

# Utility-driven programs – Home Cooling systems

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## Outline

- Types of systems addressed
- Current stock
- Types of interventions

## Home Cooling Systems

- Refrigerators
- Air Conditioners
  - Window AC
  - Split AC
- Fans
- Air Coolers

## Ownership of Home Cooling Systems

- RInfra:
  - Residential : 85%
  - Small Commercial : 10%
- BEST:
  - Residential : 80%
  - Small Commercial : 10%
- Tata Power:
  - Residential : 80%
  - Small Commercial : 10%

## Home Cooling Systems : Energy Efficiency improvement Opportunities

- Refrigerators
  - BEE Star Label Refrigerators
- Air Conditioners
  - Window AC
  - Split AC
  - Replacement with BEE Star Label Split AC
- Ceiling Fans
  - BEE Star Label Fans
- Maintenance & proper operation

## Current Market Scenario

- Refrigerator :
  - 3 star , 4 star , 5 star
  - Saving (lowest & Highest available) : 40%
  - Average cost difference : 15% – 20%
- Air Conditioner :
  - Window AC : Assembled, Non star, 1 star , 2 star, 3 star
  - Split AC : Assembled, Non star, 2 star, 3 star, 4 star, 5 star  
: Most models available - 2 star, 3 star
  - Saving (lowest & Highest available) : 30% - 40%
  - Average cost difference : 50%
- Ceiling Fan :
  - Non star
  - 5 star only from 1 or 2 manufacturers
  - Saving (lowest & Highest available) : 25%
  - Average cost difference : 20%
  - Availability is major barrier

## Type of technical interventions – Energy Savings

- Changing old units to new
  - Replacement of Inefficient equipment with BEE star rated Energy Efficient equipment
  - Replacement of Window AC to Split AC
- Operational features
  - Proper location for installation
  - Set temperatures & Timer controls
- Proper Maintenance
  - Replacement of door gasket for Refrigerator
  - Maintenance of Insulation/ Filters for AC
  - Proper maintenance of Fans
- Changing Usage Habits to plug energy wastage

7

## Intervention through Regulation & Policies

- Policy driven Market Transformation
  - Make higher star labeled appliance mandatory for manufacturers
  - Standards to be made more stringent
  - Stringent Penalties for defaulters
  - Facilitate/ promote environmental friendly disposals for early retirement of appliances
- For Consumers
  - Awareness building campaign

## If Rising Electricity Bills Are Bothering You, Switch to Electrical Appliances with BEE Label

### Reading the label...

#### Labels For Refrigerators

Count the stars within the coloured strip. More Stars, More Savings

Know the number of electricity units consumed in one year

See the BEE logo for authenticity of the label

#### Labels For ACs

Count the stars within the coloured strip. More Stars, More Savings

Know the Energy Efficiency Ratio (Higher EER means More Savings)

See the BEE logo for authenticity of the label

#### Energy and Cost saving for 250 Litres Frost Free Refrigerator at different Star Rating

Star Rating	Energy Consumption Per Year (Approx.)	Per Unit Charge Rs. (Approx.)	Electricity Cost in Rs. (w.r.t. No star)	Total saving (w.r.t. No star) Every year (Rs.)	Refrigerator Cost in Rs. (Approx.)	Cost Difference Rs.	Pay Back Period in Years
Star	1100	2.50	2750	0	14000	0	0
(One)	977	2.50	2443	308	15000	1000	3.25
(Two)	782	2.50	1955	795	15500	1500	1.89
(Three)	626	2.50	1565	1185	16500	2000	2.11
(Four)	501	2.50	1253	1498	17500	3500	2.34
(Five)	400	2.50	1000	1750	18500	4500	2.57

#### Energy and Cost saving for 1.5 Ton Windows or Split Air conditioner at different Star Rating

Star Rating	Maximum Cooling Capacity (Watts)	Minimum Energy Efficiency Ratio (EER)	Input Power (Watts)	Units consumption /Day (kWh)	Per Unit Charge Rs. (approx.)	Electricity Cost/ Month Rs.	Cost Saving Rs. Per Year (w.r.t. No star) (approx.)
No Star	5200	2.20	2364	9.45	2.50	709	0
1 (One)	5200	2.30	2261	9.04	2.50	678	308
2 (Two)	5200	2.50	2080	8.32	2.50	624	851
3 (Three)	5200	2.70	1926	7.70	2.50	576	1313
4 (Four)	5200	2.90	1793	7.17	2.50	538	1712
5 (Five)	5200	3.10	1677	6.71	2.50	503	2059

Note: Assuming 8 hrs. operation per day for five months in a year

#### Label For Tubular Fluorescent Lamps

STAR RATING	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
Lumens per Watt at 0100 hrs of use	<=61	>=61 & <67	>=67 & <86	>=86 & <92	>=92
Lumens per Watt at 2000 hrs of use	<=52	>=52 & <57	>=57 & <77	>=77 & <83	>=83
Lumens per Watt at 3500 hrs of use	<=49	>=49 & <54	>=54 & <73	>=73 & <78	>=78

Under test conditions when tested in accordance to IS 2418. Actual efficiency will vary as per site conditions.

Count the stars within the coloured strip. More Stars, More Savings

Know the Lumens per watt. More Lumens mean More Light

You can reduce your electricity bills and help India to increase the availability of electricity for more people, simply by buying Refrigerators, ACs & Tubelights that bear BEE's Star-Rated Energy Efficiency Labels

The BEE Star Energy Efficiency Labels have been created to standardise the energy efficiency ratings of different electrical appliances & indicate energy consumption under standard test conditions. \* These labels indicate the energy efficiency levels through the number of Stars highlighted in colour on the label. \* The BEE Star Labels include a Star Rating System that ranges from One Star (least energy efficient, thus least money saved) to Five Stars (most energy efficient, thus most money saved).

\* \* \* Bachat ke sitare \* \* \*

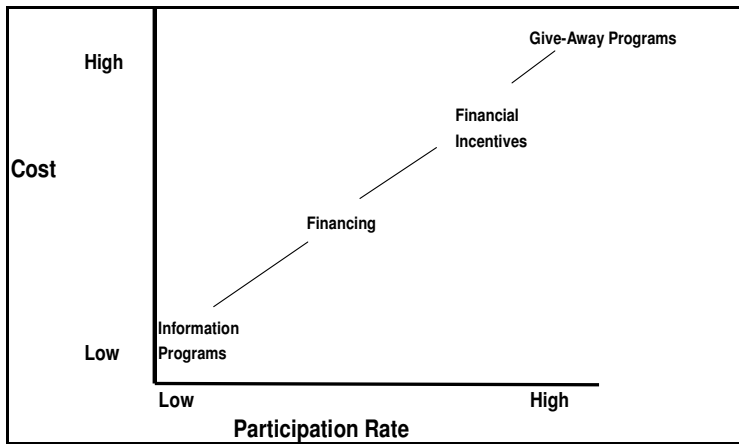
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For more details please visit [www.bee-india.nic.in](http://www.bee-india.nic.in) and [www.energymanagertraining.com](http://www.energymanagertraining.com)

## Types of Interventions

- Utility Interventions
- Consumer Awareness Building
  - BEE Star rated appliance promotion
  - Usage Timing Awareness
  - Walkthrough Energy Audit
  - Maintenance of Equipment
- Economic Incentive/ Disincentive
  - New Purchase
    - Incentivize New purchases of 5 star rated appliances over non star or lower star appliances
  - Early Retirement of inefficient appliances
    - Incentivize exchange of existing appliances over 5\* rates appliances
  - Incentivize manufacturers for more efficient appliances
- Customer Financing

## Cost-Participation Trade-offs



Thank You