What are the steps?

Building operations and procurement

Buildings: Session 8

Buildings energy efficiency sessions in partnership with:

BEEP

INDO-SWISS BUILDING ENERGY EFFICIENCY PROJECT

IFC International Finance Corporation WORLD BANK GROUP

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Energy Efficiency Training Week: Buildings Program

1. **Where to start:** Energy use in buildings
2. **Where to start:** Energy efficiency potential in buildings
3. **Toolkit:** Energy efficient building design
4. **Toolkit:** Energy efficient building technologies

   Where do I get help? IEA's Technology Collaboration Programmes
5. **Toolkit:** Energy efficiency policies and target setting
6. **What are the steps?** Enabling investment with energy efficiency policies
7. **What are the steps?** Implementing building energy codes and standards
8. **What are the steps?** Building operations and procurement

   Special session. The multiple benefits of energy efficiency
9. **Did it work?** Evaluation and energy efficiency indicators

   Where do I get help? International and regional energy efficiency initiatives
10. **Energy efficiency quiz:** Understanding energy efficiency in buildings

8. What are the steps? Building operations and procurement

Trainers: Brian Dean and Shruti Narayan

Purpose: To teach the fundamentals of how energy efficiency can be used in operations and management of buildings to reduce energy consumption.

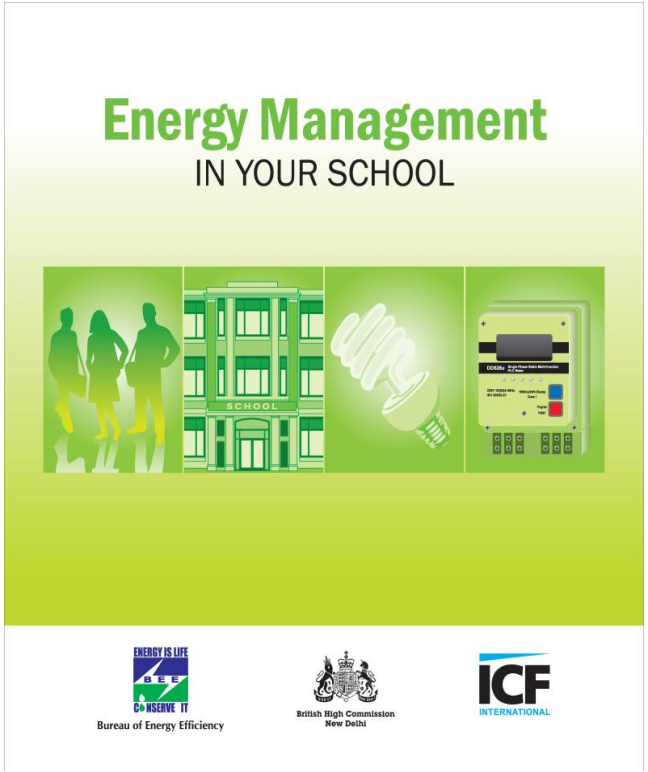
Scenario: Citizens are asking why government-operated buildings are not efficient. *What measures can enable the government to lead by example with efficient buildings?*

Energy management

Resources

Key steps

Energy management in buildings: resources



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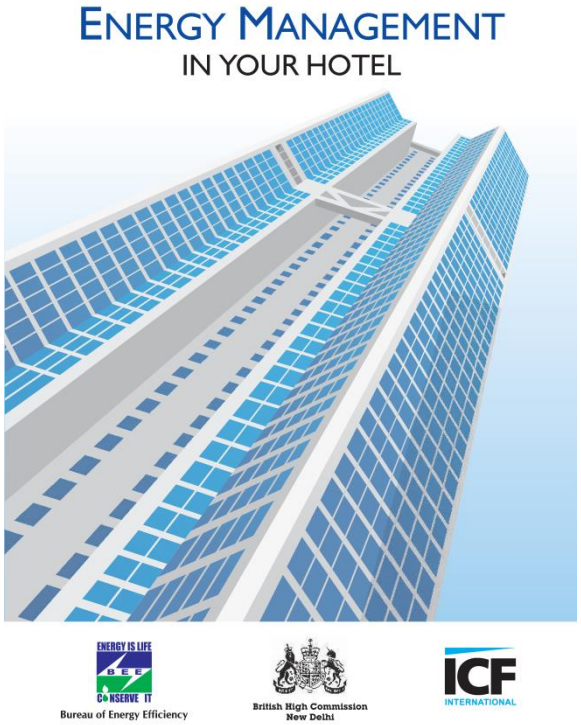

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Energy management in buildings: 7 key steps

1. Initiate an energy management programme
2. Determine efficiency targets
3. Conduct energy assessments
4. Identify energy savings opportunities
5. Calculate costs and paybacks
6. Implement measures
7. Monitor performance

Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

Step 1: Initiate an energy management programme

- Understand existing energy use situation
- Identify a core team
- Identify and set specific objectives
- Develop a plan
- Communicate plan
- Implement measures and monitor performance
- Motivate staff members

Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

Step 2: Determine efficiency targets

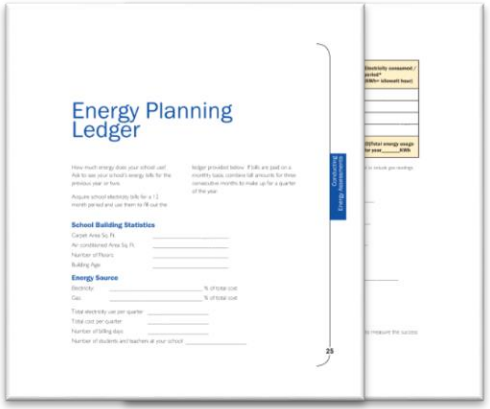
- Follow the path of our training:
  - Examine where is energy being used (session 1)
  - Identify energy efficiency potential (session 2)
  - Leadership and stakeholder engagement to set targets (session 5)

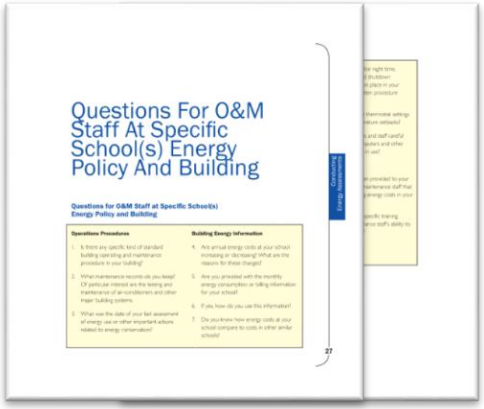
Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

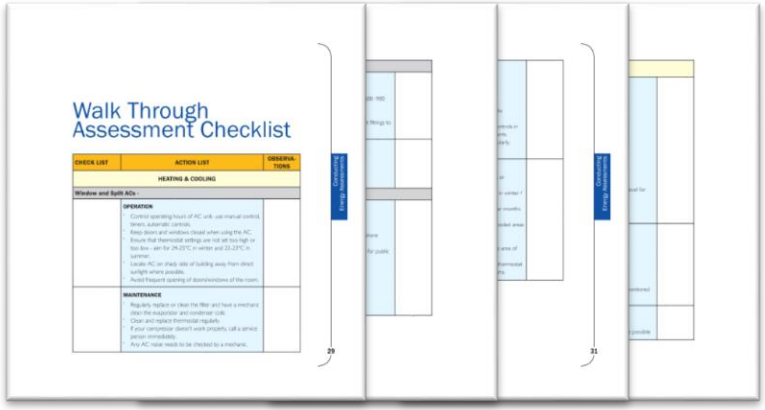
Step 3: Conducting energy assessments

- Simple audit (walk through assessment) or detailed audit (energy analysis assessment)

- Use existing forms and checklists to capture the information
  - Energy planning ledger
  - Questionnaire for building operators
  - Walk through checklist







Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

Step 4: Identify energy saving opportunities

- Follow the path to low energy existing buildings (session 1)
  - Starting with low-cost and no-cost measures

1. Make energy savings as part of the culture of the organisation
   - Stakeholder engagement and goal setting

2. Retro-commission:
   - Address maintenance and repair issues
   - Identify changes in operations

3. System improvements:
   - Reduce electrical loads
   - Improve building envelope
   - Upgrade equipment components

4. Replacement options:
   - Change equipment to be more efficient and right-sized

Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel; and ENERGY STAR

Step 5: Calculate costs and paybacks

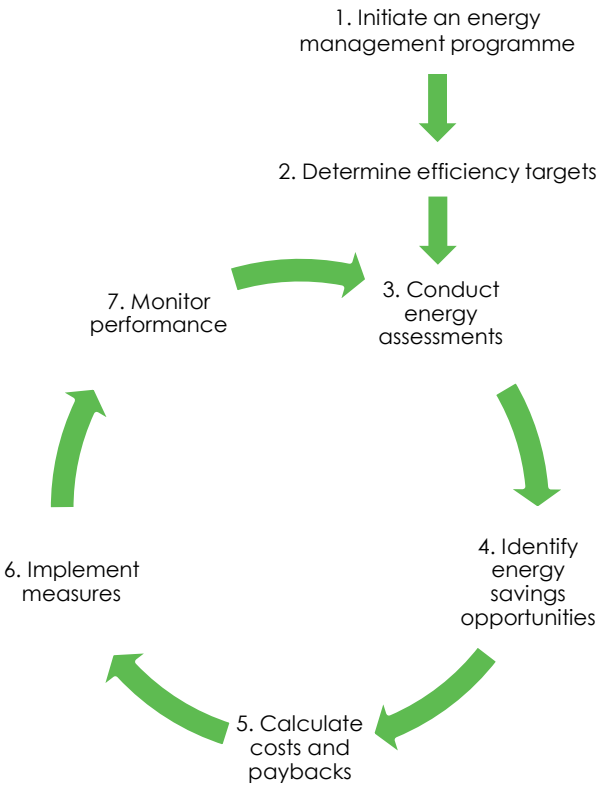
- Consider the cost analysis type needed:
  - Simple payback method
  - Return on investment of internal rate of return (IRR)
  - Cost benefit analysis
  - Net present value (NPV)
  - Lifecycle assessment(LCA)

- Increasingly understand the impact of:
  - Future energy prices
  - Full range of benefits (multiple benefits of energy efficiency)

Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

Steps 6 & 7: Implement measures & monitor performance

- Implement energy efficiency measures
  - All cost effective measures that have benefit to owners and occupants
- Monitor performance
  - Evaluation of energy efficiency (session 9)
  - Data collection / sensors / energy management systems
- Continuous improvement
  - Use the information collected to continue the process again back at step 3 to identify more energy savings opportunities for continuous improvement



Adapted from: India Bureau of Energy Efficiency, Energy Management in your School, Hospital, Hotel.

Procurement

Public procurement

Bulk procurement

Energy efficient and sustainable public procurement

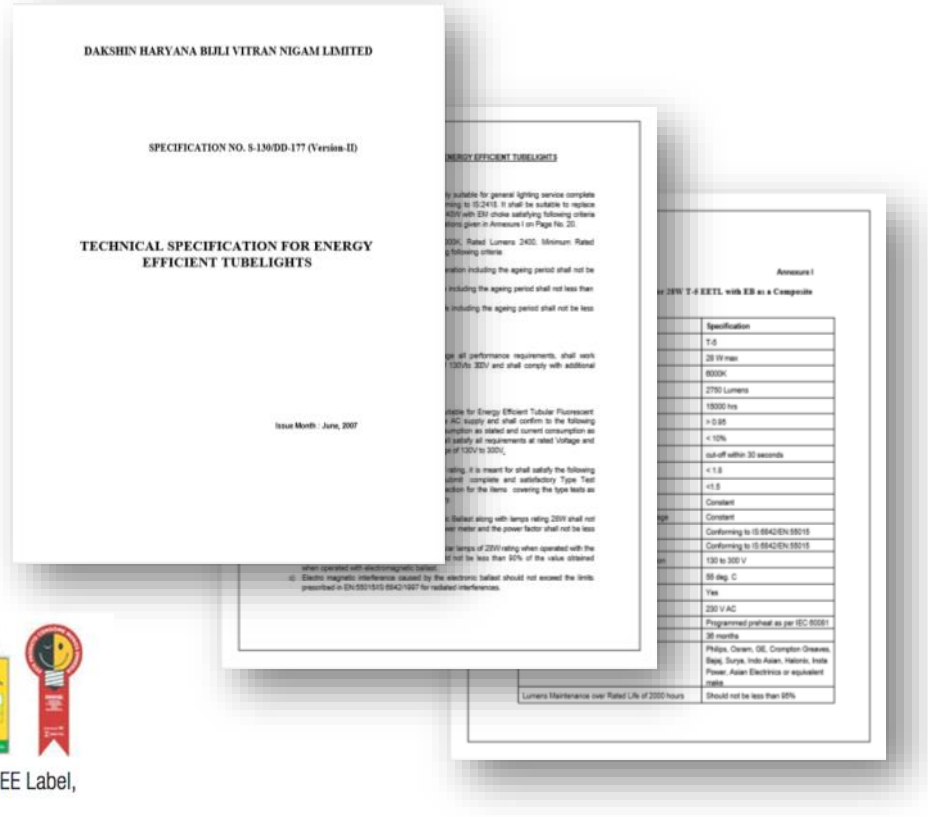
- **What?** The government purchasing efficient and sustainable products and services
- **Why?** Because governments spend more money and can influence the market for products and services
- **How?** Define minimum efficiency requirements into procurement specifications and enable purchases based on cost effectiveness and cost benefit analysis (and not first cost)
- **Result?** Efficient and sustainable product and service prices will go down, further improving the cost effectiveness of energy efficiency

Adapted from: OECD and Sustainable Procurement Platform.

Energy efficient and sustainable procurement

- Purchasing products and services that meet certain energy efficiency criteria

- Approaches include:
  - Energy efficiency label / certificate
  - Technical specifications
  - Lifecycle assessment
  - Qualifying product list



From left to right: US ENERGY STAR, EU Energy label, China EE Label, India Bureau of EE Label, Korean EE Label, Mexico Sello FIDE, Thailand EGAT EE Label, Brazil Selo Procel

Source: ESMAP Driving Energy Efficiency Markets through Municipal Procurement - http://documents.worldbank.org/curated/en/532071468326412153/pdf/893870ESMAP0P10curement0KS170140web.pdf

Bulk procurement of products: example from EESL

- **EESL's UJALA programme:**
  - the world's largest lighting replacement programme, which aims to replace 770 million old lamps with efficient LED lamps without government subsidies

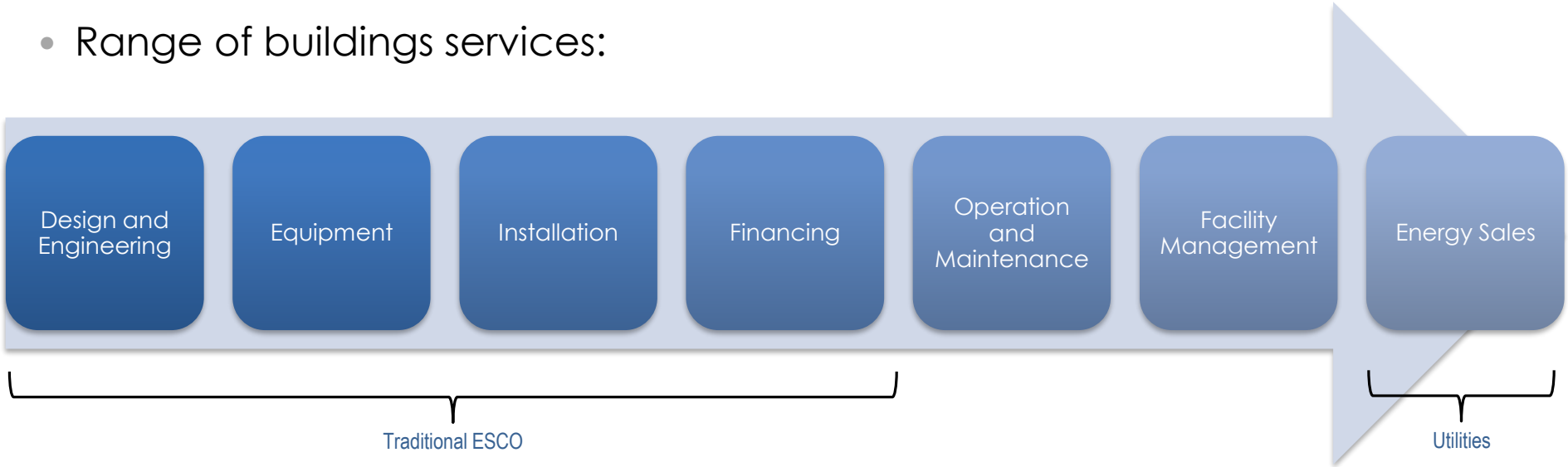
- **Thanks to bulk purchase:**
  - UJALA LED bulbs cost only 50 INR
  - LED retail prices reduced from 800 INR in 2012 to 200 INR in 2016 and less today
  - Leading to one of the fastest LED price reductions in the world
  - Helped improve acceptance and availability of LEDs in India

Source: EESL India's UJALA Story - eeslindia.org/content/raj/eesl/en/Programmes/UJALA/About-UJALA.html

Bulk procurement of services: Energy Savings Performance Contract

- Energy service company (ESCO) often deliver on ESPCs:
  - Can provide financing for energy efficiency
  - Can provide energy efficiency services
  - Typically tasked with delivering/guaranteeing energy savings

- Range of buildings services:



Source: www.iea.org/media/training/presentations/latinamerica2014/8A_Energy_Service_Companies_and_Financing.pdf

Procurement: development and implementation steps

Get commitment

Leadership agrees to the goals of energy efficient and sustainable procurement

Adopt a voluntary EE procurement policy

To test the procurement approach and to identify barriers

Conduct analyses of a limited set of products

To build credibility of the procurement approach

Develop procurement programme infrastructure

To reduce compliance costs and address barriers

Foster strategic partnerships with other jurisdictions

To achieve better pricing and improve program effectiveness

Track and monitor procurement activities

To understand the benefit and gain support for procurement

Make EE procurement mandatory

Develop enforcement mechanisms and make EE procurement standard practice

Update procurement specifications to higher efficiency

Introduce new products and higher efficiency products as the market evolves

Source: World Bank - https://openknowledge.worldbank.org/bitstream/handle/10986/17485/735070ESM0P12700EEProducts0TR003012.pdf?sequence=1&isAllowed=y

How do I calculate potential?

Scenario:

Citizens are asking why government-operated buildings are not efficient.

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