Energy Efficiency Critical Targets

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***Abstract*— Despite the fossil fuel fired power generating plants being the major producers of greenhouse gases, it is clearly evident that renewable sources of energy are not going to replace them any time soon. There is a general consensus amongst scientists and governments that our climate is changing at an unprecedented rate, and it is argued that it is largely caused by greenhouse gas emissions from economic activity that is unlikely to be significantly scaled down through forums and protocols. Many studies indicate that a higher concentration of greenhouse gases in the atmosphere, particularly carbon dioxide, is the primary cause of global warming that is driving climate change. While awaiting for renewable energy to make further technological advances, improve its efficiency, and place itself as a cost effective contender to conventional power generation, energy efficiency and conservation are currently the least expensive alternative for power and process industry to meet a growing demand for cleaner energy. For all the renewable energy resources put together, renewable energy accounts for 19.1% of total electricity production, of which 85% is hydro-electricity. Energy efficiency and renewable energy should remain the twin pillars of sustainable energy policy [1]. In many countries, energy efficiency is also seen to have a national security benefit because it can be used to reduce the level of energy imports from foreign countries and may slow down the rate at which domestic energy resources are depleted.**
In this paper, we focus on the current state of the electrical system efficiency from generation to utilisation, and identify the critical areas where efficiency can be enhanced through current technology, design and operational practice.

***Index Terms*—Energy efficiency, greenhouse gases emissions, renewables, clean power, power plant, transmission & distribution, transformers, facts, sustainable buildings, smart grids, demand response.**

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