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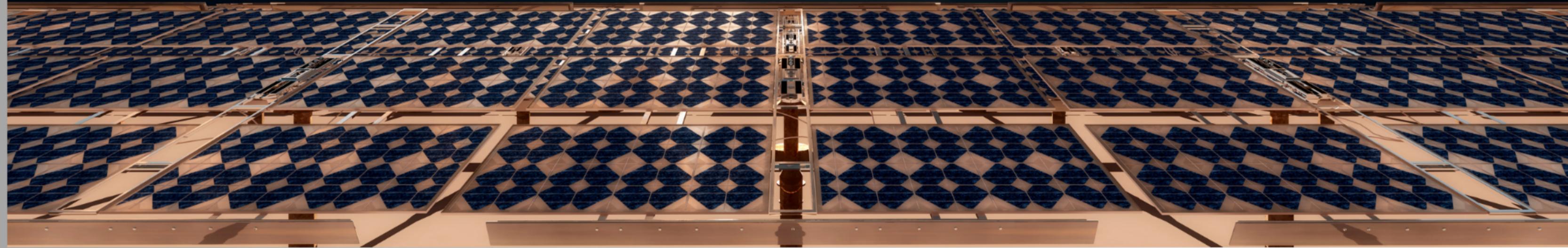
Energy Efficiency Lighting

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Energy efficiency in lighting systems within educational institutions is crucial for reducing operational costs, environmental sustainability, and the overall learning environment. Schools often have extended hours of lighting use, making the optimization of lighting systems not only an economic necessity but also a pedagogical imperative.

Learning Objectives

- Green school buildings are dynamic learning environments.
- Operations and Maintenance for Whole School Sustainability
- Meaningful, purposeful, and engaging learning
- Sustainable Spaces and Smart Transportation
- **Energy Efficiency - Lighting**
- Energy Efficiency - Plug Loads & HVAC Systems
- Water Efficiency and Quality
- Indoor Environment: Air Quality and Acoustics
- Smart Cleaning & Integrative Pest Management
- Materials and Resources
- Emerging Design and Technology
- Summary and Resources
- SCS Quiz: Test Your Knowledge!

INTRODUCTION

- Importance of energy efficiency in school lighting: reduces operational costs, promotes environmental sustainability, and enhances learning environment.
- Primary lighting technologies: incandescent bulbs, fluorescent lamps, LEDs, and smart lighting systems.
- Primary types: Incandescent bulbs convert 90% of energy into heat, fluorescent lamps produce light through mercury vapor, LEDs are the most energy-efficient option, last longer, and provide high-quality light.
- Strategies for implementing energy-efficient lighting systems: conduct energy audits, select appropriate technologies, use natural light, implement control systems, and educate stakeholders.

ENERGY EFFICIENCY IN LIGHTING SYSTEMS WITHIN EDUCATIONAL INSTITUTIONS

- Energy efficiency in lighting is crucial for educational institutions, impacting operational costs, environmental sustainability, and the learning environment.
- Schools often have extended hours of lighting use, making the optimization of lighting systems an economic necessity and a pedagogical imperative.



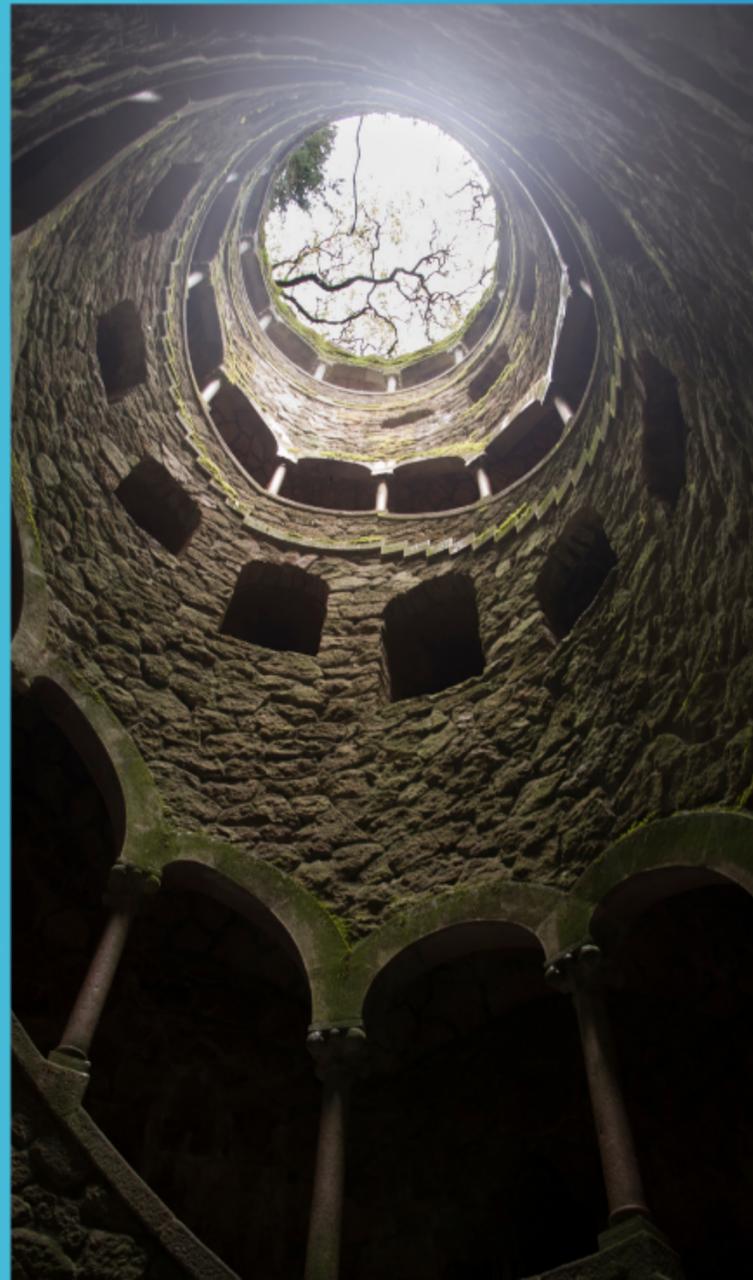
THE IMPORTANCE OF ENERGY EFFICIENCY IN SCHOOL LIGHTING

- **Cost Reduction:** Energy-efficient lighting technologies can reduce utility bills and lead to energy savings of up to 75%.
- **Environmental Impact:** Schools have a responsibility to model sustainable practices for students, reducing greenhouse gas emissions associated with electricity generation.
- **Enhanced Learning Environment:** Proper lighting is essential for student performance and well-being, improving concentration and reducing eye strain.



UNDERSTANDING LIGHTING TECHNOLOGIES

- Incandescent Bulbs: Traditional bulbs convert approximately 90% of energy into heat rather than light, making them highly inefficient.
- Fluorescent Lamps: More efficient than incandescent bulbs but have limitations in lifespan and light quality.
- Light Emitting Diodes (LEDs): Most energy-efficient lighting option available, can achieve efficiencies exceeding 90% and provide high-quality light with better color rendering.
- Smart Lighting Systems: Integrate advanced technologies to optimize energy use based on actual needs.



IMPLEMENTATION STRATEGIES

- Conducting Energy Audits: Assess current lighting conditions, usage patterns, and energy consumption levels.
- Selecting Appropriate Technologies: Based on audit findings, decision-makers should select appropriate lighting technologies.
- Utilizing Natural Light: Architectural considerations like strategic placement of windows and skylights can reduce reliance on artificial lighting.
- Implementing Control Systems: Integration of smart lighting controls can lead to further energy savings.
- Educating Stakeholders: Training staff and educating students about the importance of energy efficiency can cultivate a culture of sustainability.



ENERGY SAVING TIPS FOR SCHOOLS



- Energy Audits: Comprehensive assessments of a building's energy use to identify areas of energy waste and provide recommendations for improvements.
- Upgrading Lighting Systems: Use LED lighting to reduce energy consumption and lower maintenance and replacement costs.
- Optimizing HVAC Systems: Regular maintenance of HVAC systems ensures efficient operation and reduces heating costs.
- Building Insulation and Sealing: Proper insulation in walls, ceilings, and floors maintains comfortable temperatures within school buildings.

ENERGY SAVING TIPS FOR SCHOOLS +

- **Incorporating Renewable Energy Sources:** Schools can invest in renewable energy technologies like solar panels to offset energy consumption.
- **Promoting Energy Awareness and Behavioral Changes:** Schools can create campaigns to raise awareness about energy-saving practices.
- **Implementing Energy-Efficient Appliances:** Schools should prioritize Energy Star-rated products when purchasing new appliances and equipment.



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