

International Energy Agency

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

2007 annual report



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Demand-Side Management
Technologies and Programmes**

2007 Annual Report

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Executive Secretary
IEA Demand-Side Management Programme

January 2008

Foreword

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

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

Stockholm, January 2008

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

The International Energy Agency

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

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

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

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

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

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

IEA Demand Side Management Programme

The Demand-Side Management (DSM) Programme, which was initiated in 1993, deals with a variety of strategies to reduce energy demand. The following 19 member countries and the European Commission have been working to identify and promote opportunities for DSM:

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

Programme Vision: In order to create more reliable and more sustainable energy systems and markets, demand side measures should be the first considered and actively incorporated into energy policies and business strategies.

Programme Mission: To deliver to our stakeholders useful information and effective guidance for crafting and implementing DSM policies and measures, as well as technologies and applications that facilitate energy system operations or needed market transformations.

The Programme's work is organised into two clusters:

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

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

A total of 18 projects or "Tasks" have been initiated since the beginning of the DSM Programme. The overall program is monitored by an Executive Committee consisting of representatives from each contracting party to the Implementing Agreement. The leadership and management of the individual Tasks are the responsibility of Operating Agents. These Tasks and their respective Operating Agents are:

Task I International Database on Demand-Side Management & Evaluation
Guidebook on the Impact of DSM and EE for Kyoto's GHG Targets – *Completed*
Harry Vreuls, SenterNovem, the Netherlands

Task II Communications Technologies for Demand-Side Management – *Completed*
Richard Formby, EA Technology, United Kingdom

Task III Co-operative Procurement of Innovative Technologies for Demand-Side Management – *Completed*
Hans Westling, Promandat AB, Sweden

Task IV Development of Improved Methods for Integrating Demand-Side Management into Resource Planning – *Completed*
Grayson Heffner, EPRI, United States

Task V Techniques for Implementation of Demand-Side Management Technology in the Marketplace – *Completed*
Juan Comas, FECSA, Spain

Task VI DSM and Energy Efficiency in Changing Electricity Business Environments – *Completed*
David Crossley, Energy Futures, Australia Pty. Ltd., Australia

Task VII International Collaboration on Market Transformation – *Completed*
Verney Ryan, BRE, United Kingdom

Task VIII Demand-Side Bidding in a Competitive Electricity Market – *Completed*
Linda Hull, EA Technology Ltd, United Kingdom

Task IX The Role of Municipalities in a Liberalised System *Completed*
Martin Cahn, Energie Cites, France

Task X Performance Contracting *Completed*
Hans Westling, Promandat AB, Sweden

Task XI Time of Use Pricing and Energy Use for Demand Management Delivery
Richard Formby, EA Technology Ltd, United Kingdom

Task XII Energy Standards
Under development

Task XIII Demand Response Resources *Completed*
Ross Malme, RETX, United States

Task XIV Market Mechanisms for White Certificates Trading *Completed*
Antonio Capozza, CESI, Italy

Task XV Network-Driven DSM
David Crossley, Energy Futures Australia Pty. Ltd, Australia

Task XVI Competitive Energy Services,
Jan W. Bleyl, Graz Energy Agency, Austria and Seppo Silvonen, MOTIVA, Finland.

Task XVII Integration of DSM, Energy Efficiency, Distributed Generation and Renewable Energy Sources
Seppo Kärkkäinen, VTT, Finland

Task XVIII Demand Side Management and Climate Change
David Crossley, Energy Futures Australia Pty. Ltd, Australia

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Also, visit the IEA DSM website: www.ieadsm.org

CHAPTER I

Demand Side Management – A renewed tool for sustainable development in the 21st century

“DSM has developed in response to market liberalization. This development is influenced by the different market and regulatory regimes of different countries. The basic objective remains, to balance energy demand to energy supply thereby enabling the least cost resources, normally on the demand side, being used first.

In parallel with these institutional changes implementation of DSM is evolving in response also to new technological developments and abilities. Information Technology allows faster and smarter computation, smart metering allows more options for customers, miniaturization of technologies allows more distributed resources to be used, etc.

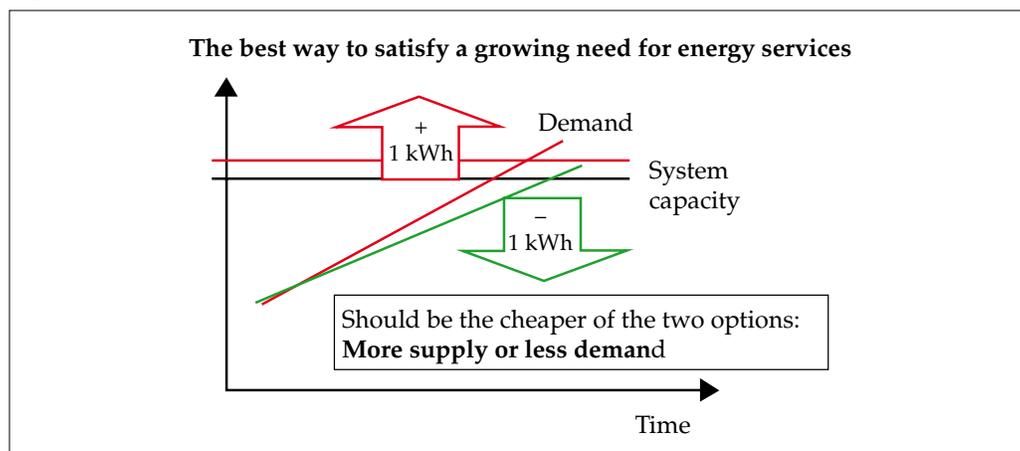
The outcome of this evolved implementation is an evolving objective. DSM nowadays looks at not only least cost in selecting resources, but also at enhanced energy security, improved diversification of resources and on environmental sustainability.”

The 21st century brings with it the imperative to create sustainable energy systems to prevent climate change while at the same time improving the people’s quality of life. These mean that DSM must be re-invented as a tool. In doing so, we will certainly find that the wide application of DSM fosters more efficient and more innovative energy technologies for global markets.

DSM as a Means to Increase Quality of Life

The fundamental DSM concept is based on the fact that the user does not want energy (kWh, BTU gas, etc.), but wants “energy services” (light, heat, etc.). The total use of resources should be efficient and when the service needed can be provided cheaper with more energy efficient equipment then that should be done. This is illustrated in the figure below.

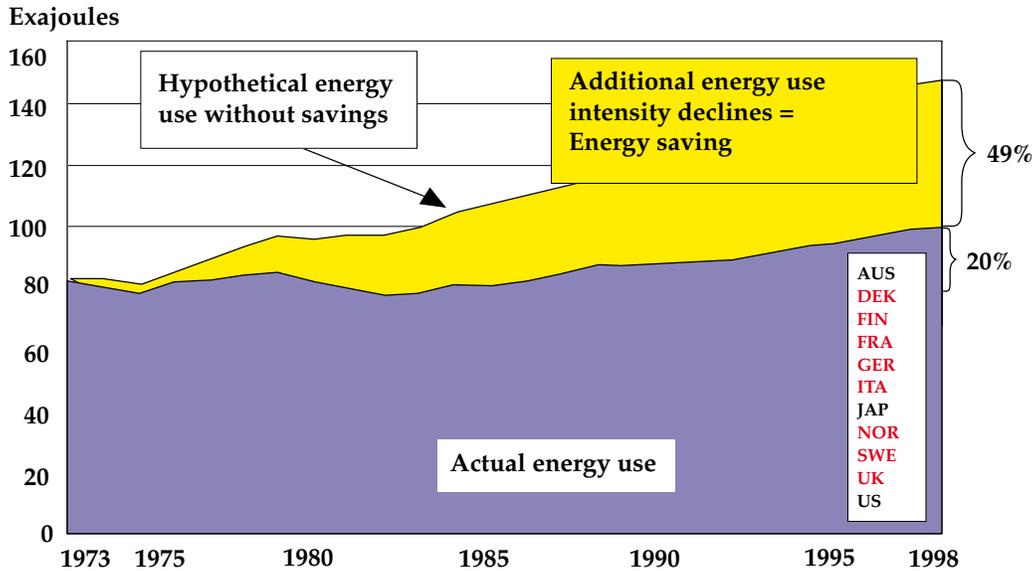
Figure 1.



The resources saved can then be used to improve quality of life. Decisions on such actions can be made using a “least-cost calculation” in which both supply side (energy) and demand side (equipment) are considered. This approach can be achieved through *Integrated Resource Planning (IRP)*.

The IEA has shown that energy efficiency is a bigger component in welfare development than normally recognised. An IEA study shows that if IEA countries kept their energy intensity on the same level today as 30 years ago then they would have used almost 50% more energy today than they actually did. [1] This is illustrated in the figure below.

Figure 2.



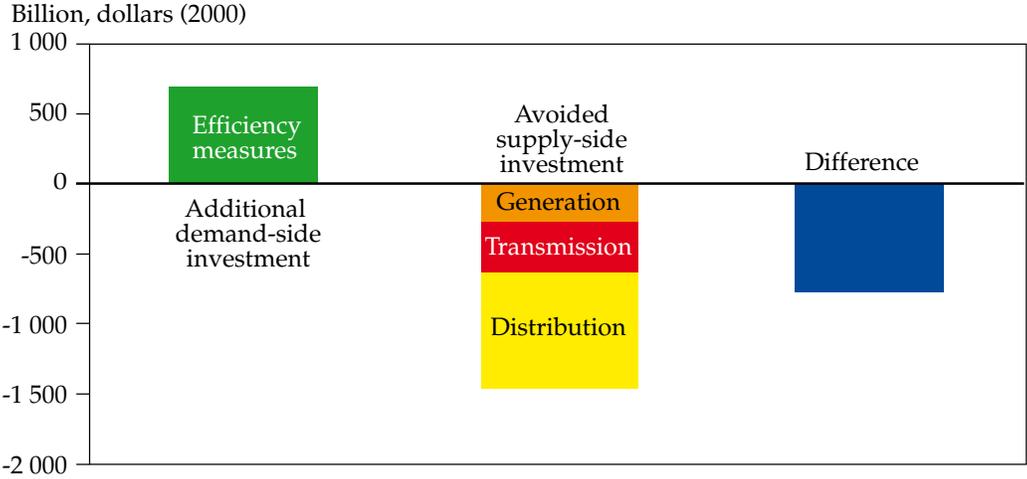
The conclusion is *that the level of consumption we enjoy today depends more on the improvements in energy efficiency than in the growth in energy use*. It would, at least theoretically, have been possible to reduce the energy use without lowering the total amount of welfare in the countries concerned.

DSM is Gaining Ground

In many cases, the attributes of DSM are receiving attention and appreciation. Balancing energy use through the management of its demand has positive impacts on the reliability and the security of systems as well as on price volatility, the environment and climate, the cost of systems, and industrial development.

The IEA calculated in their *World Energy Outlook 2004* a conservative measure of savings in investments for power generation, transmission and distribution during 2003–2030 – approximately 10%, or US\$1 trillion out of a total investment of US\$10 trillion. [2] This is illustrated in the figure below.

Figure 3:



With the new order for markets, the instruments to achieve a change in demand will continue to further develop to meet the new market structures. New technologies are emerging for better communication, miniaturisation of systems (building intelligence into appliances), small-scale renewable supply technologies, and for improving end-use technologies (e.g., LED, heat-pumps, etc.). Business adaptation to handle climate change will probably also motivate new business models to deliver the invisible resource – energy efficiency.

There are many types of measures to manage demand (see Table 1). There are two main approaches: 1) to mandate that something should be done or 2) to make use of the market and the economic instruments. In reality, most measures combine the two approaches.

Table 1. Measures, types and examples of Demand Side Management to improve energy efficiency. Those shaded in grey are more apt to apply to utilities.

APPROACH	TYPE		EXAMPLE
Mandated	Standards		<ul style="list-style-type: none"> Minimum performance (MEPS) Top-runner standard
	"Agreed Actions"		<ul style="list-style-type: none"> Voluntary Agreements Technology Procurements
	Delegated Actions	By actor	<ul style="list-style-type: none"> Regional bodies Municipalities
		By means	<ul style="list-style-type: none"> Commitments Certificates
Market Acceptance	Price-responsive customers		<ul style="list-style-type: none"> Taxes; Tax reduction
			<ul style="list-style-type: none"> Price elasticity (Demand Response)
	Non-price responsive customers	"Commoditising" energy efficiency	<ul style="list-style-type: none"> Energy Services (ESCO) Labels

It would be ideal if all customers were responsive to prices, but since they are not, several instruments have been developed to make energy efficiency more like a commodity. Mandating is typically used to give explicit information or explicit tasks about certain technologies and certain actors who should act. Market acceptance is used when the object can not be easily identified but the performance characteristic can be well defined.

Some mandated actions are being used to enable the customers/user to make a better rational choice. For example, using certificates and commitments to find the least-cost delivery of certain measures. For standards, there are measures that target not only the minimum standard, but identify and promote the best performing products. For example, measures by municipalities that provide advice on products, calculation methods, installation, etc. Another measure is technology procurements that can be used to identify innovative product features and to challenge manufacturers to deliver new, more efficient, products.

The creative process of “commodisation” and trading energy efficiency has led to the development of Energy Service Companies (ESCOs) that offer many different programs – White Certificates, Energy Efficiency Commitments as ways to engage the energy industry, and the development of incentives and metering to enable Demand Response activities.

The Ultra-Profitable Carbon-Driven Economy

The new objective on the energy scene is to reduce greenhouse gases (GHG) and to find ways to do it fast, and this is returning us to the classic DSM dilemma – there are so many profitable things to be done, but they will not happen by themselves. What is needed is either a regulation or a person that can create a business opportunity out of this challenge.

In the absence of a clear guidance for energy efficiency, ways to trigger activity are emerging. Under the pressure both to economise shrinking supply of fuels and to find ways to combat climate change, Europe and the United States have launched “directives” and “recommendations” to encourage DSM actions at the state level.

Europe

The European Union has issued a directive on energy efficiency and end-use energy services [3] in which the EU-member states are requested to issue new legislation that will required that:

- The public sector will be exemplary to improve energy efficiency in all their activities
- Utilities participate by financing and by developing services to customers

Metering and billing should be more informative and energy audits should be offered to customers. One possible means could be development of “White Certificates” as an instrument [4] and [5].

USA

The U.S. Department of energy made several recommendations to the U.S. Congress in a report March 2007 [6] and that contains 10 recommendations on how utilities can better encourage and promote energy efficiency with their customers. A national energy efficiency action plan has also been issued by the U.S. Environmental Protection Agency and in which the utility role on the market is outlined [7].

In these cases, it is obvious that the federal level both in the U.S. and Europe expresses a strong wish that energy efficiency be more systematically organised, but since the final decisions are made at the state and company level they have addressed their requests for action to them.

Actors and Products for New Preferences

In the traditional DSM business model, the utilities were responsible for developing a “level playing field” for supply and demand. Today when the issue is more urgent, we can identify several other actors that will have to be operative such as municipalities and traditional buildings-, installation- and service-industry.

Liberalised Utilities

In the liberalised energy market structure, the vertical integration of the power sector is split up and each is subject to competition. Some parts are natural monopolies because of their technical structure and therefore need to be regulated more.

Generation companies in the power sector may be less interested in making energy efficiency part of their core business, but it would make sense if the owners of these companies hedged their investments by putting some interest in the energy service business.

The transmission and distribution companies may have a more profound interest in using DSM measures actively as they could save and postpone investments as shown by the IEA World Energy Outlook, see Figure 3 above, but also as new business activities for them within the area of Demand Response. There is a need for balancing services to be developed.

Table 2. Different utility functions and their interest in DSM as a business opportunity in a liberalised market

Actor	Business interest in DSM		Remark
	Peak Load	Load Level	
Generation company	No (prices are set on the margin)	No (loss of sales)	Windfall profit may be regarded to be too high by authorities
Systems responsible (regulator)	Yes (to avoid systems break-down)	Possibly regional and in special situations (to avoid bottlenecks and to maintain systems to develop as planned)	Very different organisation between countries
Transmission and Distribution	Yes (to maintain systems and avoid bottlenecks)	See above	Where “white certificates” and commitments are introduced they concern the load level operations from these actors
Energy supplier	Yes (as a business opportunity to shift loads and operate in pools)	Yes (primarily as a marketing instrument)	
IEA DSM Programme Tasks pertaining to utilities	Tasks II, VIII, XI, XIII, XV and XVII	Tasks I, VI, VII, XIV and XVI	–

If we look on the driving forces in directives and recommendations from the central levels in Europe and the U.S. there are a few functions named where the utility business are supposed to act.

- **Funding** in both traditional ways (by taxation; public benefit charges; levies) but also with more developed mechanisms as in the case of certificates where an obligation put on the utility can be procured and/or traded.
- **Facilitating services** by more advanced metering, billing services and pricing that allows a greater flexibility
- **Services development** with a more or less active involvement in dissemination of products.

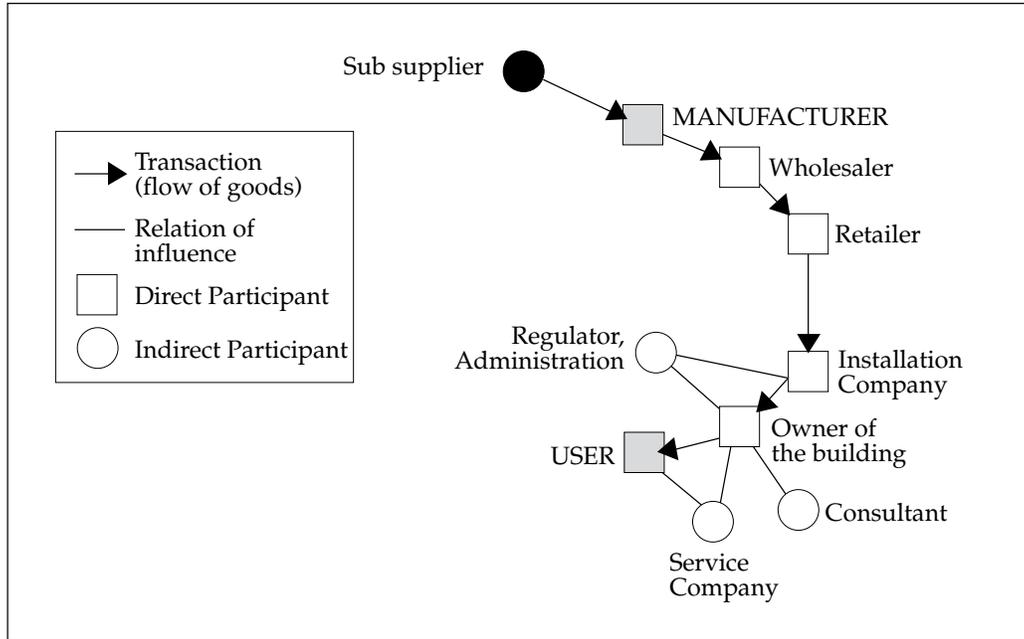
Municipalities and Industry

Municipalities have great DSM opportunities in their many roles as planners, regulators, building owners, service providers, and through their information dissemination activities to citizens. This has been in focus for the IEA DSM Programme Task IX. This Task explored the subject and gathered information on practices in several countries.

Energy Service Companies should still develop service concepts and tailor them more to customer needs as well as for customer understanding of the service concept itself. In some cases there may be a need for standardised service concepts and more distinct verification of energy savings as well as for more specialised service companies. This is presently area is being investigated in IEA DSM Task XVI (and was addressed earlier in Task X).

Traditional businesses working with installations have the opportunity to develop towards energy services as well as towards more “aggressive” marketing of the energy efficiency characteristic. The manufacturing industry already has created new concepts. For example, intelligent equipment that responds to communication with the supply side and with its “caretakers”. This is illustrated in the figure below.

Figure 4.



Product dissemination from manufacturer to the user involves many different businesses

The delivery of energy efficient applications is still in many cases not mature in that the energy-performance characteristic is invisible and how it should be correctly regarded in a calculation is un-known. A development in the organization of the market is badly needed to create the “level playing field”. [8]

New Technologies (and New Business Models)

The development of services goes hand-in-hand with the development of new technologies. In particular, the trend to improve information technologies and the trend to use renewables (PV, wind, and micro-CHP) in smaller supply side technologies opens up a completely new system configurations. IEA DSM Programme Task III developed a method for technology procurements that could be used to further boost this technology development.

Some traditional DSM problems may be solved with small-scale supply measures that manufacturing business can now provide. Distributed generation for single-family housing is possible. New renewable supply sometimes suffers from intermittency which can be solved with development of DSM as a balancing action (or as virtual storage) for their full integration into the house energy system.

Communication between customer and supplier as well as improved computerisation will enable both smart-grid services and smart-appliances that are able to adapt to local circumstances and to present situation in load, pricing, congestion, etc.

It should, however, be remembered that new technology may require institutional changes to be successful. New automated intelligent metering requires at least the following elements to be put in place to work:

- Meters
- Communications
- Software for calculation, billing, verification, settlement
- Pricing structure that rewards load management
- Institutional models (including regulation)
- End use capacity to accommodate (e.g., Storage)

Policies, Measures and Their Impact

Still, to many on both the supply side and the demand side of business, the entire thinking is a “paradigm-shift” which will require support from governments. Policies should be more explicit both as regards the carrots and the sticks for load-shape and load-level actions.

Load Shape: Countries should develop a regulatory regime that appoints responsibility for resource adequacy in the electric systems and, when the regime so allows, makes demand side balancing service the prioritised option. The impacts of adopting such a policy include:

- **Less price volatility** by improving short term price elasticity
- Improved **system reliability** by reducing peaks and adding to safety margins
- Enhanced **system security** by reducing dependency on vulnerable supply resources
- Improved **restoration capacity** by dispatching in/after emergency situations
- **Less costly network reinforcements** since energy efficiency measures will be active alternatives
- **Distributed generation** as alternative to transmission lines
- Improved **operation and use of flowing renewable** sources
- **Elastic response** as complement to competition (lack in number of companies and excess in market concentration)

Load Level: Countries should have a system for assessment of the least-cost delivery of energy services, which includes both the demand and supply side, and allows a judgement on divergence from possible sustainable paths on this it should be decided how market actors could be engaged and supported in delivery of the services. The impacts of adopting such a policy include:

- Development of **markets for energy service companies** and performance contracting
- **Allocation of commitments and obligations** that mobilises actors for large scale energy efficiency actions, e.g. use of “White Certificates, Public sector procurement, municipality initiatives, etc

- **Organisation and targeting of support programmes** for energy efficient products
- Improved allocation of **obligations for reduction of GHG-emissions** between sectors and countries
- Improved use of **market communication mechanisms**, e.g. standards and labels
- Input to how further **research and support** mechanisms should be distributed among actors.

The IEA DSM Programme Support

1. ASSESSMENTS and EVALUATION of the DSM-situation (opportunities, organisation, potentials, technologies, training, incentive structures, etc.)
2. TRAINING of staff (for planning, programme-design, evaluation, etc.)
3. TROUBLE-SHOOTING (and suggestion for programme development)
4. PROGRAMMES (target technologies, impact analysis)
5. PROJECTS (Technology Procurements, ESCO development, DR implementation)

References

- [1] 30 years of energy use in the IEA countries (OECD/IEA Paris. 2004)
- [2] World Energy Outlook 2004. (IEA. Paris 2004)
- [3] EU Directive on Energy Efficiency and End-Use Energy Services
http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_114/l_11420060427en00640085.pdf
- [4] IEA DSM-Programme, Task XIV – Market Mechanisms for White Certificates Trading <http://www.ieadsm.org/ViewTask.aspx?ID=17&Task=14&Sort=1>
- [5] EuroWhiteCert Project <http://www.ewc.polimi.it/>
- [6] State and Regional Policies that Promote Energy Efficiency Programmes Carried out by Electric and Gas Utilities http://www.oe.energy.gov/DocumentsandMedia/DOE_EPAct_Sec._139_Rpt_to_CongressFINAL_PUBLIC_RELEASE_VERSION.pdf
- [7] National Energy Efficiency Action Plan. http://www.epa.gov/cleanenergy/pdf/napee/napee_report.pdf
- [8] Creating Markets for Energy Technologies. OECD/IEA. Paris 2003 http://www.iea.org/textbase/nppdf/free/2000/creating_markets2003.pdf

Highlights

Two Tasks completed work in 2007. Highlights of these Tasks are presented below. Additional details can be found in Chapter II:

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

Task XI started in February 2004 and was completed in October 2007. Three countries participated in the Task – the Netherlands, Spain and the United Kingdom.

The overall objective of Task XI was to increase the motivation of smaller customers to save energy through presenting energy end use information, modifying their energy demand profile by time of use pricing and remote controls, and bidding demand into competitive energy markets.

Key issues addressed were:

- Issues of energy end use and feedback (EUMF) mechanisms
- Time of Use pricing
- Demand side bidding by smaller customers in energy markets
- Profile settlement constraints on the development of demand response by smaller customers, and
- Validation mechanisms to quantify smaller customer demand “available” and demand “turned down” – to provide equitable reward to customers and confidence to system operators

Task XV: Network – Driven DSM

Task XV started in October 2004 and original work plan was completed in May 2007. Four countries participated in the original work plan – Australia, France, Spain and the United States.

In early 2007, India, New Zealand and South Africa, who were intending to join the DSM Programme as new members, indicated an interest in Task XV. Consequently, in April 2007, an extension to Task XV was approved. The extension comprises an additional Subtask 6 to investigate the role of load control and smart metering in achieving network-related objectives.

Network-Driven DSM measures include:

- direct load control;
- distributed generation, including standby generation and cogeneration;
- demand response;
- energy efficiency;
- fuel substitution;
- interruptible loads;
- integrated DSM projects;
- load shifting;
- smart metering;
- power factor correction; and
- pricing initiatives, including time of use and demand-based tariffs

Key issues addressed so far include:

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

Achievements

The major accomplishments of the Tasks that were ongoing in 2007 are summarised below. Additional details can be found in Chapter II:

Task XV: Network-Driven DSM

Key accomplishments in 2007 include:

- Updating of the Task XV website
- Completion of Subtask 3 and 4 reports
- Provision of Task XV reports to new country participants
- Workshop for the Indian electricity industry
- Workshop for the New Zealand electricity industry
- New on-line database
- Publication of an additional Task XV Newsletter including details of the extension

Task XVI: Competitive Energy Services

Task XVI started in July 2006. Key accomplishments in 2007 include:

- Linking the results of Task X with the objectives of Task XVI
- Completing first drafts of National Implementation activities
- Setup of the Energy Services Expert Platform
- Operation of the innovative and competitive energy services Think Tank
- National Implementation Activities in 2007 included: overcoming barriers in capturing clients, entering new market segments, arranging financing, providing sufficient information to potential Energy Service clients and presenting information on project cases and carrying out energy audits
- International Dissemination which included: presentations and publications at various national and international conferences and seminars; contributing to the subject on “Comprehensive Refurbishment of Buildings” for the book “Urban Energy Transition”, and the organising of two workshops.

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

Task XVII started in September 2007.

The main objectives of the Task are to study how to achieve the optimal integration of flexible demand (demand response, demand side management) with distributed generation, energy storage and smart grids, and thus increase the value of demand response, demand side management and distributed generation and decrease problems caused by intermittent distributed generation (mainly based on renewable energy systems) in the physical electricity systems and in the electricity market. The Task will deal with integration aspects both at local (distribution network and customer) level and at a transmission system level where large wind farms are connected.

Key accomplishments during 2007 were:

- Held a Task definition meeting
- Finalised the Legal Annex text
- Templates were developed and agreed upon and the collection of information on the different characteristics of different types of DER in the integrated solutions started in December.

Task XVIII: DSM and Climate Change

This Task was approved in October 2007. The Task is currently being established and is open for participation.

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

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

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

- Identify circumstances in which DSM may mitigate GHG emissions and in which emissions mitigation programs may deliver benefits to the electricity system
- Identify the principles involved in methodologies for assessing the GHG emissions reductions available from specific DSM measures
- Identify ways in which DSM programs can be modified so they contribute to mitigating GHG emissions

- Identify ways in which GHG emissions mitigation programs can be modified so they deliver benefits to electricity systems
- Identify opportunities for funding DSM programs with revenue from trading GHG emissions reductions
- Explore whether time of use pricing can be used to achieve mitigation of GHG emissions, and
- Identify and engage stakeholders and communicate and disseminate information about DSM as a resource and as a mechanism for mitigating GHG emissions.

Work in preparation

Branding of Energy Efficiency Services

Starting in October 2007, a new Task is under development which deals with Branding of Energy Efficiency. The primary motivation for undertaking a Task on this topic is to:

- Understand the reasons for the absence of energy efficiency brands, and
- To develop a suitable framework for development of strategies for successful branding of energy efficiency

Likely areas for research could include:

- Knowledge and attitude of consumers in the developed as well as developing electricity markets
- Capability of energy efficiency suppliers in the market
- Best practices in definition of suppliers of energy efficient products and services
- Potential for energy efficiency products and services in other energy consuming sectors such as agricultural, industrial & commercial, etc.
- Potential for a programmatic approach towards energy efficiency, and
- Barriers to branding of energy efficiency

Work will focus on three levels of branding: (1) products/services and suppliers; (2) consumers; and (3) strategies.

Expected results will include:

- Development of significant understanding of barriers associated with branding of energy efficiency
- Identification of appropriate strategies to overcome those barriers, and
- Development of a suitable framework for development of strategies for successful branding of energy efficiency.

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

Task XI was officially completed in October 2007. However, an extension to Task XI to deal with “The Provisions of Energy Services for Residential and SME Customers” was considered. A Task Definition meeting will be held in January 2008. At that meeting consideration will also be taken whether Task XI should be extended, or a new Task should be developed.

The proposed new work will:

- Identify and develop DR and Energy Saving Services for Residential and SME customers, based on EUMF, TOU pricing and demand control
- Develop mechanisms to deliver DR and Energy Saving Services
- Evaluate how Energy Saving Service Provider (ESSP) Demand Aggregator (DAG) businesses can provide DR and Energy Saving Services for Residential and SME customers, and
- Develop ESSP/DAG routes to market for Residential and SME customers

Advanced Lighting

Lighting programs have been in focus for 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 both for new work on lighting and for dissemination of other technologies. Work continues to identify an appropriate Task on Advanced Lighting.

DSM Participation in System Operations

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

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

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

Initially four Forums are proposed, each one and a half days long. The proposed Forums will be aimed at all the agents and institutions wishing to sell, buy or develop demand side management solutions within the market. Expected participants are; (1) clients such as system operators, regulators and other entities responsible for energy efficiency; (2) commercial agents such as distribution utilities, transmission utilities,

ESCO's, suppliers, aggregators and consultants; (3) demand providers such as large, medium and small residential, commercial and industrial customers; and (4) demand side participation infrastructure providers such as communication companies, security companies, demotic companies, efficient appliance companies and managed appliance companies.

Visibility

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

The Annual Report for 2006 was produced and distributed to approximately 300 recipients in January 2007. It pulled together in one substantial document overviews of the programme's activities and details on each of the individual Tasks.

Beginning in 2004, the Spotlight Newsletter was produced in electronic format only, designed as a printable newsletter. It is distributed by e-mail to a wide list of contacts. Executive Committee members forward the newsletter to those national contacts who used to receive the printed version or they print and distribute hard copies. Two issues were produced in 2007 which included articles on:

- Task XV – Network-Driven DSM
- India – DSM Policies & Strategies
- Task XIII – Demand Response Resources
- United States – Report to Congress Calls for More Utility-Delivered Energy Efficiency
- DSM on the Rise
- Task XVI – Innovative Finance Options for Energy Services Projects
- Smart Metering – Now or Later
- India – India to Develop National Demand Side Management Roadmap
- Task XI – New Publications
- New Zealand – Newest Member of the DSM Programme
- New Work

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

The website (www.ieadsm.org) continues to serve as a vital window on the Programme's activities. Analysis of visits to the site shows a worldwide readership. In 2006 a complete new layout of the DSM website was put in place. During 2007, additional developments have been made to the website and further improvements on the content have been made. The website has a "shop front" in which the Programme's principal outputs can be displayed in a manner relevant to non-participants.

Participation in the IEA DSM Programme as of December 2007

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

 Operating Agent and participating country
  Completed Tasks
  Co-operating Agent and participating country

* Withdrawn

Benefits of participation

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

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

Reflects latest trends and issues

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

Enables complex and/or expensive projects to be undertaken

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

Saves time and money

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

Creates important networks

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

Increases the size of the technology database

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

Permits national specialization

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

Promotes standardization

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

To learn more

Visit the IEA DSM Programme web site www.ieadsm.org to view:

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

Streamlined Steps for Joining the IEA DSM Implementing Agreement

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

1. Talk to Us

2. Meet with Us

3. Write to Us

And You Are In!! Details below:

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

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

Executive Committee will invite your country to the next Executive Committee meeting, leaving Step 3 to complete the process to join.

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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, Pam Murphy, and the Webmaster, Solstice Associates Limited.

CHAPTER II

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

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

Description

Successful implementation of Demand Side participation in competitive energy markets is an essential process for world energy sustainability and system security. In this regard, a major impact of implementing competitive markets in energy supply and demand management is to expose energy suppliers and traders to the cost of their own energy and demand imbalance against agreed contracts. In this trading environment, flexible, responsive and low cost demand side participation processes, based on accurate customer consumption data, are very attractive options for reducing imbalance risk and improving system security. Interruptible contracts and Demand Side Bidding (DSB), together with standby and interruption payments, are used by larger customers to take advantage of time of use energy pricing. These mechanisms to deal with system peaks also save energy.

Time of Use Pricing and 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 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. 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.

Task XI has addressed the issues of Energy End Use and Feedback (EUMF) mechanisms (Subtask 1), Time of Use Pricing (Subtask 2) and Demand Side Bidding (Subtask 3) by smaller customers in energy markets. It has also addressed "profile settlement" constraints on the development of demand response by smaller customers (Subtask 4). Validation mechanisms to quantify smaller customer demand "available" and demand "turned down" so as to provide equitable reward to customers and confidence to System Operators (Subtask 5) have also been analysed.

Objective of the Task

The overall objective of Task XI is to increase the motivation of smaller customers to save energy through presentation of energy end use information, modifying their energy demand profile by time of use pricing and remote controls and bidding demand into competitive energy markets.

Progress in the Task

Profile Settlements and Validation (Subtasks 4 & 5)

Subtasks to study the constraints on smaller customer, Demand Response (DR) imposed by profile settlements (Subtask 4) and demand validation requirements (Subtask 5) have been completed. Netherlands, Spain and UK participated. Two reports have been published.

Subtask 4

The objective of Subtask 4 was to quantify the potential for existing profile settlement systems to deal with demand profile changes resulting from smaller customers participating in Demand Response

Profile settlement systems are used to enable smaller customers to participate in competitive supply markets without TOU metering. Profile settlements converts smaller customer, total quarterly or annual consumption into a TOU consumption. This enables Suppliers to settle their accounts with generators based on TOU consumption. Subtask 4 has considered the impact on profile settlements of smaller customers participating in Demand Response and proposed solutions to the identified problems.

Profile Settlement systems developed in Netherlands, Spain and UK have been analysed for their potential to accommodate smaller customer, demand profile changes resulting from Demand Response. Factors considered are the numbers of profiles in use, the way they are updated, variables used to modify profile shape to account for seasonal changes and the introduction of embedded micro generation.

The possibilities available to enable smaller customers to participate in Demand Response within profile settlements have been investigated with the preferred options being to:

- Accept the additional error between measured and calculated demands at Supplier/Generator metering points.
- Develop new dynamic profiles for Dynamic Demand Response customers.
- Mandate that TOU metering is required for Dynamic Demand Response customers.

The solution recommended by the study is for the additional error introduced into profile settlements to be accepted initially by Suppliers while the number of customers participating in DR increases. In order to accommodate large numbers of customers participating in DR, it is likely that some form of dynamic profiles will be required. TOU metering has a role to play in motivating Demand Response but is unlikely to replace existing profile settlements systems.

Subtask 5

The objectives of Subtask 5 are to identify and develop mechanisms which can be used to validate that smaller customer demand is “available” for demand change and also, following instruction, that the demand has “turned down”. Demand Side Bidding (DSB) is the formalisation of DR where contracts are put in place between customers and System Operators/Suppliers so as to deliver reliable Demand Response (DR), which can be used to meet capacity constraints or as alternatives to generation.

Demand Side Bidding as presently implemented requires defined blocks of demand or generation to be made “available” to System Operators and contracted for DR “turndown” or switch on during agreed time periods. DR cannot be considered for DSB unless it can be validated as “available” and “turned down”.

Several mechanisms have been proposed by which DR, suitable for DSB, can be delivered. These have differing technical and equipment requirements for their operation, as well as for validation of the DR produced.

Subtask 5 has shown that validation of smaller customer, DR should not present fundamental barriers to it being used as DSB in generation markets. In principle DR validation can be done based on control group measurement, statistical modelling and Grid substation measurement of demand “turndown” in response to DR motivator signals on specific days and at specific times. These routes use different metering “Smartness” levels, together with remote/automatic control and communication of price signals. One way, broadcast communication would be sufficient for end use switching of demand for DSB.

Task XI Final Report

A Final Report on the work carried out to date on Task XI has been written. This report links together all the issues considered in Subtasks 1 to 5 and draws conclusions and recommendations.

Activities completed in 2007

- Subtask 4-Profile Settlements Systems for Smaller Customer Dynamic Demand Management
- Subtask 5-Demand “available” and “turndown” Validation Mechanisms for Market Bidding of Smaller Customer Demand
- Task XI Final report-Time of Use Pricing and Energy Use for Demand Management Delivery

Activities planned for 2008

Proposed Subtask 6 –The Provision of Energy Services for Residential and SME Customers

- Identify and develop DR and Energy Saving Services for Residential and SME customers, based on EUMF, TOU pricing and demand control
- Develop mechanisms to deliver DR and Energy Saving Services

- Evaluate how Energy Saving Service Provider (ESSP)/Demand Aggregator (DAG) businesses can provide DR and Energy Saving Services for Residential and SME customers
- Develop ESSP/DAG routes to market for Residential and SME customers

Obtain support for new Subtask 6

A Task Definition Meeting is scheduled for 23/24 January 2008 in the UK.

Involvement of industry and other organisations in Task XI

Grid companies, System Operators, profile settlement companies and metering companies have been involved in Task XI via country Expert groups.

Reports produced in 2007

Name of report	Date published
Subtask 4-Profile Settlements Systems for Smaller Customer Dynamic Demand Management	October 2007
Subtask 5-Demand "available" and "turndown" Validation Mechanisms for Market Bidding of Smaller Customer Demand	November 2007
Final report-Time of Use Pricing and Energy Use for Demand Management Delivery	November 2007

Reports planned for 2008

Provision of Residential Customer Energy Services

Provision of SME Customer Energy Services

Meetings held in 2007

Date	Place	Type of meeting	Total Experts	Government	Industry	Academic
17-18 January	Chester, UK	Experts meeting	7	1	6	0
11-12 June	Netherlands	Experts meeting	9	1	8	0
17-18 September	Madrid, Spain	Experts meeting	7	1	6	0

Meetings planned for 2008

Task Definition Meeting, 23/24 January 2008 in UK.

Task meetings/Seminars/Conferences held in 2007

Type of meeting	Date	Place	Total participants	Government	Industry	Academic
Conference	2-4 October	Vienna	500	50	375	75

Technology development success stories

Studies have shown that dynamic Demand Response by smaller customers using remote controls and smart metering can be carried out within a profile settlements environment. They have also shown that technologies and models to predict and measure Demand Response by smaller customers, can be developed.

Positioning of the Task – vs. other bodies

Many organisations are trying to motivate business and residential customers to save energy. Demand Response and Demand Side Bidding by larger customers are being carried out in many countries to assist energy savings and supply security. Residential customers' participation using a range of demands is not carried out to any significant extent. Task XI Experts are addressing smaller customer Demand Response and Demand Side Bidding from both supply and demand side perspectives and routes to implementation.

Activity Time Schedule

The Task was entered into force in February 2004 and will remain in force until October 2009 to complete the proposed extension.

Activity	2006	2007	2008	2009
Subtask 4 – Quantify the potential for existing “profile” settlement systems to deal with dynamic profiles created by bidding smaller customers demands into markets. Propose new systems		—————		
Subtask 5 – Evaluate demand “available” and demand “shift” validation mechanisms which can deal with aggregated demand of smaller customers.		———		
Subtask 6 – The provision of energy services for residential and SME customers				—————

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Task XV: Network Driven DSM

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

Objectives of the Task

Why Network-Driven DSM?

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

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

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

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

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

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

Network-driven DSM measures include:

- direct load control;
- distributed generation, including standby generation and cogeneration;
- demand response;
- energy efficiency;
- fuel substitution;
- interruptible loads;

- integrated DSM projects;
- load shifting;
- smart metering;
- power factor correction; and
- pricing initiatives, including time of use and demand-based tariffs.

Benefits to Participants

Participating in Task XV enables countries and organisations to:

- understand the advantages and disadvantages of network-driven DSM measures as alternatives to network augmentation and for providing network operational services;
- gain information about network-driven DSM measures currently in use in other countries and about the relative effectiveness of these measures;
- understand the factors which lead to a network-driven DSM measure being effective;
- participate in further developing the identified DSM measures so that they will be successful in achieving network-related objectives;
- identify modifications which can be made to existing network planning processes to incorporate network-driven DSM measures as alternatives to network augmentation;
- understand the interaction between network-driven DSM and the operation of competitive electricity markets;
- participate in developing business models, rules and procedures to achieve the successful implementation of network-DSM measures under different electricity market structures and regulatory regimes;
- understand how load control and smart metering can be used to defer network augmentation and to provide network operational services.

Work Plan

The original Work Plan for Task XV, as approved at the Executive Committee meetings in October 2004, comprised five Subtasks. Subtask 6 was added in April 2007 following the approval of the Task XV extension.

- Subtask 1: Worldwide Survey of Network-Driven DSM Projects.
- Subtask 2: Assessment and Development of Network-Driven DSM Measures.
- Subtask 3: Incorporation of DSM Measures into Network Planning.
- Subtask 4: Evaluation and Acquisition of Network-Driven DSM Resources.
- Subtask 5: Communication of Information About Network-Driven DSM.
- Subtask 6: Role of Load Control and Smart Metering in Achieving Network-related Objectives.

Subtask 1: Worldwide Survey of Network-Driven DSM Projects

Subtask Objective

To identify a wide range of DSM measures which can be used to relieve electricity network constraints and/or provide network operational services.

Subtask Deliverable

A report listing and summarising network-driven DSM projects implemented around the world.

Subtask 2: Assessment and Development of Network-Driven DSM Measures

Subtask Objective

To further develop the identified network-driven DSM measures so that they will be successful in cost effectively achieving network-related objectives.

Subtask Deliverable

A report listing and summarising successful network-driven DSM measures and the specific network problems they address.

Subtask 3: Incorporation of DSM Measures into Network Planning

Subtask Objective

To investigate how existing network planning processes can be modified to incorporate the development and operation of DSM measures over the medium and long term.

Subtask Deliverable

A report on ways in which network planning processes can be modified to incorporate DSM measures as alternatives to network augmentation.

Subtask 4: Evaluation and Acquisition of Network-Driven DSM Resources

Subtask Objective

To develop 'best practice' principles, procedures and methodologies for the evaluation and acquisition of network-driven DSM resources.

Subtask Deliverable

A report on 'best practice' principles, procedures and methodologies for the evaluation and acquisition of network-driven DSM resources.

Subtask 5: Communication of Information About Network-Driven DSM

Subtask Objective

To communicate and disseminate information about network-driven DSM to relevant audiences, including representatives of electricity network businesses, government agencies and electricity end-users.

Subtask Deliverables

- A Task Newsletter.

- Two databases containing case studies of network-driven DSM projects from around the world and descriptions of load control and smart metering technology products.

Subtask 6: Role of Load Control and Smart Metering in Achieving Network-related Objectives

Subtask Objective

To investigate in detail the role of load control and smart metering in achieving network-related objectives.

Subtask Deliverables

A report summarising ways in which load control and smart metering can be effectively utilised to achieving network-related objectives.

Progress in the Task

The original work plan for Task XV was completed in May 2007. In early 2007, India, New Zealand and South Africa which were intending to join the IEADSM programme as new members, indicated that they wanted to participate in Task XV. Consequently, in April 2007, the IEADSM Executive Committee approved an extension to Task XV that comprised an additional Subtask 6 to investigate the role of load control and smart metering in achieving network-related objectives.

Activities completed in 2007

Following are the major accomplishments in Task XV over the last 12 months:

Updating of the Task XV website. The Operating Agent completed a major updating and renovation of the Task XV website concurrent with the implementation of the new design for the IEADSM website as a whole. The public part of the Task XV website now contains summaries of the Task XV results to date and the latest Task XV flyer. The secure part of the Task XV website (accessible only by Task XV Experts) now includes all the completed Task XV Research Reports and Task Status Reports; all editions of the Task XV Newsletter; the presentations from all Task XV Experts meetings; and the latest Task XV flyer.

Completion of the Subtask 3 report. The final version of this reports was circulated to country Experts and representatives for their approval. The report was then submitted to the relevant Executive Committee members and a ballot at the ExCo meeting in April approved the report for distribution.

Completion of the Subtask 4 report. The final version of this report was circulated to country Experts and representatives for their approval. The report was then submitted to the relevant Executive Committee members for postal balloting and the report was approved for distribution.

Provision of Task XV reports to new country participants. Representatives of India, New Zealand and South Africa were provided with access to the Task XV Experts secure website. This enabled them to download copies of the four completed Task XV Research Reports and to access the existing on-line database of network-related DSM projects.

Workshops for the Indian electricity industry. The Operating Agent travelled to India and presented a workshop on Task XV for representatives of the Indian electricity industry who were attending the India Electricity conference in New Delhi. The Indian country expert also convened a second Task XV workshop in Pune.

Workshop for the New Zealand electricity industry. The Operating Agent travelled to New Zealand and presented a workshop on Task XV for representatives of the New Zealand electricity industry.

New On-line Database. A new on-line database of load control and smart metering technology products was developed and established on the Task XV Experts secure website. This required extensive work by the IEA DSM Programme webmaster to develop the database and by the Task XV Operating Agent to prepare descriptions of technology products.

Task XV Newsletter. The Operating Agent published an edition of the Task XV newsletter that included details about the Task XV extension.

Activities planned for 2008

The following work is planned to be carried out in 2008:

- complete not less than five new case studies of load control and smart metering projects and add them to the on-line case studies database;
- incorporate information from each of the new participating countries into second editions of the existing Task XV Research Reports;
- publish another edition of the Task XV Newsletter;
- add more descriptions of load control and smart metering technology products to the on-line database;
- complete the survey of currently available load control and smart metering technologies (Activity 6-1);
- complete the report on the Role of Load Control and Smart Metering in Achieving Network-related Objectives

Involvement of industry and other organisations

Participating organisations within countries comprise the following:

Australia

Eight electricity network businesses at both the transmission and distribution level, comprising: Agility, Country Energy, Energex, EnergyAustralia, Ergon Energy, Powerlink Queensland, SP AusNet and TransGrid.

France

Agence de l'Environnement et de la Maîtrise de l'Énergie and Réseau de Transport d'Électricité.

India

Bureau of Energy Efficiency, an agency within the Ministry of Power, Government of India

New Zealand

Energy Efficiency and Conservation Authority, Electricity Commission, Electricity Networks Association, Ministry of Economic Development, TransPower

Spain

Red Eléctrica de Espana

South Africa

Eskom (to be finalised)

USA

Oak Ridge National Laboratory.

Reports produced in 2007

Name of report	Date published
Task XV Research Report No 3: <i>Incorporation of DSM Measures into Network Planning.</i>	3 April 2007
Task XV Research Report No 4: <i>Evaluation and Acquisition of Network-driven DSM Resources.</i>	23 May 2007

Reports planned for 2008

The following reports are planned to be completed during 2008:

Task XV Research Report No 1: *Worldwide Survey of Network-Driven DSM Projects.* Second edition.

Task XV Research Report No 2: *Assessment and Development of Network-driven Demand-side Management Measures.* Second edition.

Task XV Research Report No 3: *Incorporation of DSM Measures into Network Planning.* Second edition.

Task XV Research Report No 4: *Evaluation and Acquisition of Network-driven DSM Resources.* Second edition.

Task XV Research Report No 5: *Role of Load Control and Smart Metering in Achieving Network-related Objectives.* First (and only) edition.

Meetings held in 2007

None.

Meetings planned for 2008

The fifth and final Task XV Experts meeting is planned to be held in Mumbai, India in March 2008.

Task meetings/Seminars/Conferences held in 2007

Date	Place	Type of meeting	Total participants	Government	Industry	Academic
21 Sept	New Delhi, India	Task XV Workshop	42	8	30	4
1–2 Oct	Pune, India	Task XV	157	37	100	20
23 Nov	Wellington, New Zealand	Task XV Workshop	36	6	28	2

Technology development success stories

Prior to Task XV, each of the four participating countries was using only one or two different types of network-driven DSM to achieve only limited objectives:

- **Australia** – to relieve specific network constraints and to achieve deferral of network augmentations;
- **France** – to achieve deferral of network augmentations;
- **Spain** – to address generation and network capacity shortages in the electricity market (interpretability only);
- **United States** – to provide ancillary services and to address generation and network capacity shortages in the electricity market.

Task XV enabled electricity business in each of these countries to examine using a large number of different types of network-driven DSM to achieve a broader range of objectives.

The first report from Task XV contained detailed case studies of network-driven DSM projects from around the world. This report was cited in a United States Federal Energy Regulatory Commission report:

Federal Energy Regulatory Commission (2006). Staff Report and Report to the US Congress. *Assessment of Demand Response and Advanced Metering*. Washington DC, FERC. Available at: www.ferc.gov/legal/staff-reports/demand-response.pdf.

Positioning of the Task

Previous to Task XV, the IEA DSM Programme had not undertaken any work on the potential for DSM to cost-effectively relieve electricity network constraints or to provide network operational services. In fact, Task XV is the first broad and systematic investigation of the potential for DSM to cost-effectively support electricity networks being carried out anywhere.

Since Task XV commenced, a new IEA Implementing Agreement on Electricity Networks Analysis, Research and Development has been established. While the focus of this new Implementing Agreement is on technical issues in relation to the operation of electricity networks, preliminary discussions on potential collaboration between Task XV and the new IA have been held.

Activity Time Schedule

Task XV was entered into force in October 2004. The original work plan for Task XV was completed in May 2007. The Task XV extension is scheduled to be completed by mid-2008.

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Task XVI: Competitive Energy Services (Energy-Contracting, ESCo Services)

Operating Agent: Mr Jan W. Bleyl, Graz Energy Agency Ltd, Austria
Co-Operating Agent: Mr Seppo Silvonen, Motiva Oy, Finland

Introduction

The success of further increasing energy efficiency in all sectors of consumption will play a vital role in coping with the challenges of our common energy future. Avoiding energy consumption by increasing end-use efficiency, is a highly effective way to meet all three key targets of energy policies: security of supply, affordable costs of energy services and environmental soundness.

Energy Services (ES) – also labelled as Energy-Contracting or ESCo Services- are a well proven instrument to implement energy efficiency measures such as lighting, HVAC or comprehensive refurbishment of buildings. An Energy Service Company (ESCO) takes over the technical and economical implementation and operation risks and has to guarantee for the savings and overall results. Over the whole contract term. ES are also well suited to implement innovative and renewable energy systems.

Energy services are an expanding business throughout the world contributing to the improvement of energy efficiency, control of energy costs and reduction of greenhouse gas emissions. The concepts of offering these services can get various forms resulting in diverse contract models and financing arrangements. The basic feature is guarantee of energy savings and/or cost savings by the energy service company to the client.

Energy service activities have been started in different segments of energy consumption in different countries, even though the building sector is common to most of them. White areas on the market map are gradually being covered by existing and new enterprises.

Task XVI 'Competitive Energy Services' serves as a forum for the representatives of the participating countries to exchange information and experience of the different aspects of the energy service business, including the public sector actors, and giving that way incentives to the advancement of activity in this area.

Objectives of the Task

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

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

Expected Results

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

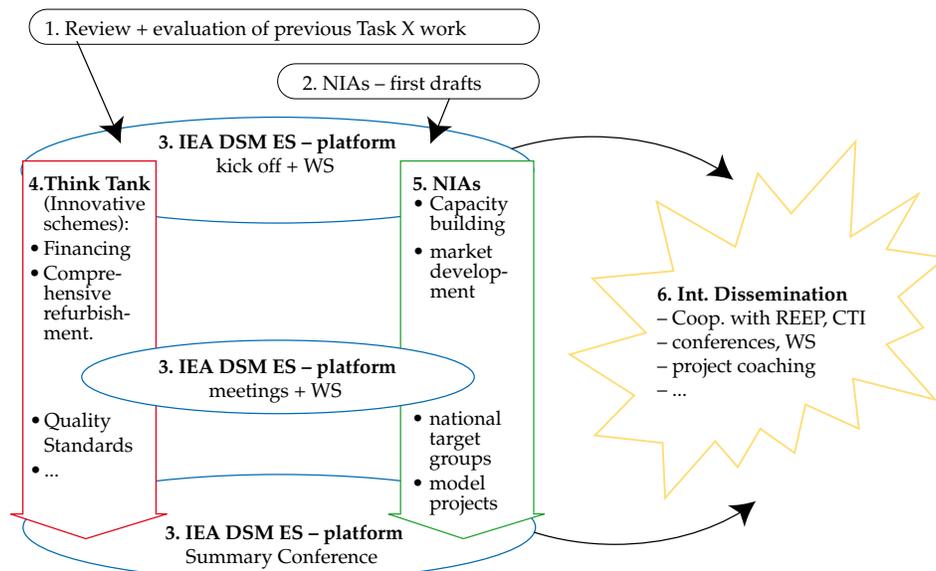
- Enlarging the market for energy services
- Participation in the IEA DSM energy services expert platform and communicating with external stakeholders
- Mutual feedback, coaching and experience exchange for country specific market development activities (NIA's)
- Know-how and capacity building on innovative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

Structure of the Work

The Task XVI Work Plan consists of four main components:

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

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



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

Subtask 2: National implementation activities – first drafts

Subtask 3: IEA DSM energy services expert platform

Subtask 4: Innovative and competitive energy services Think Tank

Subtask 5: National implementation activities (NIA'S)

Subtask 6: International dissemination

A more detailed description of the above organisational structure and subtasks can be obtained from the Task Work Plan (exerts printed in the 2005 Annual Report).

Progress in the Task

India is a new member of Task XVI and has nominated Mr. Abhishek Nath of the Bureau of Energy Efficiency as national expert to actively take part in Task XVI.

Subtask 1 Review of Previous Task X – Work linking the results of that task with the objectives of Task XVI was concluded.

Subtask 2 National Implementation Activities – first drafts has been completed. Following the given format the participating experts have brought up the activity areas in energy service activities in their countries and presented their priorities concerning the development of those.

Subtask 3 The Expert Platform has been set up and is working with full capacity since spring of 2007. List of topics to be worked on in the meetings has been layed out and approved.

- The National Experts of Task XVI had two meetings in 2007. In connection with those meetings Think Tank sessions were organized:
- The 3rd meeting of the Expert Platform was held in Graz, Austria on May 10–11, 2007, including a well visited workshop for external stakeholders, organized together with the Austrian Research Ministry (BMVIT) in the framework of their e2050 strategy process.
- The 4th meeting was held in Deventer, Netherlands on October 8–9, including a workshop with external stakeholders, organized together with Essent under the title of “How to enter the Industrial Market as an ESCo”. The related presentations were followed by lively discussions and queries resulting in indicative information on the weights of various factors in approaching the market segment.

Subtask 4: Think Tank has worked on the following topics:

- Comprehensive Refurbishment of Buildings with Energy-Contracting
- Integration of Demand Side Measures into Energy Supply Contracting Models
- Opportunity Cost Tool for preparation and rough analyses of dsm projects (to demonstrate energy costs, saving potentials and present values of future energy cost savings)
- Comparison of Financing Options for Energy-Contracting

Publications on some discussion papers of the Think Tank work can be downloaded from the public Task XVI website (<http://dsm.iea.org/ViewTask.aspx?ID=16&Task=16&Sort=0>)

Subtask 5 *National Implementation Activities* is a continuing activity in the Task having a format set to be followed by the Experts:

The Experts' presentations in the meetings provided information of the national activities during the previous periods and of plans for the coming period. Items dealt with on the basis of the presentations included overcoming barriers in capturing clients, entering new market segments, arranging financing, providing sufficient information to the potential ES-clients, collecting and presenting information on project cases and carrying out energy audits.

Subtask 6 *International Dissemination*:

Presentations and publications at various national and international conferences and seminars, e.g. presentations at the ECEEE summer study '07, ESCO Conference '07 and an international call seminar for the UNEP-SEFI Public Finance Alliance, on "Comparison of Financing Options for Energy Contracting" were held.

A contribution on "Comprehensive Refurbishment of Buildings" for the book "Urban Energy Transition" to be published by Elsevier in 2008 is under preparation.

Two public workshop were organized (together with the Austrian Research Ministry and ESSENT (see subtask 3)

Activities completed in 2007

- Linking the results of Task X with the objectives of Task XVI
- Completing first drafts of National Implementation activities
- Setup of the Energy Services Expert Platform
- Operation of the innovative and competitive energy services Think Tank
- National Implementation Activities Items dealt with in 2007 included: overcoming barriers in capturing clients, entering new market segments, arranging financing, providing sufficient information to potential Energy Service clients and presenting information on project cases and carrying out energy audits
- International Dissemination which included: presentations and publications at various national and international conferences and seminars; contributing to the subject on "Comprehensive Refurbishment of Buildings" for the book "Urban Energy Transition", and the organising of two workshops.

Activities planned for 2008

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

- Subtasks 3 and 5. The National Experts will have two meetings in 2008, the first one scheduled to be in New Delhi on April 2–4.
 - Implementation of national action plans will be dealt with by the experts in these meetings.
 - Think Tank sessions will be organized in connection with both of those meetings, with representatives of the national stakeholders invited to participate.

- Subtask 4: Work on the Think Tank will continue with these topics:
 - “Integration of Demand Side Measures into Energy Supply Contracting Models” will be dealt with more in depth, including a publication
 - “Innovative Financing Options for Energy Services”
- Subtask 6: International dissemination of information within the scope of Task XVI will be continued. Presentations at various international conferences and seminars, publications (e.g. Energy Policy) are planned. Finalization for the contribution to the “Urban Energy Transition” book to be published at Elsevier

Involvement of Industry and other organisations

Representatives of commercial actors in the field of energy services as well as of their clientele have participated in the Think Tank sessions. The experts have disseminated information gathered in the Task XVI work to their clients and other national stakeholders in their countries.

Reports produced in 2007

Name of report/publication	Date published
Review of Previous Task X – Work	June 2007
Comprehensive Refurbishment of Buildings with Energy-Contracting	ECEEE '07, April 2007
Comparison of Financing Options for Energy-Contracting	IEECB, April 2006
Integration of Demand Side Measures into Energy Supply Contracting Models	Think Tank Workshop May 2007 (discussion paper)
Opportunity cost tool for preparation and rough analyses of dsm projects (to demonstrate energy costs, saving potentials and present values of future energy cost savings)	Think Tank Workshop October 2007 (discussion paper)

Reports and Publications planned for 2008

Name of report/publication	Date published
Comparison of Financing Options for Energy-Contracting. A manual for ESCOs, ESCO customers and ESCO project developers	April 2008
Integration of Demand Side Measures into Energy Supply Contracting Models	Conference paper May 2008
“Energy – Contracting” to Achieve Energy Efficiency and Renewables using Comprehensive Refurbishment of Buildings as an Example. A Guide for Building Owners and ESCOs, in Urban Energy Transition, Elsevier Science & Technology	2nd quarter 2008

Meetings held in 2007

Date	Place	Total Experts	Type of meeting	Government	Industry	Academic
10–11 May	Graz, Austria	4	Experts meeting	2	1	1
11 May	Graz, Austria	25	Workshop with stakeholders	10	10	5
8 October	Deventer, Netherlands	6	Experts meeting	3	2	1
9 October	Deventer, Netherlands	17	Workshop with stakeholders	6	8	3

Meetings planned for 2008

2–4 April 2008, Experts meeting, New Dehli, India

4 April 2008, Workshop, New Dehli, India

October/November '08, Experts meeting, propably in Belgium

October/November '08, workshop, propably in Belgium

Seminars and/or conferences held in 2007

Date	Type of meeting	Place	Total participants	Government	Industry	Academy
11 May	Internat. Workshop	Graz, Austria	25	10	10	5
9 October	Internat. Workshop	Deventer, Netherlands	17	6	8	3

Technology development success stories

Task XVI is dealing with innovative Energy Service models to implement any kind of efficiency technology with market based instruments. It is not developing any technology by itself. ESCo services apply whatever efficiency technology is available on the market. Accordingly, succesfull expamples can be found in all sectors of efficiency technologies such as street lighting, heating, ventialation and air conditioning (HVAC-technologies), combined heat and power systems (micro-CHP) or comprehensive refurbishment of buildings and others.

Positioning of the Task – v.s. other bodies

“Competitive Energy Services” is a unique task in providing an international expert platform for Energy-Contracting experts, developing innovative energy service models, initiating and mutally supporting national implementation activities and disseminating results to international stakeholders.

The members of the task work and cooperate with their respective national bodies and projects and are involved in a large variety of other international projects, dealing with the implementation of energy efficiency and related topics.

Activity Time Schedule

Task XVI has started its operation in July 2006 and will remain in force until June 2009.

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

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

Operating Agent: Mr Seppo Kärkkäinen, VTT, Finland

Objectives of the Task

The main objective of the proposed Task is to study how to achieve the optimal integration of flexible demand (demand response, demand side management) with distributed generation, energy storages and smart grids, and thus increase the value of demand response, demand side management and distributed generation and decrease problems caused by intermittent distributed generation (mainly based on renewable energy systems, RES) in the physical electricity systems and at the electricity market. The Task deals with integration aspects both at local (distribution network and customer) level and at transmission system level where large wind farms are connected.

Thus the integration means in this connection:

- how to optimally integrate and combine demand response and energy efficiency technologies with distributed generation, storage and smart grids technologies, at different network levels (low, medium and high voltage)
- and, how to combine the above mentioned technologies to ideally support the electricity networks and electricity market

Progress in the Task

Task definition was completed in August 2007 and the Task officially started in September with five participating countries: Finland, Korea, Netherlands, Spain and USA. Italy joined the Task in November.

Subtask 1 dealing with information collection on the characteristics of different types of DER in the integrated solutions was started: The templates for information collection of national data has been agreed and the actual information collection started in December.

Activities completed in 2007

Task definition and legal annex of the Task were completed. Templates for information collection were also completed.

Activities planned for 2008

All planned subtasks 1–4 will be finished in 2008:

- (a) *Subtask 1*: Information collection on the characteristics of different types of DER in the integrated solutions.
- (b) *Subtask 2*: Analysis of the information collected and preliminary conclusions (state of the art).
- (c) *Subtask 3*: Feedback from the stakeholders: Workshop.
- (d) *Subtask 4*: Final conclusions and the detailed definition of further work.

Involvement of industry and other organisations

National experts from the participating countries represent a mix of industrial, governmental and research organisations

Reports produced in 2007

No reports in 2007

Reports planned for 2008

- Workshop proceedings
- Final synthesis report on the integration with conclusions and first set of best practices
- Detailed work plan for additional work

Meetings held in 2007

Date	Place	Total Experts	Government	Industry	Academic/Reseach
14–15 June, 2007	Espoo, Task definition meeting	6		3	3
1–2 Nov, 2007	Madrid, expert meeting	9	1	7	1

Meetings planned for 2008

Expert meeting, 11–12 March, probably in USA (exact place to be decided)

Workshop, April–June, in Europe in the connection of some other relevant workshop

Expert meeting, September, to be decided

Task meetings/Seminars/Conferences held in 2007

See above

Positioning of the Task – vs. other bodies

Cooperation and coordination has been arranged with IEA Implementing Agreements ENARD and WIND

Activity Time Schedule

The Task was entered into force in 1st of September in 2007 and shall remain in force until 27th of September in 2008.

Subtasks	2007	2007	2008	2008
Subtask 1 Preparation of information collection First expert meeting Information collection by experts and OA		—		
Subtask 2 State of the art of the integration Impacts of the integration Preliminary conclusions Second expert meeting Workshop preparation			—	
Subtask 3 Workshop Workshop documentation			—	
Subtask 4 Synthesis report Work plan for the future work Third expert meeting				—

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Task XVIII: DSM and Climate Change

Operating Agent: Dr David J Crossley, Energy Futures Australia Pty Ltd

Objectives of the Task

Task XVIII: DSM and Climate Change

At its meeting in October 2007, the IEA DSM Programme Executive Committee approved the initiation of Task XVIII. The Task is currently being established and is open for participation.

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

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

The overall aim of Task XVIII is to reconcile these two different approaches so as to identify circumstances in which DSM can contribute to mitigating GHG emissions and emission mitigation measures can achieve benefits for electricity systems. Task XVIII will then determine what is required to maximise the emissions reductions and electricity system benefits from these two types of measures.

The objectives of Task XVIII are:

- to identify circumstances in which DSM may mitigate GHG emissions and in which emissions mitigation programs may deliver benefits to the electricity system
- to identify the principles involved in methodologies for assessing the GHG emissions reductions available from specific DSM measures
- to identify ways in which DSM programs can be modified so they contribute to mitigating GHG emissions
- to identify ways in which GHG emissions mitigation programs can be modified so they deliver benefits to electricity systems
- to identify opportunities for funding DSM programs with revenue from trading GHG emissions reductions
- to explore whether time of use pricing can be used to achieve mitigation of GHG emissions, and
- to identify and engage stakeholders and communicate and disseminate information about DSM as a resource and as a mechanism for mitigating GHG emissions.

Work Plan

The Work Plan for Task XVIII comprises six Subtasks:

- Subtask 1: Interactions between DSM and Climate Change;
- Subtask 2: Principles for Assessing Emissions Reductions from DSM Measures;
- Subtask 3: Mitigating Emissions and Delivering Electricity System Benefits;
- Subtask 4: Fungibility of DSM and Emissions Trading;
- Subtask 5: TOU Pricing and Emissions Mitigation;
- Subtask 6: Communicating Information about DSM and Climate Change.

Subtask 1: Interactions between DSM and Climate Change

Subtask Objective

To identify circumstances in which DSM may help to mitigate GHG emissions and situations in which DSM may contribute to increasing emissions.

Subtask Deliverable

A report summarising the interactions between DSM and climate change.

Work to be Carried Out

The Experts will identify DSM projects in their countries in which DSM may have mitigated GHG emissions, and emissions mitigation projects which may have delivered benefits to the electricity system. The information collected about each project will include: details about: the objectives of the project; the DSM measures employed; the emissions mitigation measures employed; the market segments addressed; the regulatory regime under which the project was implemented, the cost of the project; and the impact of the project in terms of MW or MVA and GHG emissions reduced. As information about the projects is received, the Operating Agent will enter it into an on-line database.

Once all the information is collected, the Operating Agent will summarise the results and draw conclusions about the interactions between DSM and climate change.

Subtask 2: Principles for Assessing Emissions Reductions from DSM Measures

Subtask Objective

To identify the principles involved in methodologies for assessing the GHG emission reductions available from specific DSM measures.

Subtask Deliverable

A report summarising the principles involved in methodologies for assessing the GHG emission reductions available from specific DSM measures.

Work to be Carried Out

The Operating Agent will examine existing carbon accounting methodologies to identify methods which could be adapted to assess the GHG emissions reductions available from specific DSM measures. The Operating Agent will then develop a set of principles for methodologies to assess emission reductions from DSM measures.

These principles will be tested by calculating emission reductions from a range of actual DSM projects.

Subtask 3: Mitigating Emissions and Delivering Electricity System Benefits

Subtask Objectives

To identify ways in which DSM programs can be modified so they contribute to mitigating GHG emissions.

To identify ways in which GHG emission mitigation programs can be modified so they deliver benefits to electricity systems.

Subtask Deliverable

A report summarising the ways in which DSM programs and emission mitigation projects can be modified.

Work to be Carried Out

The Operating Agent will examine the information about DSM and GHG emission mitigation projects in the database and draw conclusions about how the projects could be modified to maximise GHG emission reductions and deliver benefits to the electricity system while still achieving the original project objectives.

Subtask 4: Fungibility of DSM and GHG Emissions Trading

Subtask Objective

To identify opportunities for funding DSM programs with revenue from trading GHG emission reductions.

Subtask Deliverable

Part of a report summarising the ways in which DSM programs can be funded with revenue from trading GHG emissions reductions (this report will also include the results from Subtask 5).

Work to be Carried Out

The term “fungibility” means interchangeability, particularly of one financial instrument with another based on identical terms. In this context, fungibility refers to the ability to trade any GHG emission reductions that are achieved through DSM programs. Such trading could occur through national and regional emissions trading schemes and possibly also through the two project-based mechanisms under the Kyoto Protocol, the Clean Development Mechanism and Joint Implementation.

The Operating Agent will examine a number of emissions trading schemes and the Kyoto Protocol mechanisms, using input provided by Experts, in order to assess the opportunities, benefits and threats involved in trading emission reductions achieved through DSM programs.

Subtask 5: TOU Pricing and Emissions Mitigation

Subtask Objective

To explore whether time of use pricing can be used to achieve mitigation of GHG emissions.

Subtask Deliverable

Part of a report exploring whether time of use pricing can be used to achieve mitigation of GHG emissions (this report will also include the results from Subtask 4).

Work to be Carried Out

The Operating Agent, assisted by input from Experts will examine the benefits and impacts of time of use pricing on greenhouse gas emissions and emissions abatement. The work will focus on sectors potentially affected by time-of-use pricing, and in particular the domestic sector and its challenges of peak electricity demand.

Subtask 6: Communicating Information about DSM and Climate Change

Subtask Objective

To identify and engage stakeholders and communicate and disseminate information about DSM as a resource and as a mechanism for mitigating GHG emissions.

Subtask Deliverables

- A Task Newsletter.
- On-line database about DSM and climate change.
- Regional workshops about DSM and climate change.

Work to be Carried Out

The Operating Agent will provide information about the progress of the DSM and Climate Change Task to the Experts through a regular newsletter.

The Operating Agent will establish and update an on-line database containing information about DSM and GHG emission mitigation projects. Twelve months after the conclusion of the project, public access will be provided to this database.

During the Task, four regional workshops about DSM and climate change will be held; where possible these will be held in conjunction with Experts meetings.

Progress in the Task

Task XVIII was initiated in October 2007. The Task is not yet in force.

Activities completed in 2007

Task XVIII has been under development for the last 18 months. DSM and climate change was first identified as an area for new work at the April 2006 Executive Committee meeting in Copenhagen. At its October 2006 meeting in Maastricht, the ExCo agreed that a Concept Paper for a DSM and Climate Change Task should be prepared.

At the April 2007 meeting in Seoul, the Executive Committee requested revisions to the Concept Paper which consisted of incorporating an additional subtask on the fungibility of greenhouse gas emission reductions from DSM measures. The ExCo also agreed that a Task Definition meeting should be held.

The Task Definition meeting was held on Tuesday 9 October 2007 in Brugge; four countries attended: Australia, Belgium, France and Spain, with India attending as an observer. Prospective participants made several suggestions for modifying the design

of the DSM and Climate Change Task. These modifications were incorporated into a presentation made to the Executive Committee meeting on 11 October 2007.

The Executive Committee approved the initiation of the DSM and Climate Change Task as IEA DSM Task XVIII. Following the Executive Committee meeting, a revised Concept Paper and a Prospectus for Task XVIII were prepared. A draft Legal Annex was also completed.

Activities planned for 2008

The initial work required is the finalisation of the participants in Task XVIII. Once the Task is declared in force, work will commence on Subtasks 1 and 2.

Involvement of industry and other organisations

Task XVIII is currently being established and is open for participation.

Reports produced in 2007

None.

Reports planned for 2008

The following reports are planned to be commenced during 2008. The level of completion of the reports will depend on when Task XVIII is declared in force.

Task XVIII Research Report No 1: *Interactions between DSM and Climate Change*.

Task XVIII Research Report No 2: *Methodologies for Assessing Greenhouse Gas Emission Reductions from DSM Measures*.

Meetings held in 2007

None.

Meetings planned for 2008

One Task XVII Experts meeting is planned to be held in 2008. The location for the meeting will be decided once the participants in the Task are finalised.

Task meetings/Seminars/Conferences held in 2007

None.

Technology Development Success Stories

None.

Positioning of the Task

Previous to Task XVIII, the IEA DSM Programme had not undertaken any work on DSM and climate change. In fact, Task XVIII is the first broad and systematic investigation of this specific topic being carried out anywhere.

The Operating Agent held discussions with various parties attending the Energy Efficiency Global Forum held in Washington DC in November 2007 and also at the World Bank headquarters in Washington. It is possible that these discussions will lead to collaboration between Task XVIII and other organisations carrying out work on energy efficiency and climate change.

Activity Time Schedule

Task XVIII was initiated in October 2007. The Task is not yet in force. Once in force, the Task is scheduled to be completed over a 24 month period.

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