

Executive Summary

Energy supply is one of the most fundamental infrastructures needed for the development of society and economic growth. Energy use must be rational and efficient to avoid the unnecessary wastage of depleting resources and harmful environmental impacts, such as pollution and global warming. Buildings consume a significant amount of energy. Optimising energy efficiency in a building is a much more cost-effective measure to reduce carbon emissions than turning to renewable energy solutions without addressing efficient energy use in buildings. Energy efficiency solution combines energy efficiency and conservation (EEC) measures, which need not be expensive and use advanced technology. Unlike renewable energy, the approach to adopting EEC strategies requires a combination of early planning and collaborative team efforts by architects, quantity surveyors, engineers, and building professionals at the beginning of a project. These guidelines provide cost-effective and practical measures and economic analysis in EEC for new and existing commercial buildings.

These guidelines were prepared to help policymakers, department officers, and building professionals better understand the basics of energy efficiency for commercial, institutional, and multi-unit residential buildings in hot and humid climates. These were primarily written as a guide to address the basic issues on efficient energy use in buildings concerning the design and evaluation of EEC measures, including economic viewpoints, to complement the 'Guidelines on Energy Conserving Designs of Buildings' of the Philippine Department of Energy (DOE). These guidelines, however, do not cover specific issues concerning the operation and maintenance of building systems. It is recommended that such specifics come from other sources. These guidelines discuss mainly the design of buildings and their mechanical systems, which are the significant energy users (SEUs) in terms of major shares of energy use in buildings in hot and humid climates. Therefore, these guidelines focus on the more critical aspects that affect efficient energy use in buildings without considering heating systems, commonly found in temperate climates.

These technical guidelines explain the fundamentals of energy efficiency in commercial buildings. Firstly, we need to identify the EEC of lighting, air-conditioning, and mechanical ventilation (ACMV) systems that are targeted. We also need to discuss a holistic approach to designing energy-efficient buildings by adopting a combined strategy of passive and active design measures. This approach requires early efforts in planning and designing by a multi-disciplinary design team that comprises architects, engineers, surveyors, landscape designers, etc. In addition to the existing Philippine Energy Standards and Labeling Program (PESLP) for energy-consuming products, building energy intensity (BEI) labelling may be done to enable the DOE to set up benchmarking targets for various building categories or subsectors after establishing the system and collecting sufficient building information and annual energy consumption data. BEI labelling can measure or indicate the energy performance of buildings of the same category or subsector for design and building operation purposes. A BEI labelling system will enable setting measurable goals in building energy performance benchmarking, which will be vital in achieving EEC success in commercial buildings. These guidelines were prepared to complement the DOE's existing guidelines, with three key concepts in mind:

- adopting holistic EEC strategies through a strategic combination of early planning and collaborative team efforts by architects, surveyors, engineers, and building professionals in design and construction through passive and active EEC measures

- using EEI or BEI labelling to achieve a low BEI, set as measurable goals and benchmark targets for various types of commercial buildings.
- adopting a balanced approach through economic justification with economic analysis of EEC measures under reasonable energy prices, in other words, marketed energy prices.