

### CHALLENGES

Indian municipalities are facing the challenges of rapid urban expansion, increasing power tariffs, and acute water shortages. At present only about two-thirds of the urban population has direct access to clean, affordable and reliable drinking water services. At the same time, municipal water utilities in India spend upwards of 60 percent of their budgets on energy used for water pumping. Municipal officials are often aware of the opportunities for making bulk water supply and street lighting systems more efficient, however for the most part they lack the means to take advantage of these opportunities.

### BACKGROUND

Vishakhapatnam, with a population of 1.2 million, is the second largest city in the southern Indian state of Andhra Pradesh. The city has a severe shortage of water: 213 million liters per day (MLD) are required by the city, which in turn requires 340 MLD to be pumped from the source, due to waste that occurs at various points in the system. However, only 190 MLD was being supplied to the city, and in some areas drinking water is supplied only once every two days.

Vishakhapatnam Municipal Corporation (VMC) is working to augment the water supply by bringing water from a reservoir of the River Godavari from a distance of nearly 200 km. The distance from the river to the reservoir is another 56 km. VMC is spending US\$ 94 million to lay the transmission pipeline from the river to the reservoir, and another US\$ 23 million to integrate the new water received into the existing supply system.

VMC has also allocated US\$ 3.4 million for reduction of water losses, energy efficiency and other measures. When VMC learned about the successful efforts of the Watergy Program, it asked to partner with the Alliance to make its existing bulk water supply system water and energy efficient. The Alliance began providing technical assistance in energy efficiency best practices to VMC in 2003.

#### Key Results

- Energy Savings: 1.4 million kWh/year
- Cost Savings: \$60,400 per year from an investment of \$24,500

### OBJECTIVES

The main objectives of the VMC Watergy Efficiency program were to:

- Coordinate a water and energy audit study of VMC's bulk water supply system.
- Build in-house technical and managerial capacity of VMC to oversee energy audits and implement energy savings measures.
- Assist VMC in incorporating energy efficiency measures in the design stage of its new Godavari water works.

### APPROACH

In response to the urban water and energy challenges faced by municipalities in developing countries, the Alliance has developed sustainable 'Watergy' solutions, which emphasize the important nexus between municipal water supply and energy use. By taking advantage of untapped energy and water efficiency opportunities in their water systems, municipalities can optimize energy use and reduce water wastage, reduce costs and ultimately improve water services.

As a first step, the Alliance coordinated a detailed energy audit of the bulk water supply systems at VMC. VMC bore 50 percent of the cost of the audit and committed to the implementation of the 20 suggested energy efficiency measures, six of which were no-cost. The Alliance also helped VMC incorporate energy efficiency measures at the design stage of the new pumping station for delivering water from River Godavari, by reviewing tender documents and redefining the technical specifications of pumps and motors.



## Alliance to Save Energy WATERGY CASE STUDY Vishakhapatnam, India



### RESULTS

VMC implemented all energy efficiency measures suggested by Alliance with an investment of only US\$24,500 from its Operations and Maintenance funds. The measures included retrofitting pumps and motors, optimizing the use of contracted demand, segregating low tension and high tension, and trimming impellers. As a result of these measures, VMC is accruing an annual energy savings of 1.4 million kWh and an annual financial savings of approximately US\$ 60,400. This has reduced VMC's annual energy bill for pumping water by about 5.4 percent, and has reduced CO<sub>2</sub> emissions by about 2,400 metric tonnes. The simultaneous reductions in municipal water waste, through more effective supply and distribution, will allow the municipality to deliver water to more homes.

In addition, all the suggestions provided by the Alliance during the design stage of the River Godavari water augmentation project have been included in the tender documents to ensure the quality procurement of pumps and motors, along with post-installation verification terms and conditions. Based on this assistance, VMC floated a tender and has awarded the contract to one of the leading pump and motor manufacturing companies in India.

### *For More Information*

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*Last update: March 2006*

This work was funded by the United States  
Agency for International Development



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