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Brazil Watergy: Water and Energy Management

Title: Promoting Energy Efficiency In The Developing World Through Policy Development And Project Implementation
Program Area: Urban Energy, Energy Sector Governance
Implementer: Alliance to Save Energy
Geographic Focus: Latin America & Caribbean
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Energy efficiency management at the Companhia de Água e Esgoto do Ceará water utility in Ceará, Brazil.

Project Background

USAID has worked in Brazil's northeast since 2001 in partnership with the Ceará state water utility, Companhia de Água e Esgoto do Ceará (CAGECE), and the Alliance to Save Energy (the Alliance). Through this partnership CAGECE has implemented significant energy and water efficiency measures taking steps that include motor retrofits and upgrades,

optimization of existing pumping systems, and increasing pumping and storage capacity to allow for off-peak pumping. The present focus of work seeks to take the lessons learned from this partnership in order to develop the capacity of Brazilian water utilities nationally to implement energy efficiency measures. The expected outcomes include reducing costs both to consumers and utilities, decreasing environmental impacts and improving water delivery.

Building upon the CAGECE efficiency model, and with the support of over 18 state water utilities out of the country's 27, USAID and the Alliance has launched a network of the country's state and municipally operated water and wastewater utilities. This network, the Brazilian Water Efficiency Network (BWEN), is focused upon addressing the tremendous efficiency opportunities present within the country's water and wastewater sector. The network will work to link the efficiency efforts of the sector as a whole.



Development Objective

The Brazilian water and wastewater sector represents 2.3 percent of the country's total energy use, consuming over seven billion kWh annually. USAID efforts in Brazil seek to reduce the energy consumed by this sector, working to improve overall system efficiency, reducing costs and negative environmental impacts, while expanding water and wastewater services to the country's underserved populations.

Approach

BWEN was launched in November 2002 at a one-day meeting in Brasilia. Through participation in the inaugural meeting of BWEN, utilities have demonstrated a commitment to enacting energy efficiency measures within their organizations. Other participants that have demonstrated an interest in being active partners in this network include financial organizations, manufacturers of energy and water efficient technologies, in addition to groups that can contribute to advancing implementation and awareness on a national level. Through the establishment of BWEN, utilities now have a forum for sharing energy efficiency project development experiences, a forum that will also serve to overcome barriers to implementation of efficiency projects.

One of the main messages articulated by Brazilian water and wastewater utilities early on in this work is the lack of awareness about how efficiency actions and projects can be developed and then implemented. The development of BWEN is an effort to address this awareness gap through improved coordination of actors

from across the spectrum of the Brazilian water sector, the goal being to fully capitalize upon the tremendous efficiency opportunities available to this sector. This effort will include not only the utilities themselves, but government oversight agencies, energy and water related professional associations, financial institutions, and service and equipment providers possessing the expertise to promote efficiency within the sector.

Project Partners

The formation of BWEN is the result of commitments from multiple organizations, including the Alliance, the Brazilian Association of Sanitary and Environmental Engineers (ABES), the Association of Independent Utility Operators (ABCON), and USAID. Core BWEN membership consists of state and municipal water and wastewater utilities from across the country. Some of the most active members have included utilities from the states of Sergipe, Paraiba, and Ceará in the country's water scarce northeast, as well as utilities from Brasilia, Minas Gerais, Vitoria, Paraná and Rio Grande do Sul.

Project Activities

The focus of work over the past year has been to share word of CAGECE's approach to improving water and energy efficiency of their operations, focusing upon loss and leak reduction, improved measurement, monitoring and automation, and increased information sharing throughout the utility's operational divisions. To fully share word of these accomplishments, as well as to share how other utilities have approached efficiency



through their own initiatives, several technical trainings were held focused upon raising awareness throughout the sector. These activities have reached over 400 participants representing water utilities and other related institutions from across the country.

Project Results

Through joint USAID - Alliance - CAGECE efforts, the water utility continues to save about 5 MW of reduced electricity demand based upon improvements implemented in 2002. Additional consumption savings of 42 million kWh were realized in 2003. To date, the partnership has registered demand savings of over 15MW, and a corresponding increase in service, providing approximately 200,000 previously un-served residents with water connections. Additionally, a number of management tools and accomplishments have resulted from the partnership. These include:

- An energy management procedures manual, based upon CAGECE's comprehensive energy management approach
- Case studies outlining both water and energy efficiency improvements within the utility's water treatment and delivery systems
- Efficiency upgrades to motor, pump and valve systems, including an inventory tracking system that allows managers to track and prioritize procurement needs

as well as maintenance to existing systems

- Improved information management sharing via intranet, tracking past and present system performance using energy and water metrics
- Expansion of demand-side management activities that include education campaigns to reduce water use by consumers.

Development Impact

With improved service to customers and reduced energy and water waste in the arid, energy short northeast of Brazil, CAGECE, USAID, and the Alliance have formed a sustainable efficiency model for Brazil's water and wastewater sector. Through the BWEN initiative these effort will be replicated throughout the countries water sector. These measures are expected to translate into improvements in water access to those 7 million Brazilians.

Lessons Learned

Many groups are actively involved in promoting improvements within the operations of Brazil's extensive water sector, although few address directly the questions relating to the water and energy inputs of utilities. After extensive discussion with key stakeholders in both the energy and water sectors, the Alliance has determined that the creation of an independent group focused upon improving the way both resources are utilized is the most appropriate response to advancing efficiency within the sector.



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