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PLANNING ENERGY EFFICIENCY IN HOSPITALITY ENTERPRISES: ACTION PLAN, INDICATORS, ECONOMIC EFFECT AND CONTROL

Maliavko Myroslava
Student majoring in Hotel and Restaurant Business,
National University of Food Technologies, Kyiv, Ukraine

Tkachuk Yurii
Candidate of Technical Sciences (Ph. D.)
Associate Professor at the Department of
Hotel and Restaurant Business,
National University of Food Technologies, Kyiv, Ukraine

Hotels operate 24/7 and therefore have intensive electricity, heat, and water demand. From an ESG and cost-management perspective, energy efficiency in hospitality can be defined as the rational use of energy resources (electricity, heat, and water) to reduce operating costs and minimize environmental impact. Global statistical data indicate that the hotel sector's greenhouse gas emissions account for about 1% of global emissions, and hotels worldwide generate approximately 363 million tonnes of greenhouse gases annually, an amount comparable to the energy demand of tens of millions of households.

To present an implementable planning logic for energy efficiency in hotel enterprises as a management cycle: energy audit → intervention portfolio → indicators and economic effect → monitoring and corrective control.

The proposed approach aligns the energy-planning process with the Plan–Do–Check–Act logic of ISO 50001 energy management systems [1] and uses measurement and verification principles to quantify savings at facility level [2]. For room-level interventions, evidence from hotel applications of occupancy-based HVAC controls is used as a reference for achievable savings ranges [3]. A recent hospitality-focused scenario approach is also considered to frame energy measures as policy-driven and case-based portfolios rather than isolated technical upgrades [4].

Planning starts with an energy audit to identify the structure of consumption, key loss points, and the most energy-intensive processes. Based on the audit, the action plan is formulated as a portfolio of: (1) technical measures (LED lighting retrofit, modernization of heating/ventilation/air conditioning systems, envelope insulation, replacement of inefficient equipment); (2) innovative measures (building automation systems, renewable energy sources such as solar PV and heat pumps); and (3) organizational measures (staff training, optimization of equipment operating regimes, and energy-saving culture among guests). To evaluate effectiveness, a compact KPI set is proposed: total energy use, energy cost, savings level, energy and water consumption per guest-night (or per room), heat loss indicators, and an environmental proxy

(estimated CO_2 reduction). The economic effect manifests through lower energy bills, reduced operating expenses, improved profitability, and stronger competitiveness, together with reputational benefits for environmentally responsible hospitality businesses certified under international sustainability schemes [5].

Implementation requires continuous monitoring of resource consumption, regular checks/audits, analysis of deviations, and corrective updates of the action plan. Automation improves control efficiency and enables faster response to abnormal consumption patterns. Empirical evidence from hospitality operations, such as Cubby Hotel (Lviv), demonstrates the effectiveness of water-saving fixtures (potentially up to 50% water reduction compared to conventional solutions) and LED lighting combined with motion sensors. Additionally, Sandos Eco Club illustrates how an all-inclusive resort network can successfully combine recycling programs with careful water use and electricity savings.

Energy-efficiency planning in hospitality is most effective when treated as a controlled management cycle with auditable measures, measurable indicators, and ongoing verification. This approach supports both cost reduction and sustainability performance without relying on one-time upgrades only.

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