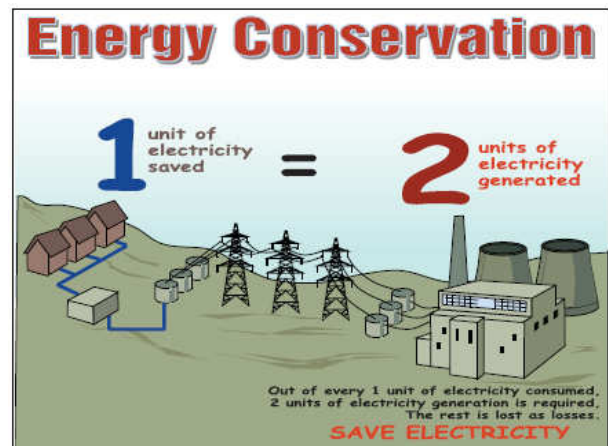
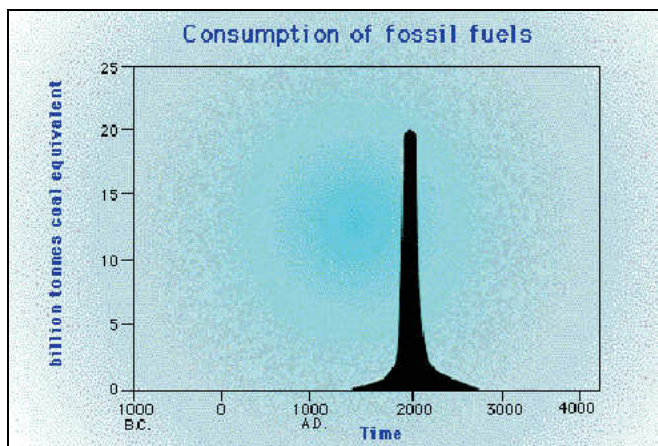


KINDLY SAVE ENERGY AT HOME FIRST!

WHY ENERGY SAVINGS DEMANDED FROM US FROM THE NATIONAL PERSPECTIVE?

- India is a tropical country. The day / night temperatures are changing from cool to warm to hot ambient temperatures. Before we had summer, winter etc 4 seasons in the country. Now one season that dominates thro out the year is summer. We feel cool for 1or 2 months and feel warm climate and the rest 10 months hot, hotter and hottest only now. In winter too, the chillness comes in only for few days or weeks instead of months.
 - Before we used to enjoy the drizzling rain scattered over many hours in a day and many days in a month. Now the rains became scarce and after harsh ambient dry weather the rains downpour less than a hour and floods the roads, streets and stagnates the locality with water sheeting. This is one of symptom of the global warming effects in our towns now.
 - Compared to the rest of the world, India's climate suited to human peak hour productivity per day since the ambient of 37 *C + /- 5*C that is 32 * to 42 *C with comforting RH of around 60 %. That is westerners who live in ice cold countries or in the desert climates invest in Indian man power. The sustained productivity per day was much better compared to other countries. Unfortunately, the climatic conditions are not favouring us now and we are the main factors to make it unfavourable.
 - Consider the function of fossil fuel like the coal, petrol and diesel has reached a peak in the last 50 years since the year 2000 A.D. and is bound to go up. In India, we are generating electricity thro coal only. Our coal calorific value is coming down from 6000 to 3000 Kcal per ton and this shows the signs of coal tapping in the hollow pot and for how long? Recently we started importing first the high grade to now low grade coal from 6000 to 5000 Kcal per ton and the price has gone up today from Rs.3000 to Rs.5000 a ton of coal. Here considering the losses in generation, transmission and distribution the equation works out to **1unit of electricity = 1 KG of coal.**
- **TODAY, SHALL WE START to SAVE OUR ELECTRICITY SO AS TO AVOID BURNING OF COAL?**



I image : Check the peak consumption of fossil fuel now around the year 2000, when looking back up to 3000 years?

II image : Reverse the equation and save 1 unit of electricity to find you have generated 2 units of electricity in India.

HOW CAN WE MEET BOTH THE ENDS MEET, ELECTRICITY SUPPLY & DEMAND IN OUR COUNTRY?

DOMESTIC CONSUMPTION STATISTICS:-

- The statistics reveal that the predominant section of consumers uses a maximum of 7 units per day and average of 200 units per month. People with one 1 AC in house consume around 20 units per day and average of 600 units per month. AC running for 7 hours a day is the major share of our daily power consumption.
- The domestic consumer, who is not using Air conditioner, consciously consumes only 5 to 7 units only per day. Even if some consumer overspends for few days of a month 300 units per month and 600 units minimum EB slab rate in 2 months, actually we don't consume more than 10 units per day. Even the same 10 units per day can be brought down by the following practical electricity consumption awareness routines by the individual family.
- But an energy conscious domestic consumer, especially the consumer who cares for electricity wastage by involuntary instinct & action is actually consuming only around 3 units per day and 100 units per month ONLY. Electricity is a rationed

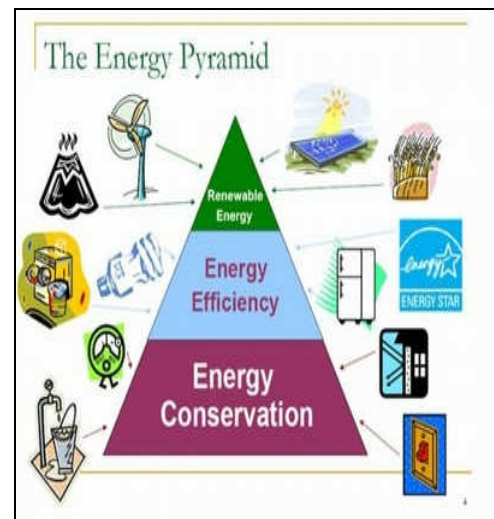
& subsidized commodity and that too is slipping more between the cup & lip now. So let us all be rational to effectively use energy for essential purposes only and not for lavish comforts.

- Today the teenager operates his cell in Power-save mode by putting black background display so as to use the cell for more hours with charged battery. If the similar Power-save mode is implemented on the gadgets & appliances by all in the family, then we all can walk the talk of conservational conversation as that is the need of the hour now.
- We are talking about saving from 55 watts (conventional tube 40 watts + choke 15 watts) to 30 watts using T 5 tube light of 30 watts (28 watts tube + 2 watts ballast). We are planning to convert this Fluorescent 4 feet tube to single point Compacted Fluorescent light CFL 14 to 18 watts matching to visual tasking. The EB talking of bulb to CFL route of saving is few watts only.
- Where as, we are losing more energy in our 2000 watt Air conditioners. Scratching the head to save in this 55 watts tube light instead of 2000 watt energy gulping A.C. If we reduce by 400 watts in our daily use of 2000 watt AC then it is saving for us and the nation.
- The news paper statistics show that “Over 1 Lac AC units sold in a single retail outlet in Chennai during hot summer months of one year recently”. The AC will tilt the ecological balance in a given localized area and thus adversely affect the overall green scenario.
- Power outages due to overshooting of loading in 1 of 3 phases due to AC loads in a street. When one section tries again & again to switch on their AC, the other section of street dwellers will be fretting and fuming in harsh, stale, non-movement of air, and darkness inside the houses.
- One of the main reasons for EB crisis today is due to poor supply and excess demand in summer months of year. Apart from drop in efficiency in generation at EB, the excess demand is due to rise of Air conditioner loads.

DOMESTIC ELECTRICITY CONSUMPTION –
Please read this to reduce Monthly EB BILL in your appliance usage.

Consumption Levels of some Commonly used Household Appliances

Appliances	Capacity	Consumption
Instant Geyser	3000 Watt	3 units / hour
Immersion Rod	1000 Watt	1 unit / hour
Air Conditioner	1500 – 2500 Watt	8.5 – 14.5 units / day
Air Cooler	170 Watt	1.7 units / day
Fan	60 Watt	0.6 unit / day
Refrigerator	200 / 300 / 500 Watt	2 / 3 / 5 unit / day
Electric Kettle	1000 – 2000 Watt	1 - 2 units / hour
Hot plate	1000 – 1500 Watt	1 – 1.5 units / hour
Oven	1000 Watt	1 unit / hour
Toaster	800 Watt	0.8 unit / hour
Iron	750 Watt	0.65 – 0.75 unit / hour
Incandescent Lamp	100 / 60 / 40 Watt	0.5 / 0.3 / 0.2 unit / day
Fluorescent Lamp	40 / 20 Watt	0.28 / 0.15 unit / day
Slim Tube	36 Watt	0.26 unit / day
Compact Fluorescent Lamp	7 / 9 / 11 / 13 Watt	0.06 – 0.09 unit / day
TV	180 Watt	0.2 unit / hour
Vacuum Cleaner	800 Watt	0.8 unit / hour
Desktop Computer	120 Watt	0.13 unit / hour



III Image : Use this table TODAY to know what is the similar breakup of domestic electric usage & find ways to reduce.

IV Image : The BOP Bottom of Pyramid concept works first now for us.

- I stage working - achieve energy savings thro conserving practices,
- II stage thinking - next - by switching over to efficient CFL, Fridge, Fan etc and
- III Always to think - act alternatively to go in for Renewal like Solar heater, Lighting, hybrid wind mill etc.

- The only way to reduce the supply demand gap in electricity is to curb the use of AC in our premises.
- The ceiling fan is a luxury but a necessity to the poor man. But the Air conditioner is a luxury and not always a necessity to the rich man. He can combine the poor man’s AC that is ceiling fan along with AC and get better comfort than AC alone.
- The load end demand reduction in each premise on AC usage will solve the India’s national burning problem. Compared to the cost of improving the generation efficiency, the short cut to solution is to cut our electricity spending in the lavish ways.
- The state Govt. to think of flat rate Rs.10/- per unit hour consumption of AC usage. Unless this comfort tax is laid, millions of commoners will struggle to burn a single light bulb in the dark hours while Lakhs of AC room dwellers enjoy the comfort of cooling their whole premises.

- You may ask why this flat rate of Rs.10/- unit? People who use DG set in premises know very well, the cost of one unit of electricity is above Rs.12/- In fact, if the Govt. fixes Rs.10/- per unit, then that is the real subsidy given to the consumer now. More than the cost, the high cost will make the consumers use the AC judiciously and not lavishly. Now the rich man is exploiting the poor man's power subsidy and the same rich man shouts thro the roof to increase the subsidy to power.
- First the Govt. to charge the said comfort tax to all the sectors from domestic to commercial, any building establishments and the hospitality segments like the hospitals and hotels etc. After paying the EB bill, the relevant segments to claim back based on the non-profit services offered to the society. The idea is not to penalize AC users. The Govt. is exploited by 8 out of 10 users now and enjoying the exploitation on others around us, where as genuinely 2 out of 10 users wants the AC usage badly.

SOLAR WATER HEATER:-

- But we have to be rational in using Electricity the high grade energy to be used only in High grade application in industry & domestic and not in low grade heating like boiler etc. One 100 liter solar water heater saves 1800 units / year. We can save around 150 units per month in our Electricity bill and this is an appreciable savings to us & more to the nation
- Of late, ETC model solar water heater is efficient. Because of the borosilicate glass used in Evacuated Tube collector model, the rate of heat transfer is efficient and scaling due to hard water is less compared to Flate Plate collector. With this, there will no need for switching on electric heating element at all once we are used to warm water bathing practice.
- You too, can avoid burning 1800 Kgs of coal / year (that is 150 KGs of coal per month) for your domestic / commercial EB units consumption. If you visualize this extra 5 KG of coal per day is burnt in front of your eyes towards your Electric water heater consumption, we all can definitely avoid the same and go in for Solar heater.

STORAGE ELECTRIC WATER HEATER: -

- Also, we have to set our Electric storage water heaters at 47°C that is 10* C plus our body temperature (instead of 60°C set) Warm water is better to our body health than hot water in long run & 20 % power savings towards health of nation.
- First, buy today one Spare Heating element for just Rs.200/- and swap it to the existing element and do this exercise twice a year and you will find 10 % savings in heating in time & power. Now you have the time & effort later to can clean the removed element leisurely not in a hurry, thoroughly and effectively. Dip & rinse for hours in the solvent and brush clean the scales with suitable detergent etc

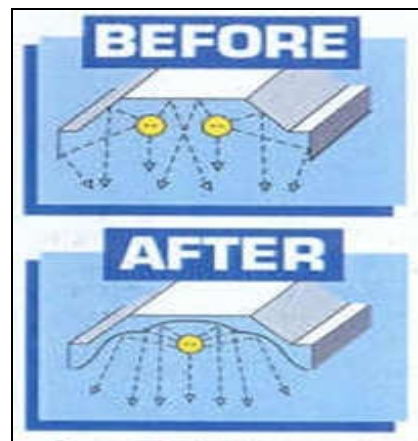
LIGHTING: -

- In commercial segment, avoid neon sign boards. Use white LED sign boards and consume only one tenth of neon power. Show case to others that you are already into CONSERVE MODE with your LED Displays! Think of buying Emergency torchlight, Standby lights using LED based. They consume only one third of the power and give back up for long hours.
- You know now, Traffic signals now glow better with LED lights, take one tenth of neon power and count down timer reduces pollution at road signals, if we switch off vehicles!
- The most important element in a light fitting, apart from the lamp(s), is the reflector. They impact on how much of the lamp's light reaches the area to be lit as well as the lighting distribution pattern. Reflectors are generally either diffuse (painted or powder coated white finish) or specular (polished or mirror-like). The degree of reflectance of the reflector material and the reflector's shape directly influence the effectiveness and efficiency of the fitting.



Usually light is needed as follows, depending upon the age:

10 years children	1 time
20 years boys	1.5 times
30 years persons	2 times
40 years man	3 times
50 years man	6 times
60 years old people	15 times



V Image : Just fit in a matching dome type aluminum / white reflector to your CFL to see more brightness in premises.

VI Image: The lighting looks dull or bright for working and depends on the age & eyesight of the person working.

VII Image: The twin tube light concept is gone and you find a lowered single tube light is diffusing the light better.

TELEVISION:-

- You see now, that the world is changing over from the old CRT tubes to the efficient LCD to the LED TV. In our existing TV, always switch off at Remote first, then at TV power button and lastly at the Main switch. When switching on please do this from Main switch to TV to remote. This is safe for the TV while switching on & off. Always keep a CFL lighting minimum when viewing TV.
- **Switch off the standby power.** That is to avoid keeping TV always ON at mains thro out the day. Plan your TV viewing hours to suit to your routines & not TV programs to control your daily schedules often. So after viewing, it is better to switch off up to mains if the time gap to switch on is more than 1 hour.

CEILING FANS: -

- Check the air breeze from the fan is felt on the floor or at the walls and escaping out thro windows. Are we getting blast of air or gentle & smooth air breeze? If air is breezing thro us, it comforts us by evaporative cooling and it is healthy too. A heavy noisy fan is unsafe to work under due to noise pollution and Electronic regulator retrofit can aggravate the noise more! Either service the fan, replace the old bush with new bearings to reduce power & sound. Other wise please go in for 5 star 50 watt fans.
- The ceiling fan is comforting the man by two ways namely by Evaporative Cooling and by Air Circulation. To achieve both the functions, the fan has to breathe in. But we can increase our comfort levels by better circulation first and next by evaporative cooling from the fan by increasing the down rod size from 10 inches to 18 or 24 inches for 10 feet height building, 2 feet and above if the height of building is 11 feet and above. Visualize our old buildings with 14 feet ceiling height is always cool.
- Use Step type switching (instead of knob type is failure and obsolete) Electronic fan Regulator and Save 30 % power. The old box type regulator only regulates the air breeze but the fan is consuming full power only. You will find the side wall above the fan regulator gone grey due to hot air escapes! This is the symptom of manual regulator failure and replace today with Electronic type.



- VIII Image: 100 watt fan consumes more power to rotate itself & gives poor circulation than 50 watts fan now.
- IX Image : Air Conditioner under shade performs better than bare AC under Sun (See Telecom Building tops !)
- X Image : Chord Switch can be given near tube light.. Want this promptly remind us to switch off when not required?

AIR CONDITONERS: -

- In India, the recent years' statistics show that TWO OUT OF THREE ACs SOLD are SPLIT AIR CONDITIONERS ONLY instead of Window ACs now. When the split AC is working, the High side or Compressor side of AC has to starve & struggle under Hot Sun to give cool comfort to the inside premises. Why not we think of just giving sun protection & cross ventilation to the AC High side in the open terrace? This can give up to 10 % savings depending on the hot weather and radiated heat from near surroundings.

- Please reduce your comfort levels with less Air conditioner usage time and simultaneously use fans etc using evaporative cooling. Positive cross ventilation is important to improve indoor air quality in your premises. You are aware now that power crisis subsides in winter months.
- Our body temperature is 37°C we have to set our Air Conditioners at is 10* minus our body temp. 27°C (instead of 22* C setting now). Cool air breeze is better to health than Cold blast. & 15 % power savings. Please don't keep you too Cool and make surroundings from warm to Hot. Live with the Surroundings.
- The outdoor unit operating in the shade will consume around 10% less electricity than the same one operating in the sun. The high side of the split or the back side of window AC can be provided with cost effective shelter. AC efficiency improves and it can be seen by fitting the AC machine Run hour meter.
- Clean the air-conditioner filter every week or month depending on usage. Clean the fins once in a month. A dirty air filter reduces airflow and may damage the unit. Clean filters enable the unit to cool down quickly and use less energy. Dirty filter makes you sick too.
- Today buy a spare Air filter @ Rs.100/- and keep it ready as active standby. Now you have the time & effort later to can clean the removed filter leisurely not in a hurry, thoroughly and effectively. You can keep it ready and insert the same whenever required.
- Using ceiling or room fan allows you to set the AC thermostat higher because the air movement will cool the room. AC without room fan will make the cooled air throw at one area and hot pockets in other areas in the room are not medically good to us. Practically felt, it is really the Smaller blade ceiling fan + AC are comforting the humans now.

STABILISERS – TV, FRIDGE, & AC:-

- The power cuts happening now force to keep our stabilizers working actively. When ever power cut is over and on resumption, high voltage comes in and only after loading from the consumer ends, the voltage drops say from 250 to 220 volt for example. This is hazardous to our appliances. Especially in some areas, the night voltage stays high above 250 volts, where as in day time it is normal. Fridge, AC & TV are the equipments used for more hours at house. So it is better to install a matching stabilizer to each of the above. The stabilizer to have time delay in giving output to gadgets.

Apart from the old 2 STAR Air Conditioner, the old stabilizer consumes more power. CONVENTIONAL VS SLEEK STABILIZER (3 KVA)

Please go in for 5 STAR AC along with Sleek Stab.

Type stabilizer	Losses for 3 kVA	working hrs/day	Kwh /Units pa	Saving in Rs.
Conventional	264 watts	12 hours	1156	5,780/-
Sleek model	96 watts	12 hours	420	2,100/-
		Savings	736	3,680/-

We have seen this icing in freezer tray often in our household fridge & this reduces its efficiency badly.

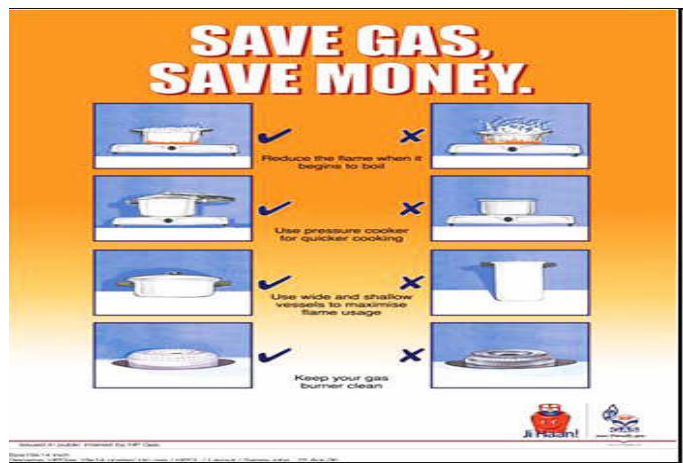
Change the settings in thermostat for summer & winter




- **X1 Image : BSNL study Having saved power in the new AC now, do we silently lose by old Stabilizer; Replace it early.**
- **X11 Image: Icing in freezer of fridge means Fridge is overworking to build up ice only and not allowed to cool inside.**
- **X111 Image: Cleaning the air filter & active spare filter swapping now improves vehicle mileage & performance.**

KITCHEN LPG GAS STOVE: -

- Clean your LPG burner and stove, to have bright blue flame instead of yellow color. Use Wide bottomed vessel above burner so that flame is at bottom only & not at its sides. The idea is that any vessel you use should fully cover the burner flame at the bottom. So narrow vessel can be used to match small burner flame. This saves LPG and fastens cooking time.
- Today you buy a spare burner head for Rs.50/- only and swap this with your existing burner every week or month depending on usage. Now you have the time & effort later, to clean the removed burner leisurely not in a hurry, thoroughly and effectively. Later to dip & rinse for an hour in the solvent and brush clean the scales with suitable detergent etc. and keep it ready to reuse. This can give savings in your LPG up to 10 % and more and your cooking time is less now! Burner head is a consumable as the symptom of flame color changes from Full bright blue to blue with orange tinge or yellow color etc.



XIV Image : The 3 images show old burner head corroded & consumed more; New burner took less & gave more.

XV Image : PCRA image - FLAT 20 % savings to achieve by PCRA LPG CONSERVATION practices in the Kitchen.

• **FRIDGE: -**

- The only appliance working 24 hours in a day is our fridge. With daily power cuts, it is safer to fix a Time delay model voltage Stabilizer (preferable with voltmeter) and high low voltage cut-out options, to the fridge. The fridge will need not daily face high voltages during resumption after power cuts. This applies to sophisticated electronic gadgets, lighting in domestic & commercial areas to improve safety of the gadgets and increase life without breakdowns & power saving too!
- Give rest to your fridge 1 hour in the morning by switching off. Whole night it has worked and ice up to 6 mm builds up in Freezer. Now this 1 hour rest is power saving, no icing in freezer & fridge is efficient. Change the settings in thermostat for summer & winter at least twice a year so that the icing in freezer tray can be avoided always.

• **BEE 5 STAR RATINGS TO HELP YOU: -**

**BEE -Single star rated Fridge consumes 3 units / day.
Five Star rated Fridge consumes 1 unit per day**

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/Year In Rs.	Total Saving (w.r.t No star) Every year (Rs.)	Refrigerator Cost in Rs. (Approx.)	Cost Difference Rs.	Pay Back Period in Years
NO STAR	1100	2.50	2750	0	14000	0	0
1 (One)	977	2.50	2443	308	15000	1000	3.25
2 (Two)	782	2.50	1955	795	15500	1500	1.89
3 (Three)	626	2.50	1565	1185	16500	2500	2.11
4 (Four)	501	2.50	1253	1498	17500	3500	2.34
5 (Five)	400	2.50	1000	1750	18500	4500	2.57

**BEE Single Star rated 1.5 Tr AC consumes 9 units / day
Five Star rated AC – consumes 6 units per day.**

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 Rate (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	578	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

• **Bureau of Energy Efficiency – Standards & Labeling Charts on Fridge and AC – The Findings in old & new gadgets**

What all we discussed above, is that to run the existing appliance efficiently. When we are sure that our appliance is inefficient, it is time to change to the BEE 5 star rated gadget like tube light, fridge, AC, water heater, pump, motor etc. This gives excellent savings compared to the existing consumption. The rating details are explained on the equipment itself.

- Thinking & Acting on Conservation Measures catalyzes our social responsibility, caring for others and sacrificing our selfish comforts. When we are safe and healthy, conservation prevails. If safety fails, conservation fails and Pollution starts. So comfort your machine to get more savings from the machine, measure the consumption & optimize production and pave for sustainable environment.

- **S.ASHOK, BEE CERTIFIED ENERGY AUDITOR / COIMBATORE / MAIL - CALL - 94437 20220;**
- **PLS. VISIT SITE WWW.ENERGYMEASURETOSAVE.COM FOR PRACTICAL ENERGY SAVING TIPS.**

SHARING KNOWLEDGE TO SAVE OUR ENERGY!

CONSERVING ENERGY IS OUR COLLECTIVE RESPONSIBILITY, FOR A BETTER TOMORROW!