



renewable
energy
& energy
efficiency
partnership



FINANCING BUNDLED MUNICIPAL ENERGY EFFICIENCY (EE) PROJECTS THROUGH ENERGY PERFORMANCE CONTRACTS BY ENERGY SERVICE COMPANIES

BACKGROUND

Municipalities and water utilities in India are constantly challenged by escalating population growth, power shortages, rising energy costs, and water scarcity. An estimated 40-60 percent of a typical municipality's annual expenditures associated with supplying water to its population is spent on energy charges. The Alliance to Save Energy's Watergy program has demonstrated that, by optimizing energy use, municipalities can achieve significant energy and monetary savings—at least 20 percent in water supply systems alone. By updating municipal infrastructure, improved utility services can be provided to the population and industries while simultaneously reducing pollution, GHG emissions and costs.

TAMIL NADU



Tamil Nadu is one of the most urbanized states in India and is a hub of several industrial activities. However, the state is suffering from severe energy and water shortages. Many inhabitants of the state only enjoy running water for a few hours a day.

"The state supplies 85% of people's water demand, mainly through household connections or public fountains,"

-Raj Kumar, Senior Manager, Tamil Nadu Urban Development Fund

PROJECT

Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) launched a municipal energy efficiency project in 45 towns in the state in 2007. With REEEP support, the Alliance to Save Energy has provided technical advisory services to TNUIFSL for undertaking this project. For the first time, municipalities have been 'bundled' for implementation of energy efficiency in water pumping and street lighting by energy service companies (ESCOs) through energy performance contracts (EPCs).

Table 1 3 geographical zones

3 Project Zones		
Group 1	Group 2	Group 3
Gudiyattam	Gopichettyalaiyam	Srivilliputtur
Vellore	Thanjavur	Bodinayakanur
Ranipettai	Kumbakonam	Devakottai
Valasaravakkam	Mayiladuturai	Sivakasi
Cuddalore	Pudukottai	Ramanathapuram
Hosur	Karur	Sivaganga
Tiruvallur	Tiruchengodu	Chinnamanur
Chengalpattu	Sathyamangalam	Paramakkudi
	Kulittalai	Usilampatti
	Udumalaipettai	Kodaikkanal
		Dindigul

Preliminary data collection in the 45 towns revealed that 16 towns already had existing contracts with private companies for street lighting. Since street lighting and water supply was procured in a combined ESCO project, the 16 towns with existing contracts could not participate. It was therefore decided to split the project into two phases. In the first phase 29 towns were bundled to go ahead with the implementation, while remaining 16 will be taken up when the project is scaled up. The 29 towns in the first phase were divided into three zones based on geographic proximity as listed in table 1.

APPROACH

The project approach was formulated after many iterations with TNUISL, the municipalities, ESCOs, and other stakeholders. In the first stage of the project, a project committee was formed and bidding documents for the ESCOs were developed. In the second stage, the ESCOs have conducted investment grade energy audits (IGAs) and will soon be implementing the energy savings measures under energy performance contracts on a shared savings basis.

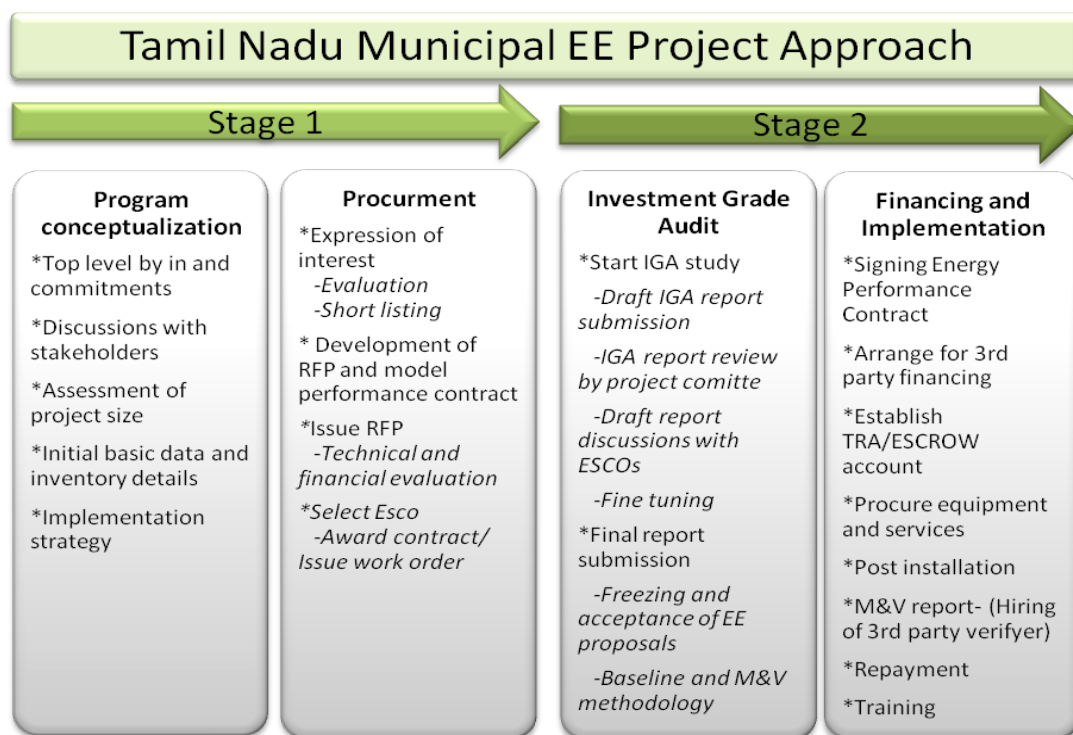


Figure 1 EE project approach

Technical Project Committee

The technical project committee – a cross functional team formed at the beginning of the project – comprises representatives from the following organizations/departments and agencies:

- Commission of Municipal Administration (CMA)
- RFP-Inviting Authority (TNUISL)
- Urban Local Bodies
- Chief Electrical Inspectorate
- Electricity Board

The technical project committee has been overseeing the project progress; resolving technical and financial issues that have emerged during the course of the project; approving the IGA reports; facilitating the signing of EPCs; and monitoring implementation on the ground.

Bid Documents

It was decided that the ESCO services, for the ULBs' energy efficiency projects, would combine water supply and street lighting. To qualify, the ESCOs had to bid for both. The bid document templates in the Alliance's *Manual for Development of Municipal Energy Efficiency Projects*—a standard reference document released by the Bureau of Energy Efficiency in 2008—were customized for the Tamil Nadu municipal energy efficiency project. With technical support from the Alliance, TNUIFSL developed the bid documents, which were vetted by the World Bank. A two-cover bid process was used, whereby the technical evaluation preceded the financial evaluation. The Alliance also developed the evaluation criteria for the technical proposals. The Expression of Interest (EOI) received 13 responses and a Request for Proposals (RFP) was issued to eight firms. Of these firms, six responded with proposals. Two leading ESCOs were selected to implement energy efficiency measures in 29 municipalities. One ESCO was awarded the projects in the municipalities in Group 1 and 2; the other was awarded the municipalities in Group 3.

Investment Grade Energy Audits

The ESCOs have completed IGAs and prepared bankable detailed project reports. The technical project committee and the ESCOs have worked out ways of resolving numerous challenges in data collection, metering, and other issues on the ground, and have agreed on baseline energy use data. The technical project committee and the ESCOs have also discussed the IGA reports and have agreed on energy savings measures that can be implemented on the ground.

Financing

Availability of finance for ESCOs has been a major issue in India. TNUIFSL is addressing this by providing financing opportunities to the ESCOs for implementing the project using a World Bank line of credit available through TNUIFSL. The ESCOs can now choose to borrow from TNUIFSL if the terms of lending are more favorable in comparison to other financial institutions. Thereby a new and reliable financing mechanism has been put in place.

Energy Performance Contracts

The ESCOs and the municipalities are in the process of negotiating and signing the EPCs. Once the contracts have been signed, the ESCOs will commence the implementation of energy savings measures and train the municipal staff in the operations and maintenance of the new measures.

Trust & Retention Account (TRA)

By setting up a TRA account with ESCROW of the

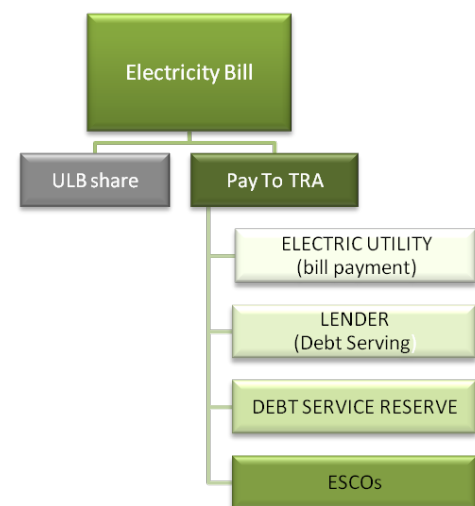


Figure 2: TRA repayment mechanism

municipalities' electricity bill payments, TNUISL has addressed the ESCOs' payment concerns and has helped establish trust between the parties (figure 2).

Measurement and Verification of Energy Savings

Measurement and verification (M&V) of the energy savings resulting from the implementation of the energy conservation measures is being carried out through the application of the International Performance Measurement and Verification Protocol (IPMVP), and by developing M&V standards for water pumping and street lighting in India. To avoid disputes over savings, a third party M&V agency has been hired to independently measure and verify savings on the ground.

OUTCOMES AND LESSONS LEARNT

Through the implementation of this project, the Alliance has facilitated market transformation by creating confidence within the ESCOs about working with the public sector—and vice versa. The outcomes and lessons learnt are listed in table 2 below:

Table 2 Outcomes and lessons learnt

OUTCOMES	LESSONS LEARNT
<ul style="list-style-type: none"> • Reduction in operating costs through reduced energy consumption • Reduction in CO₂ emissions • Reduction in demand and supply gap at the electric utilities • Availability of standardized bidding document for energy efficiency projects • Improvement in service delivery • Scaling up of the project in Tamil Nadu to include all ULBs in the state • Replication and scaling up of the project in other Indian states: all 159 ULBs in Gujarat and 213 ULBs in Karnataka. 	<ul style="list-style-type: none"> • Street lighting and water supply should be procured as separate projects, not combined into one. • The ESCO industry is dominated by vendor ESCOs(dealing with particular products and offering implementation of the same) and therefore the technical and financial capacity of ESCOs has to be evaluated before awarding new projects • Municipal EE projects have many challenges in terms of metering, availability of quality data, etc. The project committee and ESCOs should be flexible to allow for adjustments and establishing baselines.

The Bureau of Energy Efficiency has initiated the 175 ULBs Municipal DSM program across the country for implementation through by ESCOs.

For More Information

Laura VanWie McGrory

Washington DC, USA

+1-443-934-2279

Lvanwie@ase.org

Pradeep Kumar

Bangalore, India

+91-80-22112072/73

Ssetty@ase.org



**ALLIANCE TO
SAVE ENERGY**

Creating an Energy-Efficient World