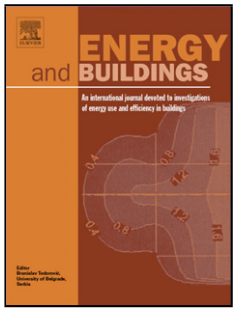

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Twenty-year tracking of lighting savings and power density in the residential sector

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Highlights:

- Energy efficient lighting savings effect on middle class apartments was quantified
- Collected monthly bills of 150 apartments was compared between 1994 and 2014
- Installation of fluorescent and CFLs led to a 35-40% energy saving in 20 years
- Average consumption for electric lighting decreased from 17 kWh/m^2 to 10 kWh/m^2
- The monthly electric lighting energy profiles are presented in this study.

Abstract:

Lighting energy consumption represents a significant percentage of total energy consumption in residential building sector. During the last 20 years, advanced energy-efficient lighting fixtures have been introduced worldwide to conserve the energy consumption in residences. In the Middle East and North Africa (MENA) region, very few studies have been conducted to evaluate the association between the introduced lighting fixtures and the resulted energy savings using valid measurements and verification techniques. This study evaluates the techno-economic impact of replacing new energy efficient lighting in residences in Egypt (a representative MENA region country). A quantitative analysis is applied by tracking the utility