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## South Africa Watergy – Water and Energy Management

Activity:	Promoting Energy Efficiency In The Developing World Through Policy Development And Project Implementation
Program Area:	Urban Energy
Implementer:	Alliance to Save Energy
Geographic Focus:	Africa
Countries:	South Africa
Duration:	September 2000 – September 2005
Status:	Active


### Project Background

As South Africa tries to rebuild its economy and society following many years of apartheid, it faces many development challenges to meet the growing demands of the historically underserved populations. This translates into a major increase in demand for water and energy services. These challenges are particularly pressing considering the scarcity of the resource, dearth of funding to build large new infrastructure, government guarantees of water to all citizens and inability to maintain historical subsidies. In response to these challenges, and building upon existing energy efficiency initiatives in South Africa and Watergy efficiency efforts in Brazil and India, USAID in partnership with the

Alliance to Save Energy is developing a municipal “Watergy” initiative tailored to the specific needs of South Africa’s urban areas.

### Project Activities

USAID and the Alliance to Save Energy are collaborating efforts with four pilot cities in South Africa: Kimberley, Mogale City, Buffalo City and Polokwane. In fact the two city councils in Kimberley and Mogale City have already approved MOUs with the Alliance to develop and implement energy efficiency infrastructure and programs in their water utilities. Current efforts underway in the cities seek to build the capacity of the municipal water utilities to identify, develop and implement energy and water resource efficiency projects.



## Approach and Development Objective

The program to date has focused upon the following activities:

### **Memoranda of Understanding**

The city councils in Kimberly and Mogale City have already approved Memorandums of Understanding (MOUs) with USAID and the Alliance to develop and implement energy efficiency infrastructure and programs in their water utilities. These activities will include targeted interventions on pressure management, leak reduction, improvement of metering and other actions to reduce unaccounted-for-water (UAW) and demonstrate the cost effectiveness of energy and water management.

### **Work to implement results of previous USAID studies**

Assistance to Kimberly and Buffalo City in implementing the key recommendations from USAID's previous water loss reduction studies. The Buffalo City study will be completed in February 2004, but some initial conclusions are becoming obvious, such as the need for pressure management, which can have substantial savings. Buffalo City has much fewer pressure reduction valves per kilometer of distribution pipe than many other cities (and in Mogale City, the valves have been degraded due to lack of maintenance). In addition, the Buffalo City study does not look at electrical efficiency, and this is another area the Alliance has agreed to assist, focusing specifically on load-shifting to off-peak hours and power-factor improvement. The Alliance is also

assisting Kimberly in implementing key recommendations including stemming the large rise in UAW, currently at 38%. These actions include improved metering, leak reduction and the creation of an energy and water management team.

### **Develop Action Plans with Cities**

With each city – starting with Mogale and Buffalo City – the Alliance has begun to develop action plans. These plans will be implemented by the local Watergy hire, Mike Rabe, who has been hired and is fully on board. Some items of these action plans include:

- Develop a pressure management program to better maintain the pressure reduction valves across the city, and to monitor the savings from improved pressure management. The Alliance is starting by helping Mogale develop a spreadsheet to enter data that will enable the city to get a better sense as to the situation and needs for maintenance on the existing valves.
- Train new staff that will be hired by the Mogale water services department on energy and water efficiency.
- Assist Buffalo City in preparing a proposal to the city council to hire staff for an energy and water management cell, including information on how these cells have paid for themselves in reduced energy costs.
- Assist Mogale City in converting the biogas generated by the wastewater treatment process for use as biofuels for municipal vehicles. This would be a



relatively small pilot project but with huge potential across the country if it is viable. Buffalo City also expressed a strong interest in this option.

- Explore leak reduction potential through use of leak detection equipment in both cities.

### Development Impact

The impacts of this work will assist South African municipalities in providing high quality affordable water service to residents. As these models are developed and applied by South African municipalities, residents will reap the benefits of improved municipal services, while reducing their impacts upon local water and air quality.

### Project Partners

USAID and the Alliance have developed a strong relationship with DWAF including the field staff who have participated in the formulation of the city strategies.

### Project Results

The MOUs have been approved by city officials in Kimberly and Mogale, and we expect to hear soon about the approval by Buffalo City. Initial audits in Kimberley have provided a glimpse of the tremendous potential for action in the water sector. Some initial key findings include in Kimberly, many of which are applicable elsewhere include:

- A strong need for improvement in bulk metering to better understand the situation with UAW, as well as expanding the city's current SCADA system.
- A strong need to establish a water management cell.
- A potential for improved pressure management.

### USAID Contact

Simone Lawaetz  
Office of Infrastructure and Engineering  
+1 202 712 4915  
slawaetz@usaid.gov

### Project Contact

Chris Godlove  
Alliance to Save Energy  
+1 202 857 0666  
cgodlove@ase.org