Frequently Ask Questions

1: General

Q: What is energy efficiency?

Ans: Energy Efficiency is a disciplined activity organized for the more efficient use of Energy without reducing Comfort level, Production levels or lowering product quality, safety or Environmental standards. Energy Efficiency is the quickest, cheapest and cleanest way to reduce energy use and pollution. For example, if we change the incandescent lamp by a LED, it will result in same illumination level with less power consumption. Thus, this is a case of improving energy efficiency.

Q: Why is it so important to save energy?

Ans: Energy is not free. The grown-ups in your house pay for all the electricity you use. So wasting energy is the same as wasting money – and we know that's not a good idea!

Wasting energy isn't good for the environment either. Most of the energy sources we depend on, like coal and natural gas, can't be replaced – once we use them up, they're gone forever. Another problem is that most forms of energy can cause pollution.

Q: What is Energy Audit?

Ans: The strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these system. Through energy audit one can know the areas of energy saving, potential of energy saving and the investment.

Q. : Why should I get Energy Audit done?

Ans: By doing Energy Audit of the organization one can know the areas of energy saving, pilferage of energy, potential of energy saving, the investment required and pay back period etc..

Q.: What's the simplest way to save energy?

- Switch off the electrical appliances which are not required. Lights, fans, stoves, televisions, radios, computers etc. should be switched off when they are not used.
- Devices which hum or give off heat or where a light illuminates, consume electricity even when switched off by remote. Hence these devices should be switched off from the switch.

Q.: What kind of lamps are more energy efficient?

Ans: We should use LED lamps and Tubes, which are most energy efficient these days. Existing Tube lights should be replaced by LED Tubes. Even Sodium vapor lamps or mercury lamps used in street lights can also be replaced by LED street lights.

Q.: Whether 5 start rated fans are providing air quantity similar to ordinary fans without star rating?

Ans: Yes 5 star rated fans will provide same quantity of air and its life is also similar to ordinary fans without star rating, available these days. Star rating is provided by Bureau of Energy Efficiency based on the electricity consumption of the fan. 5 star rating fans will consume least electricity. Normally these days 5 star rated fans are of 50 watt while ordinary fans of 80 watts.

Q.: What are some good ways to save energy at school?

Ans: Make sure the lights and fans are turned off while leaving the class room especially before recess, lunch and after school; turn off the water in the bathroom when you are finished using it; report any water leaks you find, to your teacher.

Q.: **Why Should I Buy Energy Star Rated Products/appliances though it is costly?**

Ans: All the products have two price tags: 1. The purchase price and 2. The operating cost. Star rated products might be costlier initially but operation cost will be low. Star rated products are energy efficient thus consume less energy in comparison to non rated products For many appliances even we replace normal product by 5 star rated energy efficient one the pay back period is only one to two years, for example 5 star rated fans.. Continuously rising cost of energy and effect of energy on global warming have made us think to give preference to energy efficient appliances. Thus purchase of star rated products/appliances is beneficial.

Q.: How can I save water in the household?

Ans: Don't leave the tap in the kitchen and in the bathroom on unnecessarily. Don't leave the tap of washbasin on while brushing. Don't shower longer than necessary.

Q.: How do I use a fridge in an energy saving manner?

Ans: Always quickly shut the door of the fridge, so that the cold air cannot escape.

- Don't put hot food into the fridge, but let it first cool down in the fresh air.
- Place the fridge in a cool surrounding and not directly next to the oven or not exposed tosun. The fridge shall be kept in such a way that it should be atleast one foot away from the wall so as warn air coming out of the coil should escape to atmosphere.

A layer of ice in the fridge also costs electricity. Therefore the fridge should regularly be defrosted.

Q : Is it mandatory for various organization to implement energy efficiency measures?

Ans: It is not mandatory. However, most of the organizations are now getting the energy audit done and implement energy efficiency measures to reduce their energy bill and save money. It is

mandatory for Designated Consumers notified by BEE to get energy audit done once in three years through Designated Consultant and implement the recommendations.

2: ESCO

Q. What is ESCo?

Ans: ESCo means Energy Service Company. ESCo will do energy audit for your establishment whether an organization, industry or residence etc through their Energy Auditors. They will implement the energy conservation measures from their own resources. All the investment will be made by ESCo and they will get its investment back through energy saving of the establishment.

Q. : What is Role of ESCo?

Ans: ESCo will do energy audit for your establishment whether an organisation, industry or residence etc through their Energy Auditors. They will implement the energy conservation measures from their own resources. All the investment will be made by ESCo and they will get its investment back through energy saving of the establishment.

Q.: Why should I go for ESCo mode?

Ans: By engaging ESCo, one can get energy audit of the establishment done without making any investment. All the cost effective measures will be implemented by ESCo. Thus one can get reduction of its energy consumption without making investment from the organisation. ESCo will make all the investment and will get its money back through the money saved by reduction of energy consumption. Part of the amount saved through energy saving will be taken by ESCo and part will be available with the establishment.

Q.: How ESCo can Help me?

Ans: The Establishment engaging ESCo will not require to make any investment. ESCo will do energy audit for your establishment whether an organisation, industry or residence etc. through their Energy Auditors. They will implement the energy conservation measures from their own resources. All the investment will be made by ESCo.

Q.: Whether Esco will do energy audit of my establishment?

Ans: Yes, ESCo will do energy audit of your establishment. They will identify energy saving potential, investment and payback period/ Return on Investment.

Q.: Am I suppose to make any payment to ESCo?

Ans: No, the establishment is not required to make any investment. All the investment will be made by ESCo.

Q.: How ESCo get its investment back?

Ans: ESCo will get its money back through the money saved by reduction of energy consumption. Part of the amount saved through energy saving will be taken by ESCo and part will be available with the establishment.

Q.: What is the interest of ESCo?

Ans: ESCo is operating on business preposition. By making investment they will get more business. Further, they will get the investment back through energy saving. They will take their share for energy saving till the investment with profit is recovered.

Q.: Whether ESCo will go on taking the share from energy saving for life long?

Ans: No, ESCo will not take the share from energy saving for life long. They will take their share for energy saving till the investment with profit is recovered. An agreement will be made with ESCo for the same and the time period will be agreed. After that all thaesving will belong to the organization.

Q. : Whether UP Government is having any policy regarding energy audit?

Ans: Not yet, However UP Government is encouraging various organizations to get the energy audit done and implement energy conservation measures by creating awareness. UPNEDA is also organizing UP State Energy Conservation Award every year to encourage organization for energy conservation and encourage competitiveness.

Q. : Can ESCO work in Government organization

Ans.: Yes, ESCo can work for Government Organization.

Q.: How ESCo get its investment back?

Ans: ESCo will get its money back through the money saved by reduction of energy consumption. Part of the amount saved through energy saving will be taken by ESCo and part will be available with the establishment.

Q.: How should ESCo will be able to recover its investment from Government Organizations. How can Government assist in this reference?

Ans. UP Government is planning to create a mechanism so that Government Organization can pay ESCo, against the investment made by them, in UP State Government Buildings.

Q.: Whether ESCo is having sufficient business opportunities in the state?

Ans: Bureau of Energy Efficiency has notified various industries and other organizations, such as railway, DisComs etc who are known as Designated Consumers (DCs) under Perform Achieve and Trade (PAT). These DCs are given target for reduction of energy consumption. To achieve the target of DCs role of ESCo begins. Thus ESCo is having good business opportunities.

Q.: Whether an ESCo should be registered with UP Government?

Ans: Any consultancy organization doing energy audit for a Designated Consumer should be registered with Bureau of Energy Efficiency, Government of India. BEE will ascertain the facility available (Availability of Instruments for energy audit, Certified Energy Auditor and Accredited Energy Auditors etc.) with Consultancy firm working for Energy Audit etc. Based on fulfilling the

minimum requirement as per BEE norms, the organization can be approved by BEE as Designated Consultant.

Q.: Whether ESCo is assisted for financial support by State Government?

Ans: No. However, Bureau of Energy Efficiency has created **'Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)'** to support the banks on their loans to ESCos.

Q. : What is 'Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)?

Ans: PRGFEE is a risk sharing mechanism of Bureau of Energy Efficiency (BEE) to provide commercial banks with a partial coverage of risk involved in extending loans for energy efficiency projects by addressing the risks and barriers faced and/or perceived by the financial institutions to financing ESCOs.

Q.: How ESCo can be facilitated by the State Government?

Ans: Government is not providing direct support, however, various financial assistance is being provided by financial institutions such as SIDBI. UP State have included Banks/financial institutions as one of the sectors in UP State Energy Conservation Award. These institutes are judged based on their loaning for energy conservation measures.

3. Energy Conservation Building Code (ECBC)

Uttar Pradesh Energy Conservation Building code (UPECBC) was drafted by the combined effort of Uttar Pradesh State Designated Agency (UPSDA) and Energy Conservation Building code (ECBC) cell. This code will sets minimum energy efficiency levels for commercial buildings and thus will help in energy saving to a great extent.

These Frequently Asked Question (FAQs) are designed to support building developers and practitioners (energy auditors) understand the newly developed ECBC for Uttar Pradesh.

Q.. What is ECBC?

A. The Energy Conservation Building Code (ECBC) was launched in May 2007 by the Bureau of Energy Efficiency (BEE), Ministry of Power. Its main objective is to establish minimum requirements for energy efficient design and construction of buildings. Recognizing the energy and cost savings of efficient buildings and to help address growing energy needs, the state of Uttar Pradesh is the process to notify ECBC code.

Q.. Why is ECBC important?

A.India's two thirds of the total building stock that will exist in 2030 are yet to be built. New buildings possess a great challenge to meeting its increasing energy demand. ECBC sets minimum energy efficiency levels for commercial buildings, locking in energy savings for years to come, retaining occupant comfort, while combating climate change.

Q.. Is UTTAR PRADESH ECBC applicable to all type of buildings?

A. The ECBC is applicable to all buildings or building complexes that have a connected load of 100 kW or greater, or a contract demand of 120 kVA or greater, used for commercial purposes. It is applicable for both Government and private buildings. The code is not applicable to Equipment and portions of building systems that use energy primarily for manufacturing processes.

Q.. Who is required to fill the ECBC online application?

A. If the building is eligible for ECBC, the user submitting the application for construction permission needs to fill in the ECBC online form. The building architect, developer, third- Party assessor, or owner can submit the online form.

Q.. What are the code mandatory requirements? Should mandatory requirements need to be met if I opt for "Whole Building Performance" method to comply with the code?

A. Irrespective of whether one opts for Whole Building Performance (WBP) method or Prescriptive method, the code compliance requires the building to fulfill a set of mandatory provisions. The mandatory requirements are described in UPECBC under sections 3.1, 4.2, 5.2, 6.2 and 7.2of the UPECBC code.

Q.. Is there any inspection during construction to ensure measure for UPECBC?

A.The urban local body may conduct random unscheduled progress inspections throughout the construction phase of a building for any new building, addition or alteration project, to ensure that the building complies with the UPECBC.

Q.. Does water conservation come under the scope of ECBC?

A.No, ECBC addresses only energy efficiency of buildings. Water and other aspects are generally covered in green building rating systems.

Q.8. What is U-value?

A.A U value is a measure of heat loss. It is expressed in W/m2k, and shows the amount of heat lost in watts (W) per square meter of material (for example wall, roof, floor etc.) when the temperature (k) outside is at least one degree lower. The lower the U-value, the better the insulation provided by the material.

Q.. Is it sufficient to install chiller of less efficiency than what is prescribed by UPECBC if my proposed building energy consumption is less than standard case and I am pursuing the WBP method for compliance?

A. No, any chiller that will be installed in the building must meet minimum efficiency requirements as prescribed. For minimum chiller efficiencies, please refer Table 5.1, 5.2, 5.3 of Uttar Pradesh ECBC.

Q.. Is it mandatory to put double glazed or triple glazed glass in the building?

A. No, it is not mandatory. While complying through the prescriptive path, use of permanent shading devices such as overhangs and fins can help to achieve required SHGC. Table 4.9 provides SHGC M-factor adjustment calculation. If you are using whole building performance method then there is no restriction on the SHGC of windows of the proposed building.

Q. Can there be partial compliance of UPECBC?

A. There is no partial compliance for Uttar Pradesh ECBC.

Q. If the building is naturally ventilated, does it still need to follow the UPECBC?

A. Yes, naturally ventilated buildings are also covered in UPECBC if they meet the requirement under section 2.

Q. Is it mandatory to install LED lights for interiors?

A. No, user can install any type of light fixture. If you are following prescriptive path for compliance you need to meet Lighting Power Density (W/m2) requirements based on Building area method or Space by space method. If WBP method is followed, your proposed design annual energy consumption must be lesser than the standard case annual energy consumption.

Q. Is it essential to install solar water heater system to meet hot water requirement of buildings?

A. As per section 5.2.10 of Uttar Pradesh ECBC, commercial establishments such as hotels, hospitals, guest houses with a centralized system shall have either solar water heating or waste heat recovery system upto the criteria given in the above section.

Q. Is it necessary to put roof insulation over deck or under deck?

A. The user can put either over deck or under deck. For prescriptive path roof U-value needs to be met. In the composite climates, it is preferable to put insulation over deck as stopping heat at source is more effective.

Q. Is cool roof mandatory?

A. If user follows Prescriptive or Trade-off path providing cool roof is mandatory. In WBP method it is not mandatory.

Q. Is it necessary to install glass with higher SHGC, if windows are shaded with trees?

A. No, user cannot take benefit of shading by trees. Permanent shading devices such as overhangs and fins can be considered. Automated moveable shading system can also be installed.

Q. Can user take benefit of manual shading controlling WBP method?

A.No, the user can take benefit only if it is automatic shading.

Q. Where can I find construction material properties?

A.The user can find construction material properties from supplier's test certificates. If they are not available with manufacture/vendor/supplier you can refer appendix A of the ECBC for default values.

Q. Can user take benefit of shading from surrounding buildings in WBP method?

A. No, the user cannot take benefit of shading from surrounding buildings.

Q. What software are available for WBP simulations? Are there any open-source or freely available?

A. There are many software/tools available such as eQUEST, OpenStudio, Design Builder, IES-VE, Simergy, EnergyPlus etc.eQUEST and EnergyPlus are free tools.

Q. Where can user find weather data for my city for energy simulation?

A. The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) provide weather data for Indian locations for simulations. Weather files can be downloaded from EnergyPlus website for Indian cities given on the link below. https://energyplus.net/weather-region/asia_wmo_region_2/IND%20%20

Q. Does user have to take into account emergency lighting load in LPD calculations?

A. No, emergency lighting that is automatically off during normal building operation and is powered by battery, generator, or another alternate power source are exempted.