Energy Efficiency Training

Module 1 Training energy auditing methodology

Knowledge Services
Global Green Growth Institute
Nov. 24, 2015

Power, Usage and Energy

Bulb rating

POWER

100W

ON

Time

USE

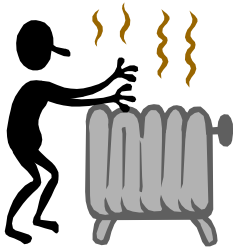
10h

=

Meter

ENERGY

1000Wh
1kWh

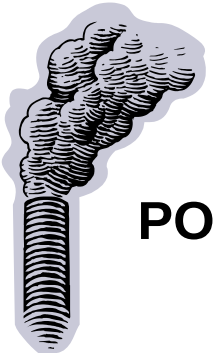


HEAT

+

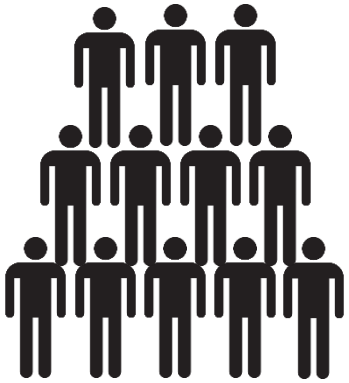
MONEY

+



POLLUTION

Demand for 1 year



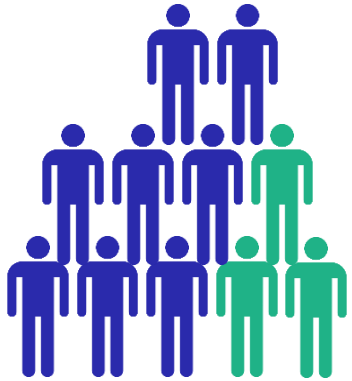
Average Consumption		Households Customers		Duration		Consumption
ENERGY	×	NUMBER	×	PERIOD	=	ENERGY
1kWh/day/HH		10,000 HH		365 days/year		3,650,000 kWh/year

Customer profiles

Average Consumption

ENERGY

4 kWh/day/HH



Urban Households
Rural Households

NUMBER

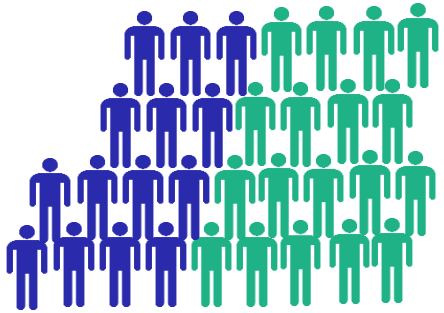
13,000 HH
5,000 HH

Average Consumption

ENERGY

1.2 kWh/day/HH

Projections - Number of customers

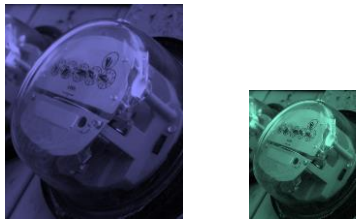
2015	2020	2025	2030
			
Urban Households Rural Households	Urban Households Rural Households	Urban Households Rural Households	Urban Households Rural Households
NUMBER	NUMBER	NUMBER	NUMBER
13,000 HH 5,000 HH	16,000 HH 12,000 HH	21,000 HH 20,000 HH	26,000 HH 33,000 HH

Projections – Consumption per capita

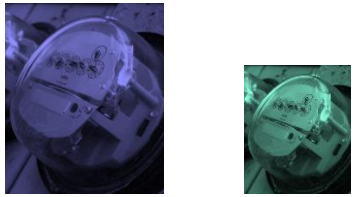
	2015 kWh/day/HH	2020 kWh/day/HH	2025 kWh/day/HH	2030 kWh/day/HH
	4	3.6	3.3	3.3
	1.2	1	1.1	1.3

Projections – Compute BAU scenario

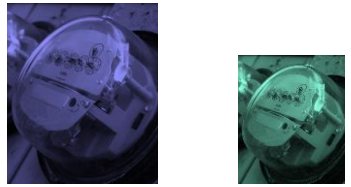
2015



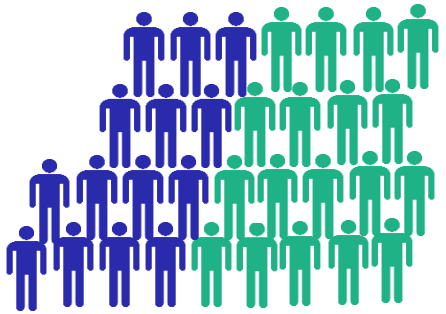
2020

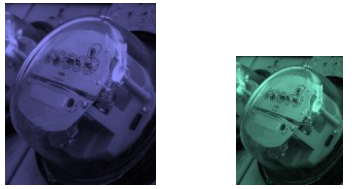


2025



2030





EE appliances introduction

Bulb rating

POWER

10W

Time

USE

10h

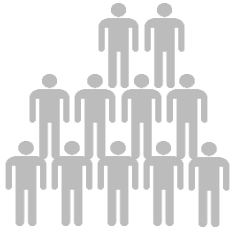
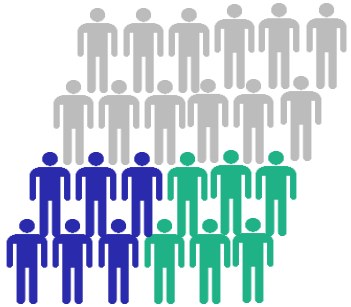
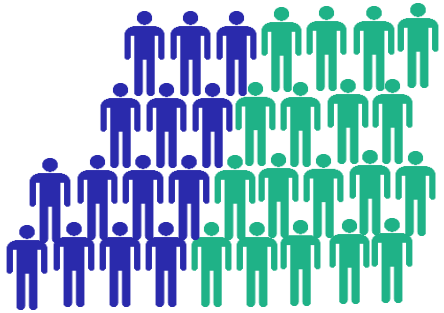
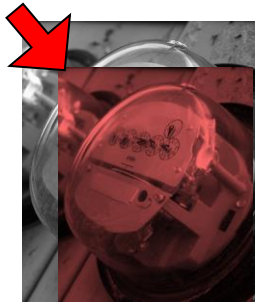
Meter

ENERGY

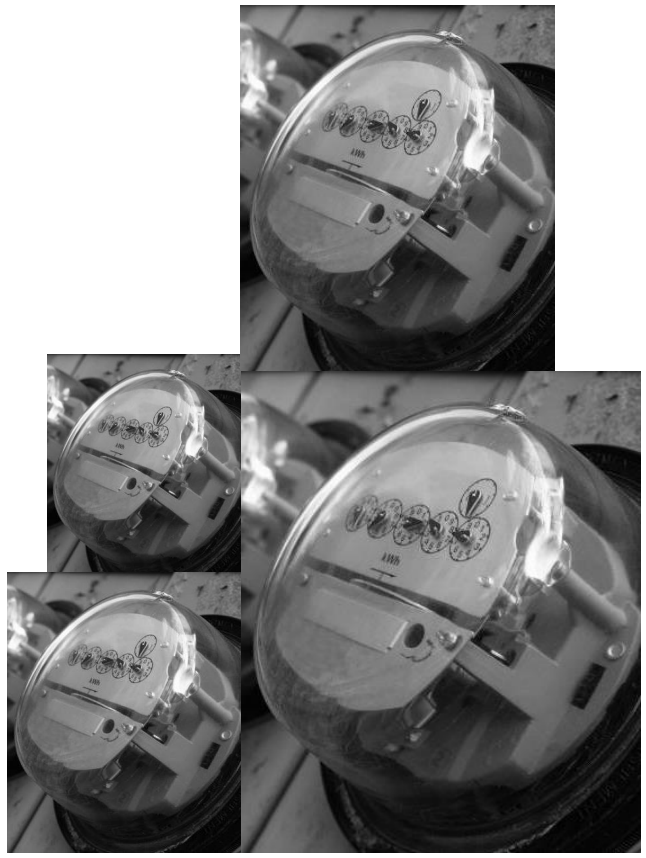
100Wh

0.1kWh

Projections – Adoption & Savings

2015	2020	2025	2030
			
0%	30%	50%	100%
			
0%	-27%	-45%	-90%

Targets



-45%

Examples – Introduction of efficient refrigerators

1. **Number of electrified households in 2015**
   a. *Urban*
   b. *Rural*

2. **Total number of households with refrigerator in 2015**

3. **Total electricity consumption for refrigerator in 2015**

4. **Number of electrified households in 2030**
   a. *Urban*
   b. *Rural*

5. **Total number of households refrigerator in 2030**

3. **Total electricity consumption for refrigerator in 2030**
   a. *If non-efficient only (BAU)*
   b. *Adoption of EE labelled*

	Urban	Rural
Households (2015 est.)	14,726	43,097
Population growth (annually)	+4%	+3%
Grid electrification (2015 est.)	86%	12%
Grid electrification (2030 target)	100%	50%
Households with refrigerators	60%	10%

	Non-efficient	EE labelled
Refrigerator annual consumption	550 Wh	250Wh
Technology adoption (2015 est.)	100%	0%
Technology adoption (2030 target)	0%	100%