operating Agent for Task VII is also developing an ongoing project proposal to take the Task VII results and shape them into a 'buzz' marketing campaign to be piloted in several countries.

## **Developing industry support for a 'Brand Approach'**

During 2003, and particularly following the presentation of results at various conference venues organised in Australia, a number of requests have been received by the operating agent for additional Task VII information. This has opened up a broad discussion amongst a variety of the market actors interested in a brand approach to energy efficiency.

Several companies, as well as government agencies, have requested information about the results of the market research and are keen to collaborate in some way with the development of a new approach to selling energy efficiency. Discussions are largely being conducted on an informal basis by email at present, but this process may be formalised in the coming months through the development of a group of market actors interested in the concept of branding energy efficiency.

## **Activities planned for 2004**

- Hold a minimum of two further industry meetings.
- Write up results of meetings and provide final report.
- Develop proposal for 'Buzz marketing' approach to the brand of energy efficiency and seek industry funding.

## **Reports**

### **Reports produced in 2003**

International Collaboration on Market Transformation - End of Phase One Report (Final Summary)

### **Reports planned for 2004**

International Collaboration on Market Transformation – Outcome of Industry Meetings

## **Meeting schedule**

### **Meetings held in 2003**

2 February, Amsterdam, The Netherlands

14 June, Oslo, Norway

## Meetings planned for 2004

Dependant on Industry Meetings schedule – currently planned February/March 2004

## Activity Time Schedule

Task VII came into force in January 2000 and, following two extensions, has a nominal date for ending at the end of April 2004. An extension may be proposed in order to further the Tasks findings, particularly the market research. There is an opportunity to more fully engage industry with Task VII objectives and results through the developing marketing campaign.

Subtask	1999	2000	2001	2002	2003	2004
Subtask A: Developing a unified policy approach to Market Transformation and integration with MTPIF		—————				
Subtask B: Market Transformation Market Research		—————				—————>
Subtask C: Market Transformation Workshop and Forum		—————			- - - - -	- - - - ->
Subtask D: Market Transformation Web site		—————				—————>
Subtask E: Promoting Advanced Products		—————				
Subtask F: Engaging Industry					—————	—————>
Subtasks G: (...X, Y, Z): Additional Subtasks (to be confirmed)					- - - - -	- - - - ->

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# Task VIII: Demand Side Bidding in a Competitive Electricity Market

Operating Agent: Ms. Linda Hull, EA Technology, United Kingdom

## Objectives

Task VIII of the IEA Demand-Side Management Programme – “Demand-Side Bidding in a Competitive Electricity Market” arose from a desire to identify which types of DSB are successful or unsuccessful, and to find ways of making schemes more successful. The project, which was completed in May 2003, focussed on the way electricity is traded, the opinions of market participants towards DSB, and the opportunities for DSB schemes within electricity markets.

The project consisted of three stages, each examining a different aspect of DSB. In Stage 1, the focus was on gathering information about current DSB schemes, and the views towards and experiences with these schemes. The findings showed that a wide range of DSB schemes was available, but with the vast majority targeted at large consumers. The opportunities for consumers became the main focus of Stage 2 of the project, which gathered information about the electrical loads available for DSB, the incentives needed to make participation in DSB attractive, and the technologies required to implement DSB. The emphasis of the final stage of the project, Stage 3, was the technical rules associated with the provision of DSB products. The project culminated in the production of a “Practical Guide to DSB”, incorporating a step by step process for the implementation of DSB.

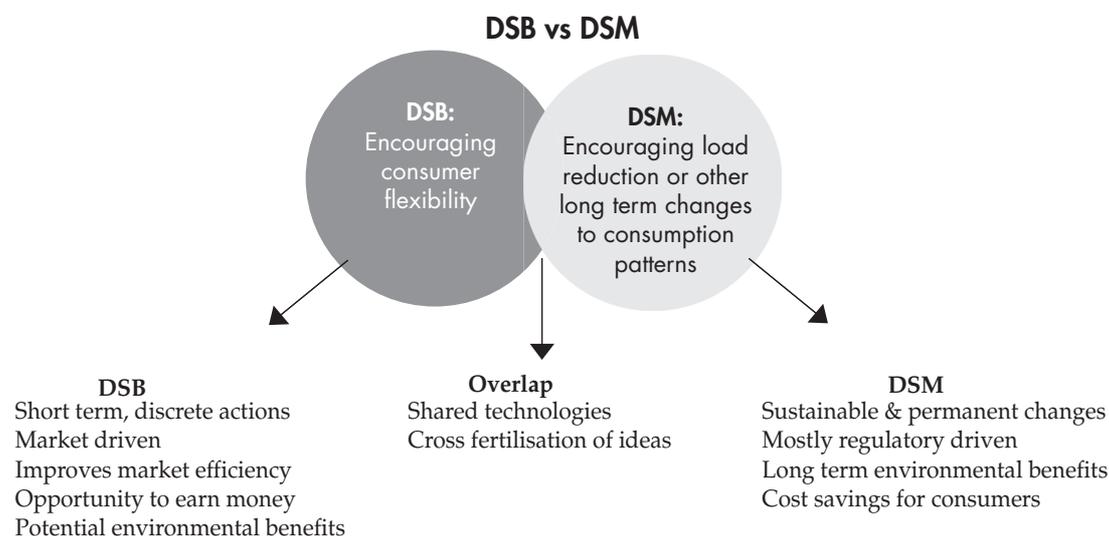
## Progress

Demand-Side Bidding (DSB) is a mechanism that encourages consumers to offer to undertake changes to their usual pattern of consumption in return for financial reward. The financial reward can be in the form of reduced electricity prices, or via a direct payment for electricity they have ‘not consumed’, or even an availability payment for the promise of being available to make a consumption change at an agreed time. DSB has become an important feature of many markets, and has the potential to grow in importance, as its operation becomes more fully understood.

Although DSB is often thought of purely as a mechanism by which consumers can earn money, it may also play an important role in terms of energy efficiency. For example, load reductions by consumers can displace the use of fossil fuel generation for maintaining the quality of electricity supply or for balancing. Alternatively, DSB can have an important role to play where demand exceeds capacity or when network constraints occur for only a very limited length of time. In such cases, it may be more appropriate to seek short term demand reductions from consumers in place of additional generation capacity or network reinforcement.

The Task has provided both an overview of the current status of Demand-Side Bidding and practical advice on how to implement DSB. However, DSB, like competitive electricity markets themselves, is an area that is constantly evolving and many changes can be expected over the coming years.

DSB is closely related to, but very different from, Demand Side Management (DSM) – the main difference arising from the impact the two have on the demand profile of consumers.

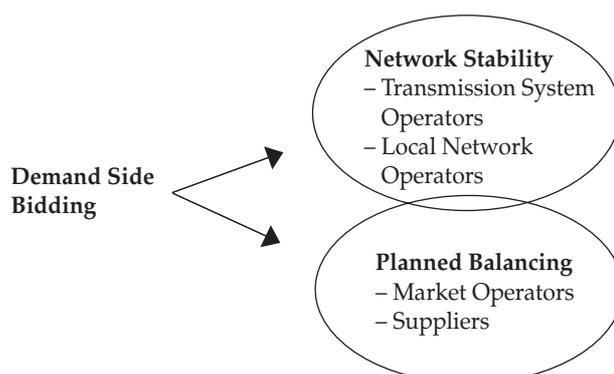


## The role of DSB in market mechanisms

There must be a balance between supply and demand of electricity at all times (i.e. on a second-by-second basis). However, for practical purposes electricity is not traded on a second-by-second basis, but rather trades are settled over a longer time interval – typically half hourly or hourly – depending upon the market regulations in force. Market participants, such as Suppliers and Generators, are given the responsibility of balancing supply and demand over these trading periods or otherwise face financial penalties.

Thus there are two types of balancing action required:

- those undertaken to maintain balance in real-time to prevent system imbalance and ultimately network failure (Network Stability); and
- those undertaken to balance supply and demand over a trading period for the purpose of avoiding imbalance charges (Planned Balancing).



DSB can be used for both of these purposes.

## Network Stability

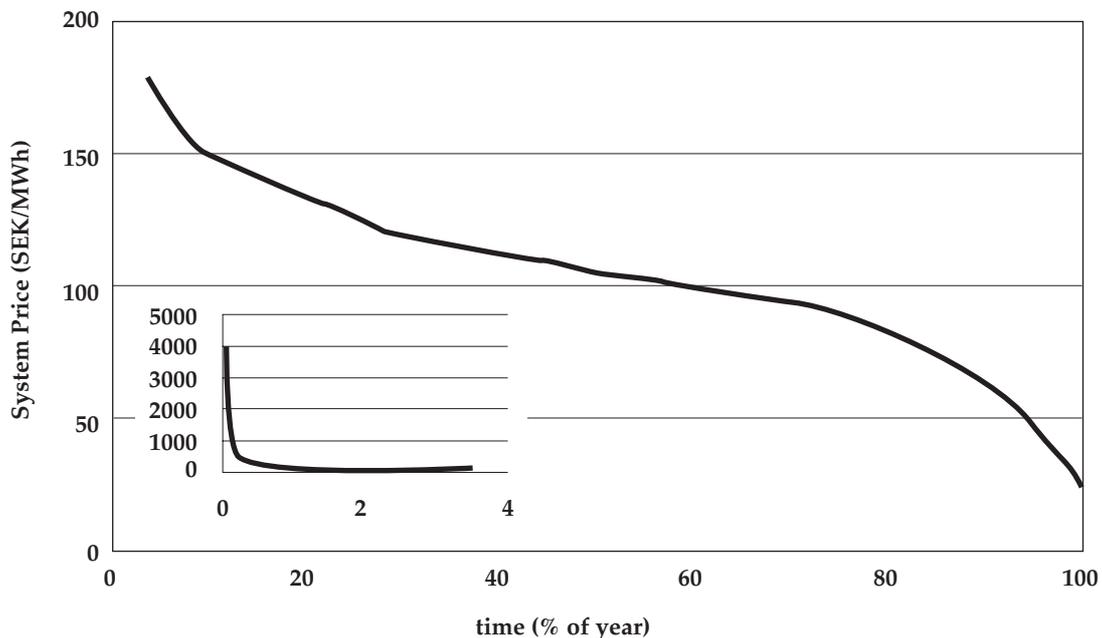
For example, a very successful area of DSB in the UK is frequency response. In an emergency – such as the loss of a large generator – the system frequency can fall dramatically from its normal value. It is the job of the Transmission System Operator to correct this and return the system frequency to normal within a specified period. Normally this is achieved by having reserve generators in a state of readiness. However, consumers capable of instantaneous shutdown can also provide the same frequency correction. In the UK, a Demand-Side aggregator (Gaz de France) is currently offering an instantaneous load reduction of 110MW, aggregated across thirteen cement production sites. The crushing and milling processes at cement works are ideal for frequency response – consuming large, predictable and steady loads, which can be easily interrupted and restarted.

## The role of aggregator and service providers

Usually DSB is far removed from the day-to-day priorities of consumers, the very people who DSB is aimed at. Consequently DSB can easily be seen as an unwanted distraction. Often, as in the case of the cement industry discussed above, the role of an Aggregator or Service Provider is crucial in providing the necessary impetus to make DSB happen. The Aggregator may be an independent company or an Electricity Supply Company. In either case, it is he who brings together knowledge of electricity markets, an understanding of the processes of the end consumers of electricity, and the expertise to implement the necessary control, monitoring and communications technologies.

## Planned Balancing

Most successful DSB schemes to date have been used to cope with abnormal or unusual situations, as in the Network Stability example described above. Similarly, the successful Planned Balancing examples have tended to be where price spikes occur just occasionally, for example, in generation limited networks. Here very high prices can occur for a relatively few hours per year and demand response is desirable to reduce prices and ensure a secure system.



## **Annual variation in System Price (Sweden)**

In this Nordic example, investigation is currently under way as to whether it is feasible to group together a large number of small consumers to provide a cost effective solution. From a market perspective, the problem is one for the suppliers. However, in practical terms the Network Operator may be best placed to solve the metering and settlement issues that arise – though it is worth noting that, at least in the case of Sweden, a target date of 2008 has been set to put the market mechanisms in place for this to be undertaken by the suppliers.

## **Activities completed in 2003**

- The Task Experts produced a National Report on the market structure in their own country and provided detailed information on how the areas of network stability and planned balancing are addressed. This information will make it possible for readers to better understand how specific DSB products are used in the participating countries.
- The results and findings of the three stages of Task VIII were used to produce the final output of Task VIII – A Practical Guide to DSB. The Guide falls into two sections. The first provides background information about the concept of DSB and why it is important in the operation of competitive electricity markets. This includes a number of important definitions and a discussion of the drivers for DSB. The second section then presents a step-by-step guide to the implementation of DSB, covering such issues as: understanding the needs of the DSB buyer; the suitability of consumers to meet these needs; the control, monitoring and communication technologies required; and how to make a business case for each participant. Each step is illustrated by worked examples. Further examples are included at the end of the Guide to provide a wide coverage of DSB applications. Examples cover both Network Stability and Planned Balancing.

## **Activities planned for 2004**

- None

## **Involvement of industry and other organisations**

The collection of information for the survey of technical rules has relied upon the involvement of several organisations within the participating countries. Much of the work has been carried out through detailed dialogue with system operators and market operators who provided the detailed information on the technical rules governing the environment within which DSB products must operate.

## **Reports**

### **Reports produced in 2003**

Technical requirements for DSB: National Reports for Finland, Greece, Netherlands, Norway, Spain, Sweden and the UK

A practical guide to Demand Side Bidding

## Reports planned for 2004

None

## Meeting Schedule

### Meetings held in 2003

6 March, Chester, UK

### Meetings planned for 2004

None

## Activity Time Schedule

Task VIII was entered into force in January 1999 and remained active until May 2003.

Activity	Start	Finish	1999	2000	2001	2002	2003
<i>Stage 1</i>							
<i>Subtask 1</i>	Jan 1999	Mar 1999	—				
<i>Subtask 2</i>	Mar 1999	Dec 2001	—	—	—		
<i>Stage 2</i>							
<i>Subtask 3</i>	Feb 2000	Nov 2002		—	—	—	
<i>Subtask 4</i>	May 2000	Oct 2001		—	—		
<i>Subtask 5</i>	<i>May 2000</i>	<i>Jan 2003</i>		—	—	—	
<i>Stage 3</i>							
<i>Subtask 6</i>	<i>Nov 2001</i>	<i>Mar 2002</i>			—		
<i>Subtask 7</i>	<i>Apr 2002</i>	<i>Feb 2003</i>				—	
<i>Subtask 8</i>	<i>Dec 2002</i>	<i>May 2003</i>					—

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# Task IX: Municipalities and Energy Efficiency in a Liberalised System

**Operating Agent: Martin Cahn, Energie-Cités, France.**

## Objectives

Local authorities have a key role in promoting energy efficiency. This applies in particular in their own stock of buildings and equipment which provides approximately 2–4 per cent of energy demand, depending on the country. Certain activities have a significant demand and at the same time provide major opportunities for improved efficiency.

Energy efficiency activity has been identified as one of the main potential casualties of market liberalisation and this is felt to be a key problem by local authorities and others. There is a tendency for energy producers, traders and distributors to concentrate into large conglomerates which compete with traditional local authority utilities. While profitable energy efficiency activity is integrated into the services offered, there is a retreat from promoting energy efficiency to the small consumer which is less profitable in the short term. This makes the public service roles, including energy efficiency activity, more difficult to maintain.

The Task's main role is to investigate energy efficiency activity by local authorities in markets affected by liberalisation to:

- discover how those impacts of liberalisation discouraging energy efficiency activity can be circumvented,
- recommend how the action of local authorities in this field can be made more effective and
- disseminate this information to local authorities and those arms of government responsible for supervising municipal activity in this field.

The people involved in the project are of two types. Firstly there are representatives of participant local authorities – normally two per country, that act as a source of information on the local authority context and the practicability of proposed solutions – effectively a sounding board for consultation. Secondly there is a consultant input from each country, the experts who will actually prepare the project reports, that will gather together information and prepare each country's input to reports. Local authorities themselves are not generally fulfilling this role, however in Spain a local authority agency is the consultant. In addition to the operating agent, some of the organisations representing the participant countries on the Executive Committee are also directly involved.

## Progress

Action by municipalities is critically dependent on the powers and responsibilities given to them by the legal framework in their country.

The Task is looking at responsibilities under all local authority roles, as an energy consumer, as an energy producer or distributor, as a regulator and planner and as an awareness raiser. It is identifying how local authority action to fulfil them can promote energy efficiency and will propose management and administrative mechanisms to improve the response to the challenge of liberalisation. The areas where action to reduce the demand for energy is most likely to be significant lie in their roles as an energy consumer and as an awareness raiser.

The Task has been designed as a partnership in which the participants each carry out studies of the same issues in parallel to enable lessons on good practice to be exchanged. Therefore it is vital that the programme proceeds with all the partners at the same stage and at the same time. However that the fact that the United Kingdom and USA were not participating was a distinct handicap and it decided to organise short visits to these two countries to analyse the situation on the ground.

The Task is proceeding through seven sub-tasks. These include:

- Sub-task 1) A launch meeting to bring the partners together and discuss the framework of the project,
- Sub-Task 2–3) Studies of the roles of municipalities in the partner countries and the impacts of liberalisation on them,
- Sub-Task 4) Detailed case studies of best practice in the participant countries and others
- Sub-Task 5) Evaluation of these to prepare recommendations for governments.
- Sub Task 6) Preparation of an Action Guide and Web Site
- Sub Task 7) A dissemination phase to ensure that the conclusions reach their intended targets.

The project will produce five reports and a regular task newsletter.

The first two reports, analyses of municipal roles and the impacts of liberalisation in France and the Netherlands have been made and the reports have been published and are available from the Operating Agent.

Drafts have been prepared of the next two reports, the case studies and guidelines for local authorities, and the latter are forming the framework for “report” No 5, the MEELS web site, which is currently under construction and will be hosted on the Energie-Cités web site.

The case studies have been prepared by four of the participant countries. Further funding has not been forthcoming from ICAEN, the Spanish funding body after the first year and so the Spanish expert has not been able to continue his work. However the remaining four partners have each contributed case studies from their country, and additional examples have also been found from German and French speaking countries. The Operating Agent has supplemented these with examples from other liberalised countries. In total 32 case studies have been prepared from the following countries: Austria (3), Belgium (1), Canada(1), Finland (1), France(2), Germany(4), Sweden (5), Switzerland(3), The Netherlands (4), United Kingdom(5) and United States of America(3).

These case studies cover a wide variety of issues related to the main roles of local authorities. Particular attention has been given to the lessons for local authorities and Government policy makers from these examples. While no example can be directly

transferred to another national administrative context, the broad principles can be adapted and therefore particular attention has been given to outlining the broad ideas behind the approach adopted and identifying the key factors for success.

The guidelines are structured according to the principle responsibilities of local government and take the form of a series of questions posed to local authorities, a brief discussion of the issues, and reference to particular case studies that may offer some answers. Many case studies are relevant to several questions and respond to several local authority roles. In the web site form direct links are inserted to the relevant case studies plus others from Energie-Cités' database.

A number of significant cross transfers are identified. There seems particular opportunity to develop the following types of responses:

**Purchasing:** developing collaborative purchasing structures or selling structures to obtain or offer the benefits of power quality (green or from efficient generation plant) and competitive prices for local authorities themselves (via consortia) or for their residents (via aggregation or special sales programmes),

**Energy Services:** Developing the economies of scale in purchasing energy performance contracting either for one's own authority or for the community, with the help of an intermediate structure

**Using the concession:** The concession agreement or a call for tenders for new energy delivery infrastructure are tools via which the local authority could in principle deliver a large range of energy efficiency benefits. Few do this yet so it is a tool worth developing.

**Setting up distribution networks:** This continues to be an important local authority role, especially for heat. There is a trend now to smaller networks with the development of smaller cogeneration plant. These are starting to include parallel heat and electricity distribution systems, competing with the public distribution network. In the case of small scale local electricity distribution networks, there may be a case to be discussed for loosening monopoly control and allowing local level competition as a means of promoting decentralised generation.

**Effective energy planning:** A liberalised market puts more pressure on the local authority to coordinate, no longer hampered by a too direct involvement itself in energy delivery which can affect its freedom of action on policy. This is a key regulatory role of local authorities seen in all the most advanced local authorities.

**Mini-production and trading:** The size of economic cogeneration units is rapidly declining and plant as small as 5kWe are now available and economic in the right circumstances. Many local authorities are now installing such plant in public buildings including housing, and are then either using it themselves or reselling direct to tenants. In the UK this can be done via private wire systems, but in other countries this is precluded by restrictive legislation and has to take place via the public network that can limit the advantage of distributed generation.

**Restructuring the local authority:** local authorities have responded to liberalisation by separating their municipal enterprises from the management function of plant, so ensuring that the local authority, as client, has an interest in the efficiency of its stock of equipment and buildings. This has produced dramatic improvements in efficiency.

**Delivering energy efficiency to the end consumer:** Public goods benefits are usually administered by the utilities that collect them, but in each country where this occurred there were reservations about the effectiveness of this approach. Local authorities have proved effective in delivering these funds, either directly or via semi independent structures at local level sometimes in collaboration with the utilities.

## **Activities completed in 2003**

Expert meetings were held in Stockholm in March 2003 and Amsterdam in September 2003. A meeting had been planned in Graz Austria in June 2003 but had to be cancelled and replaced by a telephone conference since no free accommodation could be found (Graz was European City of Culture in 2003). These allowed the case studies prepared by the partners to be coordinated. The case studies were completed by October 2003 and were reviewed and prepared for publication in draft form for the final meeting in January 2004. A newsletter is currently in press and another is planned for the final meeting. In the light of the final list of case studies, the guidelines, prepared in Summer 2003, were reviewed.

The web site is currently under construction at the time of going to press and should be complete by the end of December 2003.

## **Activities planned for 2004**

A final meeting of the Task will be held in Dunkerque in January 2004 in which the best practice will be presented and the guidelines presented. The case studies and guidelines will then need to proceed through the report approval process before printing and publication. The reports will be disseminated via the participants and directly by the Operating Agent. A final version of the newsletter and the web site will disseminate information about the project.

## **Involvement of industry and other organisations**

The main organisations that are participating in this project are local authorities in the participant countries. Two French local authorities and one French association of local authorities, three Dutch local authorities and one Swedish local authority are participating. In Austria the consultant expert works for a city energy agency and liaises with four other municipalities or municipal utilities. One of the French authorities is hosting the final meeting.

## **Reports**

### **Reports produced in 2003**

Report 1 on the Impact of liberalisation on local authorities and Report 2 on the Roles of local authorities in the participant countries were finally printed in 2003 and are available from the Operating Agent.

Minutes were prepared of the California Visit and these are available on the MEELS web site.

## Reports planned for 2004

Report 3 on Case studies of Best Practice on local authority responses to liberalisation and Report 4 Guidelines for local authorities in responding to liberalisation of the energy markets are in the final stages of editing and layout and will be published early in 2004. Draft versions will be ready for confirmation at the final meeting.

Report 5, the MEELS web site, will be ready before the final meeting in January 2004.

## Meeting Schedule

### Meetings held in 2003

3–4 March, Stockholm, Sweden

30 June, Teleconference

29 September, Utrecht, The Netherlands

### Meetings planned for 2004

January, Dunkerque, France

Activity time Schedule

The Task began on 1 January 2000 and will be completed end of January 2004.

## Activity Time Schedule

Activity	Start	Completion	2000	2001	2002	2003	2004
1 A. Launch Seminar	01 05 2000	31 08 2000	—				
B. Survey of municipal roles	01 08 2000	31 10 2002	—	—	—		
C. Survey of context of Liberalisation	01 08 2000	31 10 2002	—	—	—		
2 D. Best Practice Studies	01 10 2002	20 01 2004				—	—
3 E. Evaluation							
Analysis of Municipal Roles and Projects	01 02 2003	31 08 2003				—	
Prepare Recommendations	01 06 2003	31 08 2003				—	
4 F. Prepare Action Guide	01 06 2003	31 12 2003				—	
G. Final Seminar Disseminate reports	01 05 2003	30 04 2004				—	—

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# Task X: Performance Contracting

**Operating Agent: Dr. Hans Westling, Promandat AB, Sweden**

## Objectives

The overall objective of Task X is to facilitate the greater use of Energy Performance Contracting (EPC) and other Energy Service Company (ESCO) financial options and services. It is a business-to-business Task, limited to efforts involving the performance contracting arrangements and other ESCO-related financial options and services between client, businesses and all types of companies offering these services. In other words, it is a mechanism introducing “payment in relation to performance”.

## The Task will:

- Promote an understanding of the benefits of performance contracting and other ESCO financial options and services and the potential contribution of these financial options and services to promoting energy efficiency and mitigating global climate change.
- Identify the market potential in countries for which no mature performance contracting industry currently exists.
- Identify and share information concerning potential problems and solutions associated with implementing performance contracting and other ESCO financial options and services.

## Progress

Energy performance contracting (EPC) is a wide variety of mechanisms, which, by rationally using the knowledge of energy professionals, opens up opportunities for building owners to install more energy-efficient equipment and systems in their buildings without tying up their own capital. Projects performed give examples of energy savings in buildings by 20 to 40 per cent even if some of the savings could be reached also with other energy-efficiency activities. Estimates indicate that the market in some countries could be up to ten times larger than at present. Greater use of these mechanisms could substantially contribute to lowering emissions of greenhouse gases and reducing the risks of a climate change. EPC includes financing alternatives to lower the financial burden for the building owner and, at the same time, reduce the yearly operational costs for energy (alternatively giving more services at the same cost, or using more environment-friendly sources within the same cost). Better performance is guaranteed by the contractor – the energy service company (ESCO).

Different problems and barriers have however slowed down introduction and diffusion of the EPC concept. ESCOs have met hesitation from prospective clients, and policy makers have been slow in launching EPC marketing programmes. The objectives of this collaborative Task are to facilitate larger use of performance contracts between professional building owners and all types of companies offering these services, and to enlarge the EPC market.

Task X was originally planned for a period of two years, from 1 December 2000 to 31 December 2002.

At the end of January 2003, an Experts Meeting and Workshop was held in Stockholm, Sweden. The primary purpose of this meeting was to discuss the need for further activities in the EPC area through an extension of Task X and to penetrate the draft new Subtask Work Plan drawn up by the Operating Agent. Finalising the original Task work, including the Task X Summary Report, was also an item on the agenda. At this meeting, representatives of the then participating eight countries as well as observers from Austria and the Czech Republic were present. An extension of the Task was later approved by the Executive Committee Meeting in April 2003, and work will now continue up to 31 March 2004.

The Task was initially divided into four Subtasks: A-D. With the extension of the Task, one more Subtask has been added: E.

- Subtask A – Initial Workshop
- Subtask B – Country Reports
- Subtask C – Interactive Workshop comparing Country Reports and Ideas
- Subtask D – Country Plans and Lessons Learned
- Subtask E – Follow-up of Country Actions for Market Acceleration

In 2003, eight countries have participated in the Task activities: Austria, Finland, Greece, Italy, Japan, The Netherlands, Sweden and United States. Formal confirmation has not been received from some countries. Some other countries, for example Canada, Czech Republic and Germany, have shown interest in the work and have participated at meetings as observers.

Three experts meetings/workshops have been held during the year: in Stockholm, Sweden, in January; in Milan, Italy, in May; and in Graz, Austria, in October. The topics of the workshops have been: EPC Project Initiation; EPC Process and Procurement Guidelines; EPC and Government Policy; and EPC and General Refurbishment Projects. In connection with these meetings/workshops, specific workshops directed to a national audience have also been held.

Final versions of the Country Reports were submitted early in 2003 and were uploaded to the Task web site. In the Country Reports, the countries have identified needs and barriers for introduction and/or further expansion of EPC arrangements. The specific energy situation and earlier use of EPC or Third Party Financing (TPF) have been described. About 25 case studies have been reported and lessons learned formulated. In discussions at experts meetings, the reports have been compared and important areas for further clarification and preliminary concrete actions have been agreed upon.

The most interesting findings of the Country Reports had been summarised by the Operating Agent in several drafts of the Task X Summary Report and had been discussed at experts meetings. The final version of the Summary Report was approved in Executive Committee ballot during the spring of 2003. It was then published as a web report on the Task web site, and later during the year as a printed report. In the report, problems and barriers, but also many good examples and large opportunities, have been identified. Different financial solutions have been presented and suggestions of a number of concrete actions have been given in order to facilitate larger use of EPC and

related mechanisms. The most important actions are: raising the general credibility of EPC through aimed information, demonstration projects, accreditation of ESCOs, special performance guarantees and process and procurement guidelines. These actions will enlarge the market for all stakeholders working within this area, and EPC will offer an interesting alternative for building owners.

A Final Management Report for the first two years of the Task (i.e. the originally planned duration of the Task) has been drawn up during the year by the Operating Agent. It gives a summary of the work and accomplishments of the Task so far and also an overview of the Country Plans/Tool Boxes for National Activities.

The Task work has been widely spread during the year through paper presentations at several international conferences and national meetings.

The Country Reports, the Summary Report, the Final Management Report and conference presentations are available at the public "Library" section of the Task X web site: <http://dsm.iea.org/NewDSM/Work/Tasks/10/task10.asp>

## Activities completed in 2003

- Final versions of all Country Reports published and uploaded to the Task web site.
- The final version of the Summary Report published as a web report on the Task web site and as a printed report.
- A Final Management Report for 2001–2002 drawn up and published at the Task web site.
- A summary and overview of the Country Plans/Tool Boxes for National Activities included in the Final Management Report.
- Three experts meetings/workshops held: in Stockholm, Sweden, in January; in Milan, Italy, in May; and in Graz, Austria, in October.
- An international workshop on Performance Contracting held in Stockholm, Sweden, in January in connection with the experts meeting.
- The Thermoprofit Workshop "Energy Performance Contracting – International Experiences and Perspectives for Austria" held in Graz, Austria, in October in connection with the experts meeting.
- Continued spreading of the experience of the Task through participation with presentations at suitable international conferences.
- Participation in the "First European Conference on Energy Services Companies (ESCOs): Creating the Market for the ESCO Industry in Europe", in Milan, Italy, in May.
- Paper presentation about the Task by the Operating Agent at the "ecee 2003 Summer Study" in Southern France in June.
- Presentation of the Task work at different national conferences and seminars, e.g. with a paper by the Operating Agent at the "Energitinget" (Energy Assize) in Eskilstuna, Sweden, in March.
- Article on Task X drawn up by the Operating Agent for the Energy Efficiency Colloquium of the FFU and ESSH publication.
- Paper by the Operating Agent accepted for presentation at the CIB International Symposium in India in January 2004.

## **Activities planned for 2004**

- Drawing up of Country Reports including National Activities by Austria and Greece (the new Task X participating countries).
- Investigating the conditions for the Czech Republic joining Task X.
- Preparation of a draft summary of the discussions regarding EPC and Refurbishment.
- Preparation for the experts meeting/workshop to be held in Greece in February 2004. The workshop main topics will be: Public Procurement and Government Policy in relation to EPC. Aspects about EPC and Certificate Trading and specific insurance requirements may also be included.
- Preparation of a Final Management Report (FMR) based on the FMR for the first two years and updated with experiences from the new Subtask E.

## **Energy Performance Contracting (EPC) and public procurement regulations**

In Task X it has been found that the public bodies can play a very important role for raising the trust in EPC by introducing EPC projects. Compliance of EPC with the public procurement regulations is therefore an important issue. A legal expert and former World Bank procurement specialist was commissioned to investigate the legal aspects and summarised his findings, which have been included in the Summary Report appendices.

To summarise the findings, competition must be strived for at all stages. Regardless of the form of financing, also arrangements like leasing and other acquisitions come under the rules of public procurement. Consequently, EPC and Third Party Financing (TPF) are subject to the rules of public procurement. The guidelines for the EPC process as well as issues such as procurement; financing, measurement and verification need more and careful preparation on suggestions and are now being treated at experts meetings and workshops. Hopefully, the Task will be able to base its final suggestions on a broader scope of perspectives.

## **Involvement of industry and other organisations**

Most of the Task participating countries have established reference groups in their respective countries and/or have worked together with existing organisations, representing large building owners and ESCOs. In the countries, meetings have been held and material distributed to interested national stakeholders. Since the EPC situation varies very much between the countries, and since there are only very few ESCOs in some of them, various methods have been used to interact with the stakeholders. Some countries have also taken the opportunity to have special presentations to national stakeholders (including ESCOs, utilities, general contractors, equipment manufacturers and building owners) in connection with Task X experts meetings. Organisations for ESCOs, which have existed in the United States for many years, have also been introduced in Japan some years ago. It has been proposed to set up similar organisations in Europe.

## Reports

### Reports produced in 2003

- Final Country Reports
- Final Summary Report
- Final Management Report for 2001–2002

### Reports planned for 2004

- Country Reports from Austria and Greece
- Final Management Report including 2003

## Meeting Schedule

### Meetings held in 2003

30–31 January, Stockholm, Sweden

20–21 May, Milan, Italy

23–24 October, Graz, Austria

### Meetings planned for 2004

18–20 February, Athens, Greece

## Activity Time Schedule

The first part of Task X came into force on 1 December 2000 and was completed on 31 December 2002. The Task was extended by the addition of a new Subtask, which will be ended on 31 March 2004.

Activity Time Schedule	2000	2001	2002	2003	2004
Subtask A: Initial Workshop	—				
Subtask B: Country Reports		—	—	—	
Subtask C: Interactive Workshop comparing Country Reports and Ideas		—			
Subtask D: Country Plans			—		
Subtask E: Country Actions				—	—

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

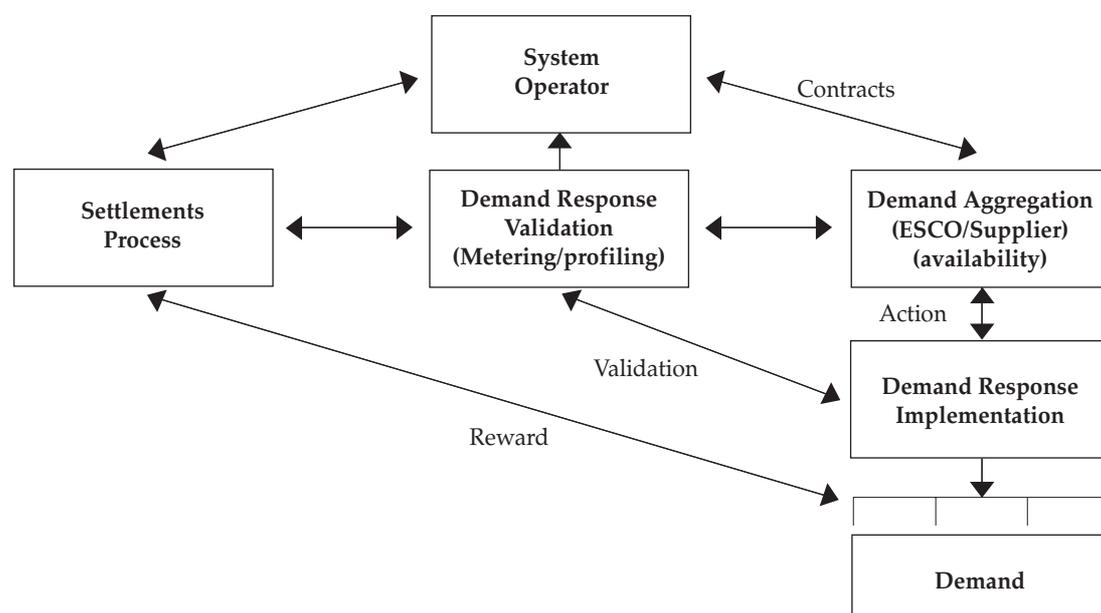
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## Objectives

The overall objective of Task XI is to increase the motivation of smaller customers to modify their energy demand and to provide mechanisms for their participation in the demand side of competitive energy markets.

In order to achieve this objective, Task XI will quantify and develop mechanisms and technologies to motivate smaller customer, energy and profile shape change through the feedback of information and by enabling their participation in the demand side of energy markets. An illustration of a process is shown in Figure 1. The specific issues which will be addressed are to define the technical, system and customer requirements for bidding the aggregated demand and distributed generation of smaller customers into energy markets. Mechanisms for validation and reward processes will be investigated, as will processes for demand aggregation and implementing demand changes. The “dynamic” demand profiles generated by DSB implementation will influence “profile” settlements systems now in place in most competitive markets involving residential and small commercial/industrial customers. Time of use metering will be considered as a possible mechanism for Demand Side Bidding (DSB) validation. Task XI will quantify the costs and benefits of time of use pricing and end use monitoring of energy for small customers. The value of and implementation methods for providing end use energy data monitoring and feedback to customers to achieve DSM benefits will be quantified. The Task will also quantify what time of use and end use pricing and metering for smaller customers has been implemented and results achieved to date in different countries;

## Outline of DSB and DR systems



## Activities planned for 2004

The intention is to complete the project by January 2005.

## Reports

### Reports planned for 2004:

- Report to quantify the impact on energy saving and DSM processes of end use metering and feedback for smaller customers.
- Report to quantify the benefits of time of use pricing and their impact on demand response for smaller customers.
- Report to quantify the pricing, control and validation requirements and mechanisms to facilitate DSB for smaller customers.

## Meeting Schedule

### Meetings planned for 2004:

Not yet determined.

## Activity Time Schedule

Task XI was entered into force in October 2003 and is expected to start on 1 January and shall remain active until December 2004.

Activity Time Schedule		
<b>Subtask 1:</b> Quantify the Impact on Energy Saving and DSM processes of End Use Metering and Feedback for Smaller Customers	1 January–30 June 2004	2004 
<b>Subtask 2:</b> Quantify the Benefits of Time of Use Pricing and their Impact on Demand Response for Smaller Customers	1 January–30 July 2004	
<b>Subtask 3:</b> Quantify the pricing, control and validation requirements and mechanisms to facilitate Demand Side Bidding for smaller customers	1 February–31 December 2004	

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