



Productivity methodologies, tools, and techniques

Small things matter for megawatts of savings—D. Pawan Kumar

Energy is a major cost component for organizations in all sectors of the economy. Industries, commercial establishments, large building complexes, and public utilities can accrue substantial savings in energy bills by adopting energy-efficient techniques, systems, and technologies in their plants, processes, and facilities. Moreover, due to rapid industrialization and urbanization, the energy supply-and-demand gap is widening in APO member countries, leading to increased costs of production and imports of energy. The major sources of energy are still fossil fuels, mainly coal and oil, which cause emissions of greenhouse gases resulting in long-term environmental problems like global warming and climate change, which are against the principles of sustainable development. Adopting energy-efficient practices and procedures is therefore essential.

Countless opportunities exist for reducing electricity consumption and carbon footprints, especially in the domestic and commercial sectors, which can lead to surprising energy savings. The only catch is that these small things are often so simple that few pay attention. What follows is a list of a few such ideas that could save huge amounts of electricity if all energy users implemented them diligently.

Appliances/Machinery

- Switch off electrical appliances when not in use. Even low-power gadgets like chargers, adaptors, inverters, TVs, etc. consume substantial power in standby mode.
- Ensure the purchase of energy-efficient equipment even if it costs more, as high efficiency pays for itself. Do not buy cheap in haste and repent at leisure.
- Use thermal appliances where feasible instead of electrical appliances.
- For switching off TVs and air-conditioners (ACs), do not use the remote control. Switch them off from the mains to save electricity.
- If your desktop computer must be left on, turn off the monitor, as the monitor often uses more than half of the system's energy. Setting computers, monitors, and photocopiers to go into sleep mode when not in use helps cut energy costs by approximately 40%.
- Allow sufficient space for ventilation around your refrigerator. Check the thermostat setting often and adjust as needed.
- Buy split ACs instead of window ACs. They may cost more at the time of purchase but are more energy efficient and consume less electricity.

Buildings

- Use electric devices with occupancy sensors that switch them on or off automatically when someone enters or leaves the room.
- Use solar water heaters instead of storage electric geysers for hot water. They require near-zero maintenance and each device saves up to 1500 units of electricity per year.
- Install double-pane glass panels in windows, since heat escapes through a single pane of glass almost 14 times faster.

- Use reflective tiles or insulation on the rooftop to keep interiors cool.
- Install solar passive designs in buildings during construction.
- Use energy-efficient components and controls like MCBs, electronic fan regulators, variable air volume systems, thermostat controls, etc.
- Install false ceilings in air-conditioned spaces to reduce the space to be cooled.

General

- Use capacitors for power factor improvement, especially if you are a bulk consumer.
- Avoid frequent opening of refrigerator doors as it leads to energy loss.
- Cool hot food items to room temperature before placing them in a refrigerator.
- Switch from ACs to evaporative coolers during hot/dry summer months.
- Use fans and desert coolers instead of ACs where feasible (fans consume 4% of the energy required by ACs, while desert coolers consume about 10%).
- In summer, close curtains over windows facing south, west, and southwest, or use sun-films. Three to 5% less energy will be consumed for each degree if the AC is set at higher than 22°C. Set the temperature of the AC no higher than 25°C for the greatest comfort and lowest energy consumption.
- Avoid overcooling of the room with the AC and avoid heavy blankets or quilts while sleeping in warm weather.
- Use public transport rather than individual vehicles and carpool where feasible.

Lighting

- Compact fluorescent lights (CFLs) use 75% less electricity than incandescent bulbs and offer similar light. If you replaced 25% of your lights in high-use areas with CFLs, you could save up to 50% on lighting energy bills.
- Electronic ballasts reduce power consumption by 20%.
- You can save 10–50% of electricity consumption with T5 tube lights and Energy Star-labeled products/devices.



Contributed by D. Pawan Kumar, Director, Energy Management Group, National Productivity Council of India, who served as the APO expert several times for courses on energy management and energy efficiency. He also authored *Training Manual on Energy Efficiency for Small and Medium Enterprises* for the APO.