Reductions in electricity consumption and power demand in case of the mass use of compact fluorescent lamps

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References:
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Abstract:
The paper presents a general methodology for the evaluation of the reduction in electricity consumption and its market value, as well as the reduction of the peak power demand in case of the mass use of compact fluorescent lamps (CFLs), illustrated on the Serbian power system. The evaluation was based on the assumption that the two most used incandescent lamps in each of 25–50% of the total number of dwellings in Serbia will be replaced with adequate CFLs, and that the same total number of lamps will be replaced in residential and non-residential sectors. The daily diagrams of the total electrical power demand in Serbia for days with the maximum and minimum yearly peak loads are presented and compared with the corresponding daily diagrams which took into account the planned lamp replacement and the coincidence factors (CFs) for the observed lamps, which in case of the residential sector are obtained by on-site monitoring of 344 dwellings. It was shown that, in order to precisely calculate the cost-effectiveness of the planned action, decrease of electricity consumption has to be calculated for each hour, because the electricity cost rate (ECR) usually changes on an hourly basis.

Keywords:
Coincidence factor; On-site monitoring; Compact fluorescent lamps; Electricity consumption; Power demand; Electricity cost rate