




# Happy Home

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## Energy consumption in residential sector

- ✓ 10-15% energy from the Residential sector
- ✓ Major components
  - Ø Air-Conditioning
  - Ø Lighting
  - Ø Heaters
  - Ø Refrigerator
  - Ø Washing machine
  - Ø Water Pump



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## Why Energy savings?

✓ Long term financial rewards

Ø Potential to save up to 50%

✓ National interest

✓ Occupant comfort

✓ Reduce pollution and

✓ Conserving our natural resources

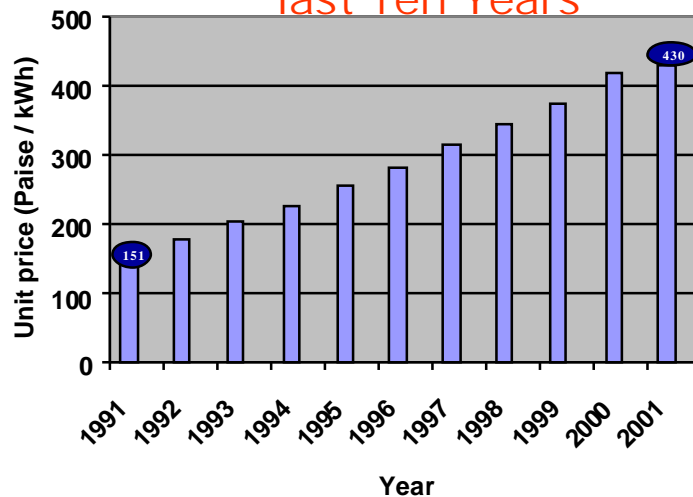


Electricity generated by fossil fuels for a single home puts more carbon dioxide into the air than two average cars

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## Average Indian Power cost for last Ten Years

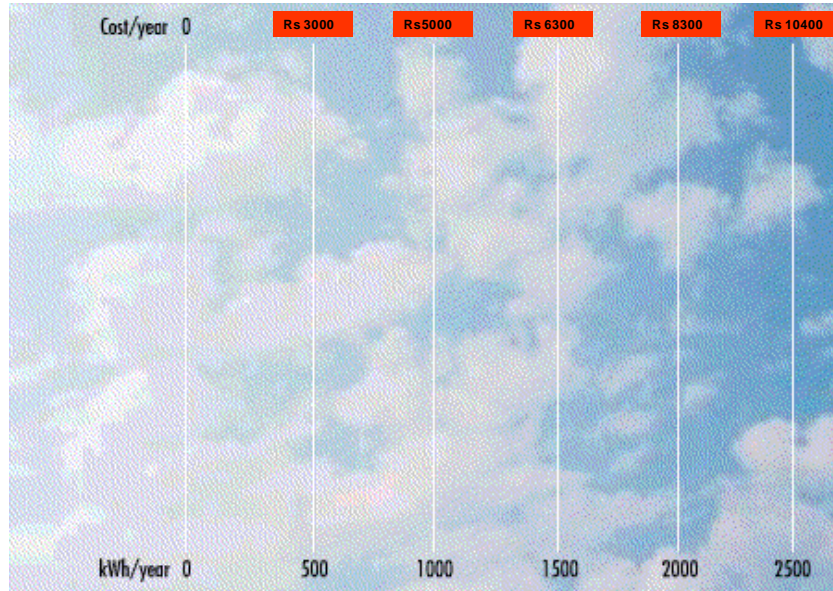


3 - Fold increase in Last 10 Years

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## Typical energy use at Home



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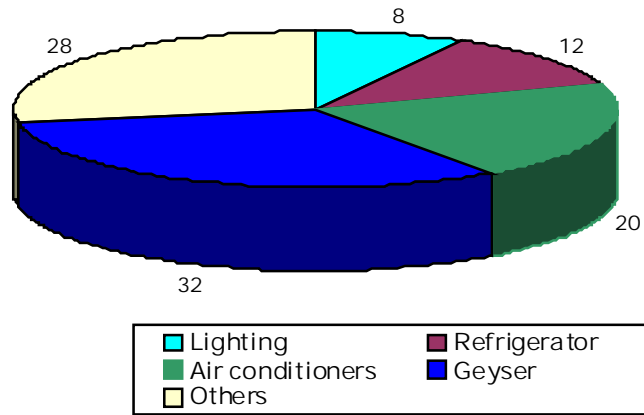
## Typical energy use at Home

1	Ceiling fan	60	200	12	72
2	Washing machine	500	35	17.5	105
3	Computer Monitor & printer	200	40	8	48
4	Geyser	1500	60	90	540
5	Lighting (60W)	60	40	2.4	14.4
6	CFL (18W)	18	40	0.72	4.32
7	TL (Twin 4feet)	100	40	4	24
8	Microwave oven	1000	30	30	180
9	Refrigerator	500	200	100	600
10	Television	180	200	36	216

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## Breakup of Power Consumption at Home



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## Energy saving tips in home appliances



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## Cause for Energy Loss

- √ Poor insulation (Air-conditioned room)
- √ Less energy efficient fittings
- √ Controls and switches
- √ Operating practices



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## Suggested Measures to improve energy efficiency

- √ Air-conditioning
  - ∅ Consumes 20% of total energy
  - ∅ Eg. , 1.0TR AC Consumes Rs 3600/ Yr
    - q Select energy efficient equipment
  - ∅ Set thermostat at "Green temperatures"
  - ∅ Incorporate Electronic timer switch
    - q Replace mechanical thermostat



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## Suggested Measures to improve energy efficiency

### √ Air-conditioning

- ∅ Use an interior fan in conjunction with your window air conditioner
- ∅ Do not place any heating equipment near to AC thermostat (Light, TV, Room Heater)
- ∅ Place unit below the tree shade
  - q Consume 10% less energy



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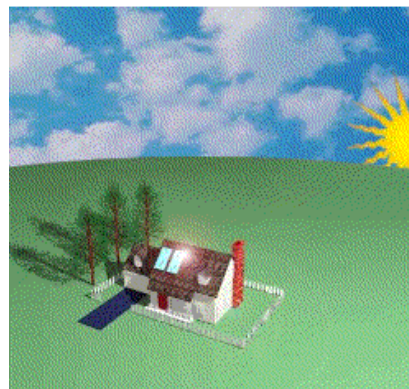
## Suggested Measures to improve energy efficiency

### √ Building Orientation

- ∅ East West

### √ Building insulation

- ∅ Trees on the periphery
  - q Save up to 25% of energy
- ∅ Wall insulation
- ∅ Roof insulation
  - q Green Roof
  - q Light color reflective coating



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## Suggested Measures to improve energy efficiency

### ✓ Lighting

∅ Consumes 10% of total energy

#### ∅ Indoor

- q Turn off the lights in any room you're not using
- q Use CFL Lamps in place of GL Lamps
- q Use electronic ballast
- q Use natural lights



#### ∅ Out door

- q CFL
- q Timer control operation

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## Comparison Of GLS & CFL



GLS	Watts	40	60	100
	Lumens	425	720	1380
CFL	Watts	9	15	20
	Lumens	400	900	1200

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## Comparison -Efficacy



## Comparison –Colour Rendition



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## Suggested Measures to improve energy efficiency

### v Refrigerator

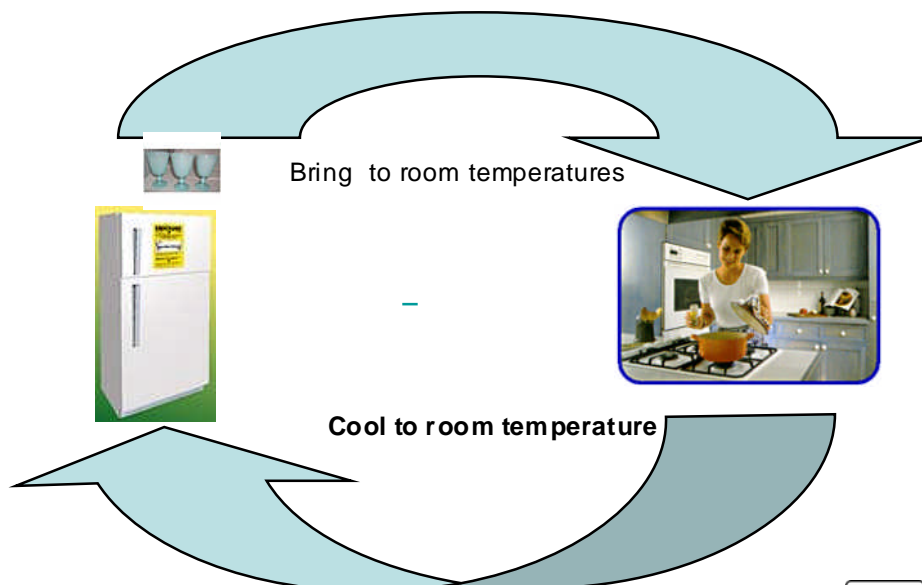
- Ø Consumes 20% of total energy
- Ø Eg., Cost of operating 315 Lts refrigerator is Rs 4000/Yr
  - q Select energy efficient equipment
- Ø Set thermostat at correct temperatures
  - q Don't keep your refrigerator or freezer too cold
- Ø Minimize number of openings
  - q Plan your operation



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## Suggested Measures to improve energy efficiency



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## Suggested Measures to improve energy efficiency

### ✓ Refrigerator

- ∅ Regularly defrost manual-defrost refrigerators and freezers
  - q Motor load will increase
- ∅ Leave enough space between your refrigerator and the walls or cabinets
  - q Air can circulate around the condenser coils
  - q Trapped heat increases energy consumption

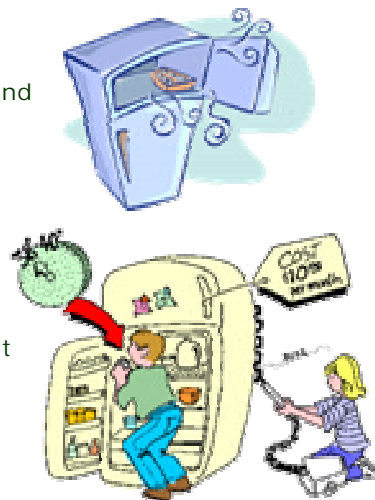
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## Suggested Measures to improve energy efficiency

### ✓ Refrigerator

- ∅ Set temperatures at optimal level
  - q Food compartment between 36° and 40° F
  - q Freezer between 0° and 5° F
- ∅ Make sure your refrigerator door seals are airtight
  - q Check by inserting paper
  - q If you can pull the paper or bill out easily, the latch may need adjustment or the seal may need replacing



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## Washing Machines

- ✓ Always wash only with full loads
- ✓ Use the correct amount of detergent
  - ∅ Too many bubbles make your machine work harder and use more energy
- ✓ Up to 60 percent of the cost of washing clothes comes from heating the water
  - ∅ Use hot water only for very dirty clothes, and always use cold water in the rinse cycle



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## Micro wave Oven

- ✓ Microwaves ovens use very high-frequency radio waves to penetrate the surface of food to heat water molecules inside
- ✓ Consumes 50 % less energy than conventional ovens
- ✓ Not Suitable for Large size food



**MICROWAVE OVEN**  
Cooking Hygiene and Safety

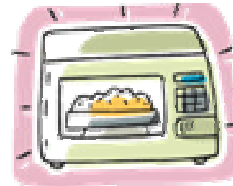


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## Cooking Tips

- ✓ Microwave ovens use around 50 percent less energy than conventional ovens
- ✓ With conventional ovens, minimize the preheating time
  - Ø Unless you're baking breads or pastries, you may not even need to preheat



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## Cooking Tips

- ✓ Don't open the oven door too often when checking your food
  - Ø Each opening drops temperature by 25°C
- ✓ Turn off electric burners several minutes before the allotted cooking time.



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## Cooking Tips

- ✓ On electric stovetops, use flat-bottomed pans that make full contact with the element
  - ∅ A warped or rounded pan will waste most of the heat
- ✓ When cooking on a gas burner, use moderate flame settings to conserve natural gas
- ✓ Remember that a blue flame means your gas stove is operating efficiently
  - ∅ Yellowish flame is sick and needs cleaning

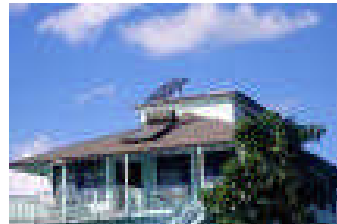


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## Solar Water Heating

- ✓ Consumes 35% of total energy
- ✓ Replace Geyser
- ✓ Best option
- ✓ Gaining tremendous popularity



Savings for average household – Rs.6000 per year

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## Idle operation of Electrical Appliances

- √ Biggest loss of energy
  - ∅ TV, Audio Systems, Telephone answering machines
  - ∅ A small compact audio unit can draw 9 watts while it's ostensibly turned off
  - ∅ Audio Player used for an hour and kept switched on whole day
    - 93 percent of a stereo's energy use occurs when the unit is not turned off!!



What is the Solution?

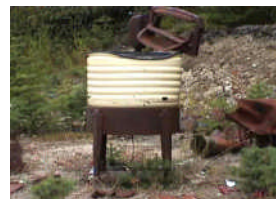
**Unplug the appliances when not in use!!!**

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## Indoor Environmental Quality

- √ Quality of Indoor environment
  - ∅ Health
  - ∅ Productivity
  - ∅ Quality of Life
- √ Major health disasters – Outbreaks
  - ∅ Sick building syndrome



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## Indoor Environmental Quality

### ∨ Measures

- ∅ Avoid smoking inside the house
- ∅ Avoid fresh air intake from contaminated place
- ∅ Do not use Toxic paints, Carpet
  - q Check VOC limit
  - q Use water based paints



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## Day Light Concerns

### ∨ Daylight effect

- ∅ Improves indoor environment
- ∅ Increases productivity
- ∅ Reduce lighting energy use by 50 – 80%

### ∨ Incorporation of

- ∅ Shading devices, Courtyards, Window glazing
- ∅ Day light view is critical for occupant comfort



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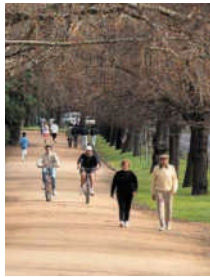


## Words of a Diabetologist ..

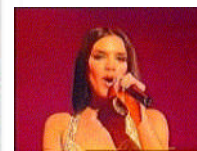
All Diabetics know about - Exercise, Diet & Medication ....

... Key however lies in action

– Dr Rachael

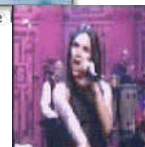


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Thank you



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