EESL’s Building Energy Efficiency Program

A Successful Business Model

S.P. Garnaik
Chief General Manager (Technical)
EESL’s Profile

Joint venture Company of 4 Public Sector Enterprises of Ministry of Power, Govt. of India

- **A public Energy Service Company (ESCO) under Ministry of Power, Govt. of India**
- **Established in the year 2009**
- **100% share holding with Public Sector Enterprises**
- **Board of Directors represented by Ministry of Power and Bureau of Energy Efficiency (BEE)**
- **Largest ESCO in the world**
- **Backed by Government of India and Promoters with net worth of over $32 billion**
- **Implementing largest Energy Efficiency Portfolio in the world**
- **One of the fastest growing companies in India – 10 fold growth in one year**

- **NTPC Limited** (India’s Largest Power Generating Company | Market Cap as on 1st March 2016 – US $15.5 billion)
- **Rural Electrification Corporation Limited** (Market Cap as on 1st March 2016 – US $2.4 billion)
- **Power Finance Corporation Limited** (Market Cap as on 1st March 2016 – US $3.1 billion)
- **Power Grid Corporation of India Limited** (India’s Largest Power Transmission Company | Market Cap as on 1st March 2016 – US $10.7 billion)
Overview of India’s Building Sector (Source: Expert Group Report on Low-Carbon Economy)

The overall constructed area to increment by about 5 times from 21 billion square feet (2005) to approximately 104 billion square feet by 2030 at a CAGR between 5% to 10%.

Building energy consumption accounts for over 30 percent of electrical energy consumption in the country, and is rising annually at 8%.

Lack of energy conscious designs lead to rampant inefficiencies in commercial buildings. Energy Audits show energy saving potential of up to 30-50%. Energy performance index (EPI) 200 to 300 kWh/sq m/year.
Issues and Opportunities in Buildings

- Improper O&M Practice
- Under-utilization of equipment
- In-efficient system or equipment
- Wastage

Loss of Energy

- Purchase more from grid
- Generate more at site

Building Prospective
- More Energy Cost
- Less Competitive

National Prospective
- More Fossil Fuel Consumption
- High GHG Emission

Controllable (Management, Technology & Practice)
Interventions by EESL in Buildings

- 94,000 nos. of LED Lighting.
- 5,000 nos. of BEE 5 – Star ceiling fans.
- 3,000 nos. of BEE 5-Star ACs.
- 328 nos. of energy saver ACs.
- 2 nos. (120 TR) energy efficient chillers.

Other EE products like efficient water pumps and APFC control are also installed.
Snapshot of Achievements – EESL Building Programs

- **Reduction in Electricity Consumption**: 39%
- **Total Annual Energy Savings (MU)**: 11 MU
- **Total Annual Cost Savings (INR)**: 90 Million
- **Annual CO2 reduction (Tons of CO2)**: 9350 Tons
- **Total Investment (INR)**: 125 Million
Activity Flow

Discussion with Building Officials
Establish Baseline & Signing of Agreement
Procurement Process
Project Implementation
Cash flow to EESL from Deemed Savings
Key Features

Pre Implementation
- Walkthrough Survey
- Procurement by EESL
- Investment

Installation
- Undertaken by EESL

Post Implementation
- Warranty
- Sample based quality check
- Selective Replacement
Proposed Business Models

• Model 1: If 100% investment is made by customer,
  - Walkthrough Survey
  - Facilitation in procurement
  - Warranty
  - Project Monitoring
  - One-time Fees to EESL

• Model 2: If 100% Investment by EESL (Preferred Model)
  - Investment
  - Walkthrough Survey
  - Facilitation in procurement
  - Warranty (Extended)
  - Project Monitoring
  - Project Cost
    - = Upfront Investment + PMC + Interest on Debt & Equity
### PMC Model

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Aspects</th>
<th>Clients Scope</th>
<th>EESL’s Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inventory Collection</td>
<td>NA</td>
<td>Though Walk Trough Audit, Questionnaires etc.</td>
</tr>
<tr>
<td>2</td>
<td>Technology Suggestion</td>
<td>NA</td>
<td>Submit best suitable technology based on energy audit</td>
</tr>
<tr>
<td>3</td>
<td>Tender Process</td>
<td>Only Letter of Award (LoA) to be issued</td>
<td>Tender document preparation, bid management, finalization of Bidder etc.</td>
</tr>
<tr>
<td>4</td>
<td>Capital Investment</td>
<td>Entire project investment (including EESL’s Fee)</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>Project Monitoring</td>
<td>NA</td>
<td>Taken care by EESL</td>
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## ESCO Model

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Deemed Saving is estimated based on the reduction in wattage due to retrofits and operating hours.

- **Annual Monetized Saving (Rs.)**
- **Annual Repayment to EESL (Rs)**
- **Annual Retain of Saving by Client**

**Project Period:** 3-5 Years

**Project Cost:** Material Cost + PMC + ROI

**Warranty:**
- **A:** 60-80%
- **B:** 20-40%
Successful ESCO Project by EESL: A Case

Project: Energy Efficiency Retrofit Program in a High-Rising Building

- Energy Audit (Walk Through)
- Preparation of Scheme
- Identification of Intervention
- Signing of MoU with Client
- Implementation
- Warranty Support & Payment Recovery

Deemed Saving Approach

28% Reduction in Energy Consumption

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<th>HEAD</th>
<th>UNIT</th>
<th>Values</th>
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<tr>
<td>Estimated Energy Savings</td>
<td>KVAh</td>
<td>123638</td>
</tr>
<tr>
<td>Fixed Tariff, Rs. per kVAh</td>
<td>$ Per kVAh</td>
<td>0.125</td>
</tr>
<tr>
<td>Estimated Annual Cost Savings</td>
<td>$ Per year</td>
<td>15465</td>
</tr>
<tr>
<td>AMC getting free for Client on Air Conditioning</td>
<td>Per year</td>
<td>332.30</td>
</tr>
<tr>
<td>($ 12.3/AC/Annum)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cost Savings</td>
<td>$ Per year</td>
<td>15796</td>
</tr>
<tr>
<td>Investment, Rs.</td>
<td>$</td>
<td>35888</td>
</tr>
<tr>
<td>EESL PMC fee</td>
<td>$</td>
<td>4306</td>
</tr>
<tr>
<td>Estimated Capital Cost of the project</td>
<td>$</td>
<td>40194</td>
</tr>
<tr>
<td>Equity Portion (20% of capital cost)</td>
<td>$</td>
<td>8039</td>
</tr>
<tr>
<td>Return on Equity 23.7% per annum</td>
<td>$</td>
<td>5894</td>
</tr>
<tr>
<td>Debt portion (80% Cost of capital)</td>
<td>$</td>
<td>32156</td>
</tr>
<tr>
<td>Debt Interest (11% per annum)</td>
<td>$</td>
<td>10078</td>
</tr>
<tr>
<td>Total Estimated Repayment to EESL</td>
<td>$</td>
<td>56167</td>
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Contract Period
- Years: 5

Payout to EESL annually
- $: 11233

EESL Share
- %: 71%

EESL Quarterly repayment
- $: 2808

No. of repayments
- Quarterly: 20
Contact Us:

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