ENERGY EFFICIENCY OPPORTUNITIES FOR SCHOOLS

National surveys show that schools spend about $250 to $300 per student on utilities each year. Most of these costs come from ventilation, lighting, heating and cooling. Some studies suggest that features of the indoor environment, such as proper ventilation, comfortable temperature and quality lighting, can affect student performance, attendance, and employee retention.

Ventilation

1. Ventilation
   Provide healthy indoor air quality by ensuring ventilation complies with building codes. Make sure outside air dampers function properly to save up to 9% in HVAC energy by free cooling through economizers.***

2. Co_2 Control
   Ventilate only when classrooms, libraries and auditoriums are occupied. Savings depend on occupancy patterns.

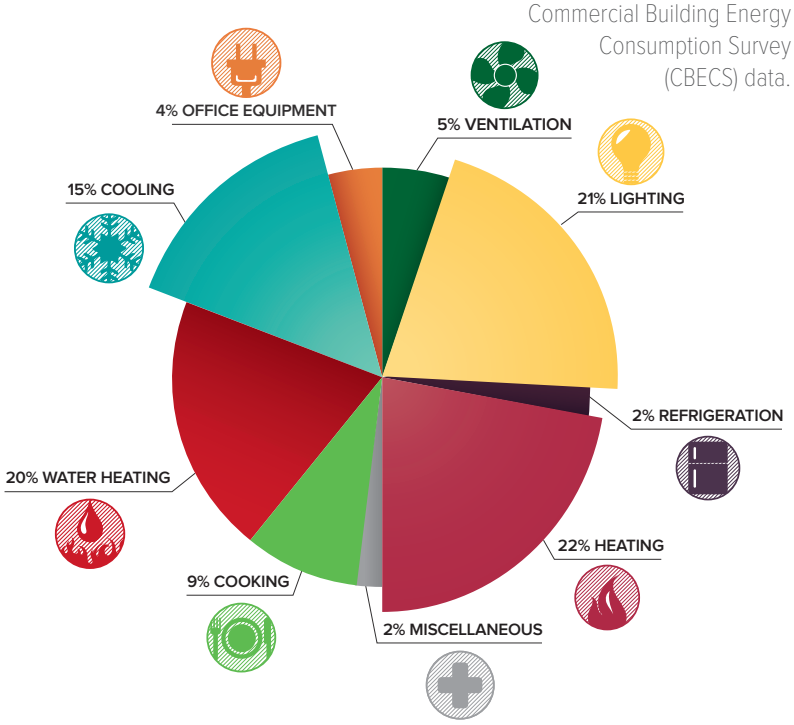
Lighting

3. Interior LED Lighting
   Consider LEDs for your classrooms and gymnasiums. Interior LED fixtures compete with top performing fluorescent lights in terms of quality and energy efficiency. Superior lamp life, maintenance savings and dimmability can offset the higher initial cost.

4. Exterior LED Lighting
   Reduce energy consumption by as much as 40% with LEDs for exterior lighting. Other benefits include reduced light pollution and reliable operation at low temperatures.***

5. Occupancy Sensors
   Save 40-46% on lighting energy in classrooms with occupancy sensors. Choose spaces that are intermittently occupied and carefully select the right type of sensor for each space.***

This chart represents typical usage and is estimated from sources such as ASHRAE standards and Commercial Building Energy Consumption Survey (CBECS) data.



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Kitchen

6. Cooking Equipment
   Upgrade to ENERGY STAR® commercial ovens and improve energy efficiency by 20%.*

7. Refrigeration Retrofit
   Switch to an Electronically Commutated Motor (ECM) and/or an automatic door closer and save up to 23%.**

8. Refrigeration Replacement
   Replace refrigerators and freezers with ENERGY STAR models and enjoy 40% savings compared to standard models.*

9. Vending Machines
   Specify ENERGY STAR refrigerated beverage vending machines to save 50% on energy costs. Retrofit existing vending machines with controllers to save 30-40%.

Cooling

10. Cool Roofs
    Choose a roof with a high solar reflectance to reduce cooling load - this may not have additional cost if a roof replacement is already planned.***

11. Green Roofs
    Reduce cooling and provide an educational tool about topics in science, including energy, storm water management and biology, by integrating a green roof with vegetative plantings.

12. Window Films
    Apply window films to reduce heat gain and light in areas where occupants complain of overheating and glare.***

IT Equipment

13. Computers and Servers
    Choose ENERGY STAR computers and servers to save 30-40% on operating costs.

14. Computer Power Management
    Power down computers and monitors when not in use to save $10-30 per computer per year.

15. Unplug Devices
    Unplug all devices during breaks to reduce energy costs.

HVAC

15. Energy Management Systems
    Save between 5% and 15% of overall energy usage in buildings when HVAC systems are optimized and recommissioned properly.***

16. Equipment Replacement
    Specify equipment that is more efficient than required by code to maximize energy savings and the investment in HVAC equipment.

17. Roof and Wall Sealing
    Seal the joints at the roof and wall to reduce air leakage in the building envelope and improve HVAC performance, comfort and moisture control.

18. Programmable Thermostats
    Save between 5% and 15% on HVAC costs with thermostats programmed to set back at night and on weekends.***

19. Window Replacement
    Consider window replacement when doing a comprehensive remodel.***

20. Variable Frequency Drives (VFDs): Pumps & Fans
    Save between 10% and 50% on the energy for the controlled pump or fan.

* ENERGY STAR® www.energystar.gov
** Energy Savings Potential and R&D Opportunities for Commercial Refrigeration. Navigant Consulting. 2009.
*** E-Source Business Energy Advisor www.bizenergyadvisor.com

When planning a high performance new school, some additional energy saving opportunities to consider include:

1. Minimizing the surface area of the building envelope with a multi-story footprint
2. Useing high efficiency HVAC systems, such as geothermal heat pumps or thermal storage
3. Including proper daylighting design

Nothing Compares

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