EESL’s Building Energy Efficiency Program
A Successful Business Model

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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**

**Joint Venture Partners**

- **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)
The overall constructed area is expected to increase 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

- **94000 nos.** of LED Lighting.
- **5000 nos.** of BEE 5 – Star ceiling fans.
- **3000 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

- **39%** Reduction in Electricity Consumption
- **11 MU** Total Annual Energy Savings (MU)
- **90 Million.** Total Annual Cost Savings (INR)
- **9350 Tons** Annual CO2 reduction (Tons of CO2)
- **125 Million** Total Investment (INR)
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,
  
  - PMC
  
  - Walkthrough Survey
  - Facilitation in procurement
  - Warranty
  - Project Monitoring

  - One-time Fees to EESL

• **Model 2:** If 100% Investment by EESL (Preferred Model)
  
  - ESCO
  
  - Investment
  - Walkthrough Survey
  - Facilitation in procurement
  - Warranty (Extended)
  - Project Monitoring

  - Project Cost = Upfront Investment + PMC + Interest on Debt & Equity
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Aspects</th>
<th>Clients Scope</th>
<th>EESL’s Scope</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Inventory Collection</td>
<td>NA</td>
<td>Though Walk Trough Audit, Questionnaires etc.</td>
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<tr>
<td>2</td>
<td>Technology Suggestion</td>
<td>NA</td>
<td>Submit best suitable technology based on energy audit</td>
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<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>
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<tr>
<td>4</td>
<td>Capital Investment</td>
<td>Entire project investment (including EESL’s Fee)</td>
<td>NA</td>
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<tr>
<td>5</td>
<td>Project Monitoring</td>
<td>NA</td>
<td>Taken care by EESL</td>
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Shared Saving Approach

- **Baseline kWh**
- **Estimated kWh**

**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**
  - 60-80%
  - 20-40%

**Project Period**: 3-5 Years
**Project Cost**: Material Cost + PMC + ROI
**Warranty**
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**

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**Deemed Saving Approach**

- **Lighting (LEDs)**
- **Air Conditioning (5-Star ACs)**

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**Estimated Energy Savings**: 123638 KVAh

- **Fixed Tariff, Rs. per kVAh**: $0.125
- **Estimated Annual Cost Savings**: $15465 Per year

**AMC getting free for Client on Air Conditioning ($12.3/AC/Annum)**

- **Total Cost Savings**: $15796 Per year
- **Investment, Rs.**: $35888
- **EESL PMC fee**: $4306
- **Estimated Capital Cost of the project**: $40194

**Equity Portion (20% of capital cost)**: $8039

- **Return on Equity 23.7% per annum**: $5894
- **Debt portion (80% Cost of capital)**: $32156
- **Debt Interest (11% per annum)**: $10078

**Total Estimated Repayment to EESL**: $56167

- **Contract Period**: 5 Years
- **Payout to EESL annually**: $11233
- **EESL Share**: 71%
- **EESL Quarterly repayment**: $2808
- **No. of repayments**: Quarterly 20

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**28% Reduction in Energy Consumption**
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