

DSM Spotlight

The Newsletter of the International Energy Agency Demand-Side Management Programme November 2005



REEEP and the DSM-Programme – A Perfect Match?

The IEA DSM Programme is working to fulfil its mission: “Deliver to its stakeholders, materials that are readily applicable for them in crafting and implementing policies and measures.” To achieve this goal, Operating Agents and Executive Committee members are re-assessing how best to disseminate the Programme’s results. One approach being considered by the IEA DSM Programme is creating partnerships with other organizations. Collaborating with REEEP could create a perfect match.

REEEP (Renewable Energy & Energy Efficiency Partnership) is a public-private partnership launched by the U.K. and other partners at the Johannesburg World Summit on Sustainable Development in 2002.

In June 2004, REEEP was formally established as a legal entity in Austria with the status of an International NGO. The aim of REEEP is to accelerate and expand the global market for renewable energy and energy efficiency. Its goals are to:

- 1) Reduce greenhouse gas emissions.
- 2) Deliver social improvements to developing countries and countries in transition, by improving the access to reliable clean energy services, and by making REES (Renewables and Energy Efficient Systems) more affordable.
- 3) Bring economic benefits to nations that use energy in a more efficient way and increase the share of indigenous renewable resources within their energy mix.

The REEP regional secretariats provide access to best practices in policy and finance to promote renewable energy and energy efficiency. And, REEEP’s International Secretariat engages political, financial and business support to reduce the risk inherent in implementing new policy and financing initiatives.

Given the mission and scope of REEEP, it seems clear that both organizations could benefit from a partnership. To test the waters, it is envisaged to develop some project ideas together, such as to organise ESCO-training in Asia and to assess and suggest programs for Demand Response possibly in cooperation with the African Development Bank. The collaborative projects must not only respond to the regional REEEP demands, but also support the work of the IEA DSM Programme.

Energy efficiency is the focus of REEEP in 2005-2006. In addition to our activities in the energy efficiency of buildings and the appliance sector, it seems that the potential of energy efficiency in the energy systems is another major area of interest. The exceptional work already achieved on these issues in the IEA DSM Programme could be disseminated to our REEEP partners and could scale up existing or future REEEP projects. We are looking forward to strengthening the collaboration with the IEA DSM Programme in the future.

DR. MARIANNE OSTERKORN
DIRECTOR OF REEEP INTERNATIONAL
SECRETARIAT

PARTICIPATING COUNTRIES

Australia

Austria

Belgium

Canada

Denmark

European
Commission

Finland

France

Greece

Italy

Japan

Korea

Netherlands

Norway

Spain

Sweden

United Kingdom

United States

demand response

Building A DR Toolkit

Energy markets around the world continually strive to improve the efficiency and effectiveness of their power grids. This desire has become stronger with the dramatic rise in oil and natural gas commodity prices over the last couple of years. Incorporating Demand Response into the liberalized market design is one of the strategies that many markets are using to improve market efficiency.

Demand Response (DR) occurs when consumers actively adjust their power and energy consumption based on price signals. This action causes a more efficient supply and demand balance than what occurs when consumers purchase energy for a fixed price per kWh. It's easy for most people to understand that when demand is high and supply is scarce the price would be higher than when demand is low and supply is abundant. This type of price fluctuation occurs in almost every area of the economy. For example, if the price of an icecream cone is \$1 many people will consider buying it for dessert. However, if the price jumps to \$10 most people will consider an alternative dessert or even forgo dessert altogether. Hourly electric prices are among the most price volatile of all commodities. At 6:00am the price could be \$35 and at 2:00pm the price could jump to \$1,000 or more. This volatility is driven by supply and demand. By incorporating DR into the market design, the volatility and magnitude can be mitigated, thereby making the market more efficient.

Unfortunately, the electric industry has historically not provided this price signal to its consumers. Traditional utility tariff

structures are generally based on a single price per kWh of energy consumption. In some instances, there may also be an additional kW demand charge. These charges are generally set by administrative bodies and structured so that the consumer pays an average fixed price that covers the utility's annual cost plus an acceptable return on investment. Of course, this is an over simplification, but the point is that the consumer price does not have a direct correlation to the actual price of the wholesale energy market or its utility in a given hour. Therefore, consumers are not conditioned to modify their power use based on price fluctuations.

In order for the consumer to make intelligent power consumption decisions based on prices, they need to know their level of consumption and be able to correlate that with the market price. This would be very expensive to implement with older metering and communication technologies. However, the rapid development of the Internet and wireless communications along with new advanced metering technologies has helped to solve many of these technology problems.

With the technological capability in place, the industry is now able to consider modifications to market rules that would enable DR participation. Unfortunately, the blueprint for doing this does not exist. The IEA DSM Programme has taken a major step towards helping the development of DR by developing action-oriented tools that markets and regulators can use to incorporate DR in their daily operating practices.

These tools are designed to provide methodologies and research resources to use when evaluating the best business case structure for DR in a market. All of the project tools will be organized into the book, Task XIII Project Guidebook, to provide a roadmap for assessing DR integration into the market. In addition to the tools, the book can be used as a teaching guide for a DR professional certification programme.

The following tools will be included in the IEA DSM Task XIII Project Guidebook:

■ **DR Overview:** This section provides an introduction to Demand Response explaining what demand response is and how it is being used. The section also provides a Glossary of Terms to help people communicate with each other and a DR research database. The database is located on the project portal and provides a single source location for a variety of DR research studies and product development from all the participating countries.

■ **Market Assessment:** This section provides guidance on evaluating the demographic mix in a market as it relates to DR. This basic information provides the foundation one needs to estimate DR market potential and DR value to the market.

■ **DR Market Potential:** This section provides tools that help calculate the available DR market potential. The first step is to use a benchmark analysis based on data collected from dozens of DR products to establish benchmarks from the top performing products. A

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user can utilize the DR Market Potential Calculator, located on the project web portal, to translate the benchmark to local market conditions. The Calculator will provide a rough estimate of the available DR capacity in the market. The next step would be to interview a sample of consumers in the market. This is more expensive and time consuming than the benchmark analysis, but should yield a more accurate market potential estimate because it is based on actual market data. The section provides instruction for implementing such a research study as well as sample questionnaires. The final tool in this section is a description of modeling techniques that have been used to estimate the available DR potential. Modeling techniques are widely used to estimate Energy Efficiency market potential, but similar efforts for DR are fairly new. The section provides insight into these efforts.

■ **DR Valuation:** This section proposes a methodology for calculating the value DR has in the market. The methodology uses existing market modeling systems and techniques and describes how DR can be incorporated.

The methodology essentially calculates the Net Present Value DR using probability distributions on future market actions. The section has a technical guide and a layman guide. The technical guide provides instruction to people familiar with modeling systems. The layman guide provides instruction to people familiar with the energy industry, but not actual market modeling (e.g., regulators and executives).

■ **DR Technology:** This section provides a description of the type of technology used (and perhaps required) to manage DR products. Seventy-five case technology studies describe how the technology is being used and its benefits.

■ **DR Product Database:** This section provides a description of DR product types and how and where they are being used. The section also contains a database of around 100 existing DR products with their operational attributes.

■ **DR Market Barriers:** This section contains a review and discussion of current and past market barriers that may be impacting DR growth or implementation in markets around the world.

We hope to be able to identify common barriers from the participating markets and offer suggestions for overcoming them.

■ **DR Market Participation:** The last section in the Task XIII Project Guidebook provides guidance on how the tools, when used in combination, can provide insight into developing robust DR market participation.

It is widely believed that DR can help improve market efficiency and therefore, grid effectiveness. Balancing supply and demand can help lower the energy costs for all consumers in the power grid. DR is most probably the least cost solution for events with high consequence (e.g. blackouts or severe price spikes), but low probability events (e.g. needed once or twice every few years). Unfortunately, it is still a relatively new capacity source and the perfect solution has not yet been found. Task XIII strives to provide tools that everyone can use as they continue to search for the perfect solution. This toolkit will be available to the participating countries (see sidebar) in 2006 and worldwide in 2007.

The toolkit is based on data from Australia, Canada, Denmark, Finland, Italy, Korea, Netherlands, Norway, Spain, Sweden, and USA.

This article was contributed by IEA DSM Task XIII expert, Pete Scarpelli, Vice President of RETX in the United States. For more information contact the Operating Agent, Ross Malme, CEO of RETX, e-mail: rmalme@retx.com

new work

Competitive Energy Services

The single most effective way to meet all three key energy policy targets—security of supply, affordable costs of energy services and environmental soundness—is to avoid energy consumption by increasing end-use efficiency.

Energy Services like Energy Performance Contracting (EPC) or Supply Contracting have successfully proven to be an effective DSM instrument. If designed and implemented properly they create a win-win-win-situation—guaranteed energy and cost savings for the facility owner, a business opportunity for energy service companies (ESCOs) and less emissions into the environment.

The work of the new IEA DSM Task XVI, Competitive Energy Services, will build upon the recently completed work of IEA DSM Task X, Performance Contracting. IEA DSM Task X identified problems and opportunities and suggested a number of concrete actions, including raising the general credibility of Energy Performance Contracting (EPC) through targeted information, demonstration projects, accreditation of ESCOs, special performance guarantees and process and procurement guidelines. The new work will go a step further by taking a more product oriented approach, in other words, transforming the knowledge gathered into concrete products (e.g., manuals, training sessions, etc.).

To contribute to the market development of energy services, this new work will:

- Establish an IEA DSM energy services expert platform to disseminate information and provide services (e.g., coaching and training) in the field of energy services.
- Design, elaborate and test innovative energy services and financing models and then to publish them as a series of manuals.

This new IEA DSM Task on Competitive Energy Services will support you in tapping the energy efficiency potentials in your country through the use of market based instruments

TASK OPERATING AGENT,
JAN W. BLEYL OF GRAZ
ENERGY AGENCY

- Develop and follow up country specific activities for implementing energy services in the market with a focus on selected market segments, such as public buildings and private service buildings.
- International dissemination: Offering expertise and initiating joint projects and services with other international organisations

Countries are welcome to join this new work. For more information contact the Operating Agent, Jan W. Bleyl of Graz Energy Agency, Austria, e-mail: bleyl@grazer-ea.at or Co-Operating Agent, Seppo Silvonen of Motiva, Finland, e-mail: seppo.silvonen@motiva.fi

The benefits for a country participating in this Task are:

- Enlarging the market for energy services in your country.
- Building up know-how and capacity on innovative and competitive energy services and financing models (exclusive and first hand information).
- Developing business opportunities for international ESCOs.
- Participating in the IEA DSM energy services expert platform.
- Access to manuals on energy services and financing models to translate and adapt for use in your country.
- Mutual feedback and coaching for developing country specific market development activities (lessons learned in other countries).
- Preparing, if an EU country, for the upcoming EU-directive on energy end-use efficiency and energy services and helping to close the gap between policy targets and the “real world.”

new publications

Evaluating EE Policies & DSM Programmes

Is your DSM programme a success? Are your energy efficiency measures effective? These are questions often asked, but not easily answered. To facilitate the evaluation of DSM programmes and energy efficiency policies, the IEA DSM Programme has written an evaluation guidebook, *Evaluating Energy Efficiency Policy Measures & DSM Programmes*. It aims to provide an independent, standardised methodology for use in measuring and comparing the effectiveness of different measures. The two-volume book begins with an overview of evaluation theory, presents a detailed evaluation method and concludes with 30 policy evaluation case studies from seven countries.

The guidebook is designed for evaluators as well as those responsible for developing and implementing policies. Policy measures are categorized by types—regulation, information, economic, voluntary agreements, and combined policy measures. To structure the evaluation process, the experts in IEA DSM Task I identified seven key analytic elements:

- Policy measures theory used
- Indicators to measure success
- Baselines for indicators
- Assessment of outputs and outcomes
- Assessment of energy savings and emissions reductions, and other relevant impacts
- Calculation of cost, cost efficiency, and cost effectiveness
- Level of evaluation effort

Volume I outlines how to conduct evaluations and guides the reader through different types of policy measures. Volume II describes the country case studies by detailing the national policy measures and the systems used for evaluating, monitoring and data collection.

The Evaluation Guidebook already is proving to be a valuable tool for countries. Italy is evaluating the use of White Certificates as an energy saving measure and wanted a deeper knowledge of other EE policies and tools to classify, characterise, and quantify their effectiveness and efficiency. CESI, the Italian Company for Research and Services in the Electricity Sector, is leading a research project that has as one of its objectives to gather information on possible EE policies and energy savings projects and to provide a cost/benefit ranking of these policies tailored for the Italian situation.

Dr. Capozza of CESI states that, “In the context of the work conducted for the national Regulatory Authority on possible EE policies and cost/benefits rankings, CESI took great advantage of the approach and the synthesis methodologies identified and described in the IEA DSM Evaluation Guidebook, Volume I. CESI also obtained valuable information from the case studies and the extensive overview on the variety of possible EE policies adopted at an international level that were described in detail in Volume II of the Evaluation Guidebook.”

Are your DSM programmes and EE policies:

- Relevant?
To what extent are the objectives justified in relation to needs?
- Effective?
To what extent have the expected objectives been achieved?
- Efficient?
Have the objectives been achieved at lowest cost?
- Useful & Sustainable?
Do the expected or unexpected effects contribute to a net increase in social welfare and sustainability?

The Evaluation Guidebook is available for free. Visit the IEA DSM Programme website, <http://dsm.iea.org>, to download a copy of Volumes I and II.



<http://dsm.iea.org>

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

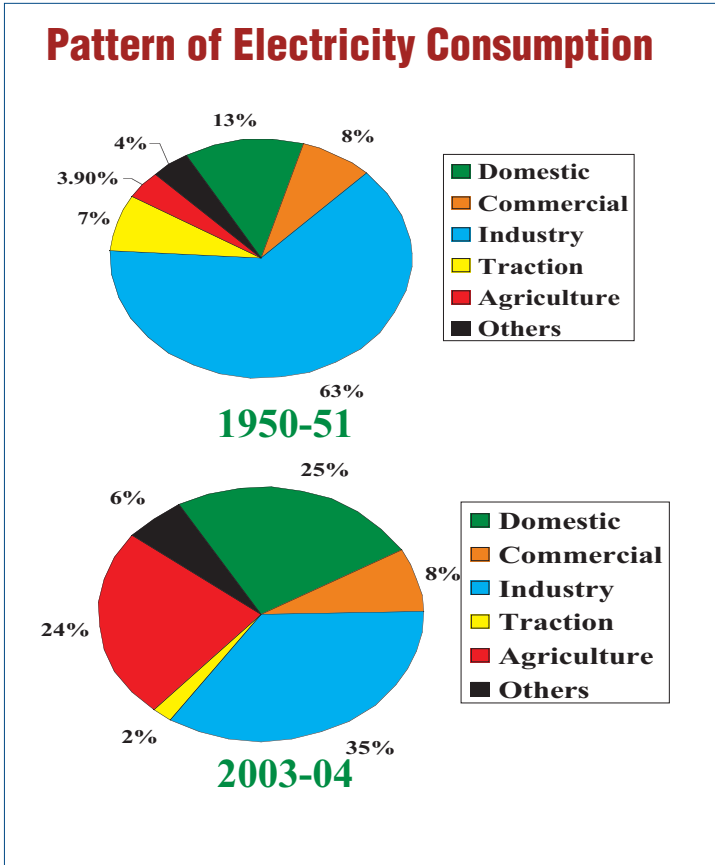
india

India Explores IEA DSM Membership

The IEA DSM Executive Committee welcomed Mr. Sudhaker Shukla, the Director of the Ministry of Power for the Government of India, to their October 2005 meeting in Spain.

At this meeting, Mr. Shukla outlined the need for demand side and energy efficiency over the next decade in India. Per capita consumption of electricity in India is low compared to industrialized countries, about 606 kWh, but is expected to grow significantly—in 2012 per capita electricity consumption is projected to be 1000 kWh. The Government of India recognizing the need for changes in its electricity sector passed the Electricity Act of 2003. The Act created a liberal and transparent framework for power development, and facilitated investment by creating a competitive environment and reforming the distribution segment of the power industry. In addition to this Act, the government has set the goal of providing electricity to 78 million rural households over the next five years. Today, over US\$ 3 billion has been committed as a capital subsidy.

Mr. Shukla commented that “The work of the IEA DSM Programme and the activities underway in India create an opportunity for both to benefit from such collaboration.”



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

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

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Prepared for the IEA Demand-Side Management Executive Committee
by
Morse Associates, Inc.
Washington, DC U.S.A.

Editor:
Pamela Murphy