

A PATH TOWARDS NET ZERO ENERGY BUILDINGS

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ABSTRACT

The environment is one of the most basic public assets of a human system, and it must be therefore specially protected. Sustainable development is understood as a development that does not damage the ecological or social systems on which it depends, but it approves ecological limitation under the economic activity frame and it has full comprehension for support of human needs.

This paper explores the ways to deliver highly efficient buildings whose reduced energy demand is satisfied by clean, renewable energy. Building off of the broader concept of a green or sustainable building, the concept of the “net zero building” focuses on the energy dynamics and performance of the building. And as policymakers and leaders align toward the net zero concepts, the focus on achieving deep energy efficiency has centered on integrated technologies as well as ways to connect buildings to the natural environment.

The paper addresses the importance of sustainable design by reducing or completely avoiding depletion of critical resources like energy, water, and raw materials and prevent environmental degradation caused by facilities and infrastructure throughout their life cycle to make the built environments livable, comfortable, safe, and productive. Buildings use resources (energy, water, raw materials, and etc.), generate waste (occupant, construction and demolition), and emit potentially harmful atmospheric emissions. This is a unique challenge for Building owners, designers, and builders face to meet demands for new and renovated facilities that are accessible, secure, healthy, and productive. The impact on society, the environment, and the economy has to be minimized.

The paper concludes with recommendations to find ways to reduce energy load, increase efficiency, and maximize the use of renewable energy sources in federal facilities. Improving the energy performance of existing buildings is important to increasing our energy independence. Net zero energy buildings is a way to significantly reduce our dependence on fossil fuel-derived energy.

KEYWORDS: Net Zero Energy Buildings, Energy Calculation Methodologies, Energy Efficient Buildings