

DSM Spotlight

The Newsletter of the International Energy Agency Demand-Side Management Programme November 2002



Programme Achievements

Every five years, the IEA DSM Programme evaluates its work and assesses its impact. This Programme, as with other IEA Programmes, derives its success from strong international collaboration among its 17 member countries. As illustrated by the current results below, the Programme's work to clarify and promote opportunities for demand-side management has benefited those working internationally as well as nationally.

Communications Technologies for Demand-Side Management

- Defined *energy related services* that can be made viable through the provision of cost effective communications. These services range from micro generation management to feedback of end-use energy consumption.
- Developed a *business architecture* that demonstrates the route for ESCOs to deliver services cost effectively.
- Developed the FlexGate, a *communication gateway*, that overcomes many of the difficulties of providing wide-ranging services.
- Defined *field trials* of energy related services, and the next step is to implement these field trials to demonstrate the services and prime market for wide-scale service delivery.

Demand Side Bidding in a Competitive Electricity Market

- Significantly *improved the understanding* of demand bidding and its challenges to power pools.
- Contributed to the *consideration of demand side bidding* as an ESCO operation.

International Collaboration on Market Transformation

- Developed an *international market transformation*

policy approach that is leading to shared policy development across the European Union.

- Conducted *international market research* in six countries. The research is the first of its kind in the energy efficiency marketplace, and has provided a tool to engage industry in marketing and promoting energy efficient products.
- Held several *workshops* to promote a new approach to brand and market energy efficiency.

International Data Base on Demand-Side Management Technologies and Programmes

- Developed, tested and improved an efficient *data collection instrument* for energy efficiency and DSM programs. This web-based database, available in several languages, is for organizations to use to gather data and thus reduce their cost of data collection.
- Conducted an *international analysis* on groups of programs in the database, including market transformation, lighting and communication. This data is used by countries for program development and evaluation.

The Role of Municipalities in a Liberalized System

- Promoted the idea of *cooperation* between local authorities in liberalized energy markets and the development of the *market power of customers*.

More information and reports on these areas of work can be found on the IEA DSM Programme website, dsm.iea.org.

COUNTRIES PARTICIPATING IN THE IEA DSM PROGRAMME

Australia

Austria

Belgium

Canada

Denmark

European Commission

Finland

France

Greece

Italy

Japan

Korea

Netherlands

Norway

Spain

Sweden

United Kingdom

United States

A New Programme Strategy

The IEA DSM Programme has always worked to keep pace with technological developments and issues that are of concern to those working to optimize energy systems. And, the Programme's Strategic Plan is a dynamic tool that helps keep this moving target in sight. In early 2003, the Programme will once again revise its Strategic Plan to reflect the changes occurring in demand-side management. Some of the key factors that are being considered are:

- The political pressures to address climate issues by testing all possible ways of enhancing Energy Efficiency. The EC work on an Energy Demand directive is one example of this.
- The ongoing process of liberalization, which is providing new instruments for DSM while making others obsolete.
- The development of new technology, which is providing new resources for the work. The IT (Information Technology) industry, for example has developed quite a few new technologies.
- The establishment of policies and measures, which are improving the cost and performance of technologies.
- The need to find a demand response process that deals with system reliability and security in a more predictable way and prevents power blackouts such as those experienced recently in parts of the world.

The DSM Programme recognizes that the need for dealing with the effects of energy demand remains, but that a more organised way to deliver these opportunities is required. The Programme also acknowledges that DSM as a concept has changed, and therefore, the scope of the Programme needs to be re-evaluated and possibly its focus changed towards the direction of **Energy Demand and Systems Management**.

INDEEP Database

The comprehensive international database on DSM programs created by DSM Programme experts will soon be available to all on the DSM web site. This database is a compilation of over 220 DSM programs in 15 countries. The programs range from occupancy sensors in schools to commercial and industrial lighting rebate programs to household consumer behavior campaigns and energy efficiency programs for low-income households.

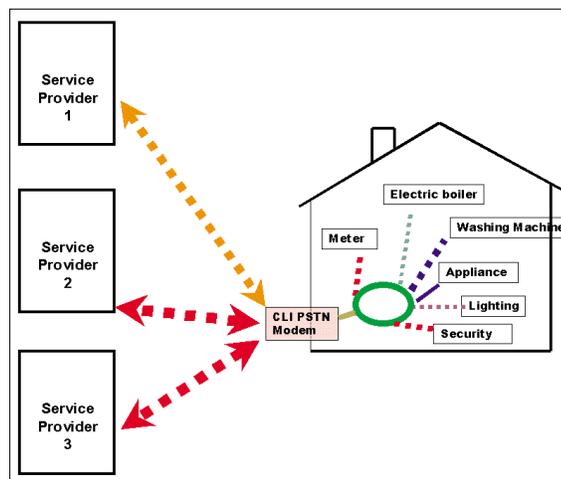
The target audience of this database is utilities, government organizations and private consultants who are designing and evaluating demand-side-management programs. Users will find the information valuable to compare program goals, costs and results as well as to contact others to create their own network of program designers. To increase the accessibility of the data, it is available in six languages—Dutch, English, French, German, Italian and Spanish.

In addition to this database, the two latest INDEEP reports also are available on the DSM web site—*INDEEP Analysis Report 2000* and *Final Report: Developing INDEEP 1994-2000*.

For more information contact the Task I Operating Agent, Harry Vreuls of NOVEM, the Netherlands, e-mail: h.vreuls@novem.nl, fax: +31-46-4528-260, or visit the IEA DSM website.

Field Trials Of Bundled Energy Services

Finland, the Netherlands and the U.K. have defined field trials of bundled energy services for customers that are to be implemented in 2003. The Finish field



trial will primarily provide bundled services to blocks of multi dwelling houses while the trial in the U.K. will target individual houses. The trial in the Netherlands is in concept form at this time. The potential market for such services is large with customer targeted service bundles that include remote energy management, appliance diagnostics, security, micro CHP plant control and metering. The objectives of the field trials include:

- Demonstrate provision of household services through a common communication and business infrastructure
- Determine the costs of delivering services to large populations
- Determine customer reactions to services and identify preferred bundles of services
- Assess the willingness of customers to pay and the amount
- Determine process for collecting money and paying for services
- Prime the market for growth in this area through demonstration.

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

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Performance Contracts

The IEA DSM Programme is adding a unique international dimension to the development of performance contracts and other Energy Service Company (ESCO) contracts. Although the main objective of this work is to facilitate the greater use of such contracts in the participating countries—Finland, France, Italy, Japan, the Netherlands, Norway, Sweden and the United States. The collaborating countries are sharing lessons learned and measures to further develop performance contract mechanisms and are contributing to an expanding international market for performance contracting.

As part of DSM Task X, *Performance Contracting*, each participating country has summarized the present situation in their country and either has identified the lessons learned, if they have a long experience with such contracts, or has identified specific needs and barriers for the introduction and development of such contracts. In addition, each country has suggested actions and prepared a country plan or “toolbox for national activities.” For each country report, three fundamental services were included 1) technical aspects, such as the installation of more effective air distribution systems, boilers and chillers, better control systems, lighting, and HVAC products and services; 2) guarantee of performance; and 3) measuring and monitoring of energy during short or long periods before and after upgrading.

The material collected in the country reports shows a range of services that can be included in Energy Performance Contracts. And, many of the examples show energy savings of 20–40%. A U.S. NAESCO report shows a median savings of 23% of the total electric bills for many of the projects studied.

The advantages of Energy Performance Contracts are numerous. They include:

■ For ESCOs

- Profit
- Growth and diversification
- Synergy with others activities
- Legal incentives

■ For End Users (private and public service organizations, such as banks, shopping and sports centers, and industries)

- Savings
- More rapid implementation

- Transfer of management responsibility to the ESCO
- Better quality and reliability of the service received
- Improvement of indoor conditions
- Updating of plants to the standard
- From an Administrative Viewpoint
 - Provides a single procurement procedure performed against a number of different procurements (e.g., design, installation, fuel supply, management, maintenance)
 - Allows resources for an energy efficiency investment plan to be derived from the ordinary energy budget for costs (which is generally beyond dispute)
 - Simplifies administrative responsibilities by outsourcing energy services and passing on relevant responsibilities to the ESCO
- From a Technical Viewpoint
 - Helps to overcome possible technical/management shortcomings of the Public Administration (e.g., schools, hospitals and office buildings) in the energy field
 - Transfers technical risks relevant to interventions and management of the energy services from the Public Administration (PA) to the ESCO
 - Provides a warranty on the quality of service based on the efficiency conditions the ESCO is bound to offer as part of its services.

Participating Countries

Finland
France
Italy
Japan
Netherlands
Norway
Sweden
United States

Models for Contracts & Financing

Examples with large variations

Contract	Years	Profit Sharing		Financing Responsibility	
		Owner	ESCO	Owner	ESCO
Shared savings First Out	Year 1-4	0%	100%	0%	100%
	Year 5-8	100%	0%		
Shared savings	Year 1-8	50%	50%	0%	100%
	Year 9-	100%	0%		
Guaranteed savings	Variable	80%	20%	100%	0%
	4-15 years	50%	50%		only advice
Mixed	Variable over years and type of project	70% 30%	30% 70%	50%	50%

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Performance Contracts *from page 1*

- From a Financial Viewpoint
 - Overcomes the problem of chronic lack of budget for project financing, which is typical for PAs
 - Allows the PA to route financial resources towards other kinds of investments more relevant to their corporate calling
 - Allows the PA to implement their plan of refurbishment at a lower cost, owing to the stronger bargaining power of ESCOs in the market of energy technologies and products
 - Allows the PA to gain immediate economic savings with respect to the historical costs, against no direct investment
 - Grants the PA the right to take over the energy efficient devices and plants included in the ESCO supply service, upon expiration of the contract

Based on the country reports, a number of actions, such as government policy initiatives, clarifications of the legal framework and information dissemination, have been identified to build trust in Energy Performance Contracts.

The next step in this Task is to discuss procurement guidelines in order to determine how the Energy Performance Contract model can fit into existing public procurement regulations, such as the World Trade Organization Agreement on Government Procurement, the European Procurement Directives or the existing rules in Japan and the United States. All the participating countries see the role of a large government or public organization taking the initiative to further the use of performance contracting arrangements as critical. It is the hope, as the Task X Operating Agent notes, “ that this Task will contribute to

EPC PROCESS – PROBLEMS – ACTIONS – RESULTS



Problems	Short Term Actions	Long Term Results
1. Credibility & Trust	Information SAVE, Best Practice Creation of networks Demo Projects World EPC Conference Success stories	World EPC Network established "ISO 18000" Energy management Accreditation
2. Process & Procurement	Network of skills created Energy Agency, FEMP Clarification of Rules Guidelines Alt. with energy Audits and Feasibility study Two-stage, prequalification Conditional Award of Contract	Different alternatives for initiation of EPC-projects accepted by all stakeholders Both Owner, Energy Agency and EPC-initiated
3. Contracts	Public Property Owners establish national Standards As FEMP, States EC, WTO	A "FIDIC" Energy Perform. Contract Conditions finalised Manuals (web & printed) for EPC-projects generally available
4. Financing	Banks awareness Local government allowed to enter multiyearcontracts EBRB & World Bank National Economic incentives Government guarantees Warranty formulations Insurance arrangements	White and Green Certificates Trading an accepted mechanism for Climate Actions EPC Performance Bonds established
5. Measurement & Verification	Analysis of existing Protocols Pilot Projects Simple benchmark-alternatives Yearly measuring	Simplified benchmarking and repeated measuring routines established
6. Market <i>Only limited in most countries but increased interest</i>	Start of breakthrough for EPC in many OECD countries Public bodies launch EPC comp. – both large projects & parts of smaller	EPC-solutions have penetrated OECD-countries and is increasing in transition & developing countries

major energy savings in buildings, the substantial creation of important new business activities, and a more efficient use of limited investment capital.”

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International Energy Agency Demand-Side Management Programme
Increasing energy efficiency and decreasing consumption through demand management and the Internet (ieadsm.org)

The Internet Energy Efficiency (IEE) The International Energy Agency (IEA) has appointed the International Energy Agency (IEA) Demand-Side Management Programme (DSM) to study and promote opportunities for Demand-Side Management (DSM), including load management and interruptible services. The objective of the DSM Programme is to help the member countries to evaluate energy systems to further more efficient, better saving value to the energy system investment for gas and electricity customers. (here)

<http://dsm.iea.org>

Visit the IEA DSM web site for more information on Programme activities, publications and contact names.

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

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

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