GLOBAL ENERGY EFFICIENCY WORKSHOP

U.S. Companies Introduce Best Practices & Programs to Promote Energy Efficiency and Demand Side Management in Developing Countries

by Jason Hancock, Senior Program Coordinator, United States Energy Association

The **Global Energy Efficiency Workshop,** sponsored by the **United States Agency for International Development (USAID)** and organized by the **United States Energy Association's (USEA) Energy Utility Partnership Program (EUPP)**, was conducted in Washington, D.C. March 8 to 12, 2010. The Global Energy Efficiency Workshop brought together key energy industry officials from ten developing countries and the United States to discuss the ever-growing role of energy efficiency in meeting today's energy demand and the methodologies and policies required to effectively promote energy efficiency to end users to offset energy demand, decrease the need for new generation construction and lower the global carbon footprint. The Global Energy Efficiency Workshop included four days of presentations, a session where each country presented their current renewable energy outlook, and a day of site visits to facilities within the metropolitan D.C. area that are energy efficient or promote energy efficiency to consumers.

Allen Eisendrath, Energy Team Leader, Office of Infrastructure and Engineering, USAID welcomes the delegation during his opening remarks at the Global Energy Efficiency Workshop

INTERNATIONAL DELEGATES

Botswana
Mr. Thuso Matshameko, Government of Botswana
Mr. Kesiilwe Moalosi, Department of Energy

Brazil
Ms. Mariana Alfonso, Companhia de Eletricidade do Estado da Bahia- COELBA
Ms. Ana Christina Romano Mascarenhas, Neoenergia
Mr. Alexandre Mancuso, USAID/Brazil

East Africa Power Pool
Ms. Safaa Hamed Mekkawy, Egypt Electricity Holding Company
Mr. Getahun Moges Kifle, Government of Ethiopia Electricity Agency

Jamaica
Ms. Hillary Stuart-Alexander, Ministry of Energy and Mining
Mr. Elvis James, United States Department of State

Mexico
Mr. Edgar Chavez-Andrade, Comisión Nacional para el Uso Eficiente de la Energía
Ms. Susan Wofsy, USAID/Mexico

Namibia
Kudakwashe Ndhlukula, Renewable Energy & Energy Efficiency Institute

Philippines
Mr. Alvin Jones Ortega, Energy Regulatory Commission
Ms. Lily Gutierrez, USAID/Philippines

South Africa
Mr. Ompi Aphane, Department of Minerals & Energy
Mr. Cleveland Thomas, USAID/South Africa

Tanzania
Mr. John Kabadi, Tanzania Electric Supply Company, Ltd. (TANESCO)

BACKGROUND

The objective of the Global Energy Efficiency Workshop was to inform and motivate leaders in business, government, and utilities, and the public and private sectors in USAID-assisted countries to implement energy efficiency, energy conservation, and demand-side management programs in their countries. This workshop assisted the participants in understanding the role of energy efficiency, energy conservation, and demand-side management tools to meet the growing demand for energy services while meeting the ever stringent financial, environmental and reliability requirements.

KEYNOTE: LOOKING AHEAD: 2010 AND BEYOND *THE DECADE OF ENERGY EFFICIENCY*

The Global Energy Efficiency Workshop's keynote speaker **Kateri Callahan, President, Alliance to Save Energy (ASE),** addressed the need to promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment and greater energy security. ASE has promoting energy efficiency for more than thirty years and views energy efficiency and conservation improvements as America's greatest energy resource.

The enormous energy savings that can be attained through energy efficiency programs can avoid the emission of 2.5 billion tons of CO_2 and saves roughly $400 billion on an annual basis. By reducing overall energy demand, energy efficiency programs are extremely cost-effective as they cost one-third or less than lowest-cost source of electric generation, proving soundly that the least-expensive kilowatt hour is the one that is not built.

Ms. Callahan focused on five areas that are critical to establishing effective energy efficiency programs:

- Research, development and deployment-essential to encouraging technological innovation
- Incentives to gain a foothold in the market
- Education/Outreach to achieve market penetration
- Codes/Standards- necessary to mandate energy efficiency and phase out inefficient technology
- Government leadership by example

DEVELOPING ENERGY EFFICIENCY AND DSM PROGRAMS

One of the most critical takeaways from this workshop was that there is no single means to implement effective energy efficiency programs or Demand-Side Management (DSM). In order to realize the potential energy savings possible through energy efficiency and DSM, the effort has to come from all sides. Government, utilities, industry all play a critical role in what is necessarily a multi-faceted approach to realize the reduction of energy demand possible through increased energy efficiency. With this in mind, USEA broke the workshop into segments to represent the roles government, utilities, industry, financiers, and marketers play in bringing energy efficiency to the end consumer.

ROLE OF GOVERNMENT

Governments play a key role in initiating energy efficiency by setting the policies, standards and codes that are often required to start other interested parties on the road to increased energy efficiency.

Lawrence Reilly, National Grid (retired), spoke on the importance of governmental regulation to decouple utility revenue, breaking the link between profit and delivery volumes so that utilities are able to invest more solidly in efficiency programs that have a higher start up cost but would provide substantial savings in the long-term.

Maria Vargas, U.S. Environmental Protection Agency, discussed the U.S. Government's Energy Star branding program that has successfully made consumers aware of the potential savings available through more efficient consumer products.

Chris Tindal, Acting Deputy Assistant Secretary of the Navy for Energy, discussed the Department of Defense strategy for increasing the efficient use of energy. Through training programs to promote the awareness of energy use and building audits which have led to facilities retrofits including, efficient lighting, efficient heating & cooling and advanced metering, the Department of Defense has reduced its energy demand and is a prime example of government leading by example.

ROLE OF UTILITIES

Utilities play a key role in the energy efficiency process in that they are a significant point of direct contact with the consumer. Consumers expect to realize the monetary savings which motivates them toward the more efficient use of energy.

Laura Furrey, American Council for an Energy Efficient Economy, spoke on utility-run energy efficiency programs including: performance incentives, small business programs, and rebate programs for efficient lighting and appliances.

Dr. Eric Rambo, PA Consulting Group, discussed the use of rebate programs to incentivize the adoption of energy efficient technologies on the consumer level. Rebates are only effective if they are high enough to stimulate the purchase of a more efficient, though more expensive technology over a less-efficient, less expensive similar item. If the rebates are too high, then consumers buy more of the item than they need, store them for future use and no energy demand reduction is realized. If the rebate is too low, then consumers will opt to buy the cheaper, less efficient technology.

Asim Hussain, CURRENT Group, spoke on the necessity of improving grid efficiency and optimizing solutions to enhance operations and reliability, optimize power delivery, incorporate renewable and distributed generation, and ultimately allow consumers to manage their energy usage.

Jim Hogan, PA Consulting Group, discussed improving efficiency in electricity distribution. Through the principle of "control the controllables" by means of improved information and communications technologies, advanced metering and more efficient generation, technical and commercial losses can be managed and can have a huge impact on the results achieved.

ROLE OF INDUSTRY

Industrial applications comprise a significant portion of the overall consumption in the United States. With increased public awareness, industries are becoming more globally conscious as they strive to maximize production while reducing their carbon footprint.

Joseph Turk, Johnson Controls, discussed the most common opportunities for industrial energy savings including outside air management, operations, compressed air, lighting, data centers and fume hoods. By addressing issues in these categories, even well managed facilities can realize 8 to 12% reductions in energy usage.

Jeffrey Ruebesam, GE Power & Water, discussed GE's "Ecomagination" business strategy to improve industry efficiency which seeks to grow revenues, double spending on research and development all while reducing energy and water use, lowering green house gas emissions and engaging the public.

TECHNOLOGY OVERVIEW: BUILDINGS

Derek Supple, Johnson Controls, provided information on how buildings can be designed to be net zero energy for new construction and how existing buildings can be retrofitted to significantly improve energy efficiency and energy consumption. As a case study, Mr. Supple turned to Johnson Controls monumental task of retrofitting the iconic Empire State Building, which will improve it to such a degree that will be in the top ten percent of commercial buildings in energy efficiency.

Marc LaFrance, U.S. Department of Energy, discussed the Department of Energy's goal of mandating net-zero energy buildings and homes by 2025. Through the development of a comprehensive building code, new energy efficient construction materials can be mandated that will increase the efficiency of buildings thereby reducing their energy demand. The lowered energy demand for the building combined with the use of on-site generation such a roof-mounted solar photovoltaics will reduce the annual net use of electricity from the grid to zero. Mr. LaFrance commented on the building process, "If you build it wrong, you have to live with the mistake for fifty years. If you build it right, you will benefit from the energy savings from the very beginning."

TECHNOLOGY OVERVIEW: LIGHTING AND APPLIANCES

Paul Vrabel, ICF International, discussed the move toward the use of energy efficient lighting as one of the "low-hanging fruits" of energy efficiency. Energy efficient lighting is a method of energy efficiency that is easy for consumers to understand, is easy to implement and readily available. Further, the energy savings are easily verifiable and are cost effective to both utilities who often subsidize efficient lighting and to consumers who immediately see the savings in their utility bills.

Susan Komornik, The Cadmus Group, discussed the energy savings that modern appliances can bring to consumers. The amount of energy savings from improved energy standards in refrigerators from 1974 to 2008 is equal to the amount of energy used annually in Canada! Through government established policies and energy efficiency standards, the appliances used on a daily basis are becoming increasingly more efficient. Utilities can also play an role in bring more efficient appliances to the consumer through rebate programs and recycling/pick-up of old, inefficient appliances.

FINANCING ENERGY EFFICIENCY

Jas Singh, World Bank, spoke on financing energy efficiency in developing countries. Because energy efficiency projects have high initial costs and a slower rate of return than other investments, they are often difficult to implement. The problem is further compounded in developing countries where the lending infrastructure is less developed or non-existent. In these cases, market-based financing is simply not enough. The World Bank is working to transform the energy efficiency market by targeting commercially-oriented, demand driven programs that show results within one to two years. As credibility grows for energy efficiency investments, other investors will begin to actively participate.

Nina Kogan Lockhart, National Association of Energy Service Companies, discussed the Energy Service Company (ESCO) approach to financing energy efficiency projects. ESCOs are companies that contract with a customer to perform a feasibility study on existing facilities to determine energy savings through an energy efficiency retrofit. If the feasibility study shows benefit, the ESCO performs a more in-depth audit and develops a project proposal. The ESCO and the customer enter a contract where the ESCO guarantees that the project will achieve a specified level of energy savings over the life of the contract and the customer agrees to pay the ESCO a percentage of the energy savings. If the energy savings fall

short of the contracted amount, the ESCO pays the customer the difference so that they can meet their debt service obligations. If the savings exceed the guarantee, the customer and ESCO share the excess based on a prearranged formula. Although project financing is actually obtained through a third party, lenders are easier to obtain based on the risk mitigation provided by the ESCO.

MARKETING ENERGY EFFICIENCY

Carol Mulholland, The Cadmus Group showed the delegation the importance of marketing energy efficiency to the consumer. In order to effectively market energy efficiency to the consumer, you must first understand what influences the consumer's perception and behavior. This will help to better understand the consumer's mind set and use the marketing campaign in a way that will be accessible to them. It is also important to understand that consumers are different and that no single marketing campaign will reach 100% of consumers. For this reason, consumers are divided into segments so that campaigns can be marketed more closely to each segment. Finding allies in marketing energy efficiency programs such as utilities, technical trades, and retailers, and bringing them in at the beginning is critical to the success of the marketing strategy. Finally, it is important to evaluate your campaign to see how effectively energy efficiency is being promoted.

Christopher Wold, Collaborative Labeling and Appliance Standards Program (CLASP), showed the workshop participants how energy efficiency labeling can promote consumer awareness and help consumers purchase the most energy efficient products available. Labeling for energy efficiency falls into two categories: comparative labeling and endorsement labeling. Comparative labeling provides information showing where the specific items fits in a ranking of similar items based on energy efficiency. The endorsement label is a recognized branding from an energy efficiency program that consumers associate with energy efficiency, such as Energy Star. CLASP is an international organization that helps identify and respond to the needs of standards and labeling for major appliances, equipment and lighting projects in countries and regions throughout the world.

SITE VISITS

Sidwell Friends School

Sidwell Friends School, guided by it Quaker values, is committed to practicing responsible environmental stewardship. This principle of environmental stewardship is clearly visible in the design of the new Sidwell Friends Middle School in Washington, DC. By designing the school as a green building, Sidwell Friends hopes to inspire its students to thinking a more energy efficient, environmentally conscious manner.

The Sidwell Friends Middle School is the first K-12 school in the world to receive the U.S. Green Business Council's LEED (Leadership in Energy and Environmental Design) Platinum rating. The Sidwell Friends Middle School earned the LEED Platinum rating through careful management of the construction process and through active systems that reduce the school's energy demand and waste output. During the construction phase, regionally manufactured materials were used to minimize energy needed for transportation, building materials from recycled resources were used (11%) and 60% of its construction waste was recycled. The active systems that further contribute to the schools efficiency and low-environmental impact include a sewage treatment facility, a green roof which includes photovoltaic panels that generate 5% of the school's energy, and the use of natural ventilation, including solar chimneys which heat and draw air throughout the building.

United States Green Building Council Platinum LEED Headquarters

The delegation toured the United States Green Building Council's (USGBC) headquarters building in Washington, DC. Like Sidwell Friends Middle School, the USGBC's headquarters is also Platinum LEED certified and is used to showcase the benefits of LEED certification. The USGBC has a display that highlights many of the various components that went into the construction of their headquarters that contributed to its Platinum LEED certification, ranging from energy efficient windows to furniture constructed from recycled materials. Each item has been printed on an individual card with its specifications, manufacturer and energy efficiency/environmental rating.

Home Depot

Susan Komornik of The Cadmus group led the delegation on a tour of Home Depot, a major U.S. retailer of energy efficient building materials and appliances. Home Depot promotes the Energy Star program but has also gone a step further with its own energy efficiency branding, Eco Options. Products that carry Home Depot's Eco Option Label have less of an impact on the environment than comparable, unbranded products. To carry the Eco Options brand, products must provide either greater energy efficiency, conserve water, promote home health, clean air or be produced in a manner that promotes sustainable forestry. The efforts of Home Depot to promote energy efficiency and environmental stewardship provided the delegates with the perfect example of how a retailer can build on the foundation of a government program in a way that is both environmentally responsible and profitable.

ENERGY EFFICIENCY ACTION PLANS

Over the course of the workshop, participants broke into three smaller groups to discuss the applicability of the information gained during presentations from the previous day. Through this collaborative exercise, participants were able to discuss the impediments to energy efficiency in their home country and then work together to identify means to overcome them.

At the end of the workshop time was allotted to allow each participant to draft an Energy Efficiency Action Plan for their country that included recommendations for policymakers, their own organizations, utilities, and utility regulators for actions to accelerate the deployment of energy efficiency programs in their home countries. The action plans were then presented to the rest of delegation in the final session of the workshop.

All of the delegates agreed that much remains to be done in their home countries with regards to implementing governmental policies to mandate energy efficiency. Most felt that revisions to building codes to include provisions stipulating energy efficiency would be useful and that their governments

could lead by example by retrofitting existing government buildings to improve their efficiency. For some, these will be the first steps in implementing energy efficiency in their countries, for others, it will be yet another step on the journey toward increased energy efficiency. Regardless of the degree of implementation, all of us can do more to improve our efficient use of energy and globally, much remains to be done.

To view the presentations from the Workshop, please visit our Website:
http://www.usea.org/programs/eupp/gee/gee.asp

For more information, please contact Jason Hancock at jhancock@usea.org