



U.S. Department of Energy
Energy Efficiency
and Renewable Energy

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

EnergySmart Schools

For a brighter energy future



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EERE Project Management Center
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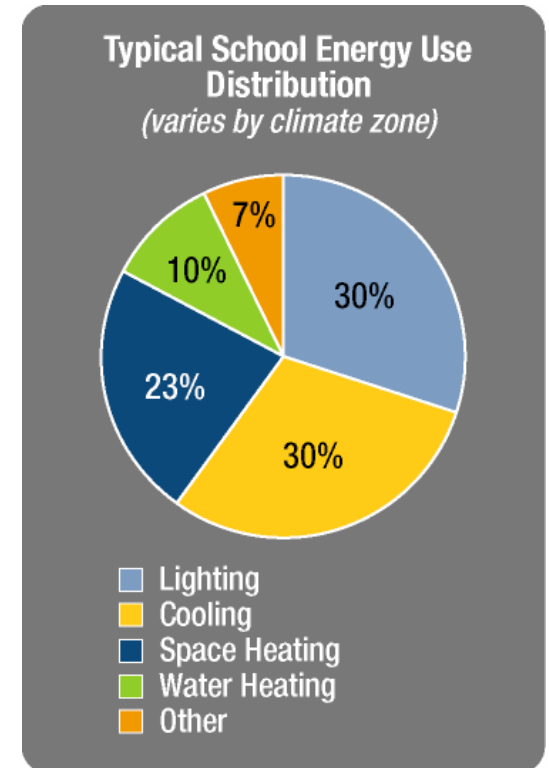
Opportunity

- **About \$60 billion will be spent over the next 3 years to build or renovate schools**
- **The average school is 42 years old and uses outdated equipment and technology**
- **Around 1,000 schools are built annually**
- **America's 93,000 public schools spend more than \$8 billion per year on energy:**
 - **2nd largest expense after personnel costs**
 - **Rising energy costs limit funding for other school needs**
- **Increasingly, schools play a critical role as centers of community and must be constructed with the ability to provide shelter and services during emergencies**



What Makes a School EnergySmart?

- High-performance building design
- Energy-efficient technologies, design and O&M strategies
- Energy education
- Alternative fuel transportation
- Renewable energy systems
- Incorporates ENERGY STAR Portfolio Manager and Target Finder tools
- Safe havens
- Round the clock centers of community





Challenges

- Energy efficiency not first priority for school decision-makers,
 - Need for study that links improved academics and health to energy efficiency
- Perception of higher initial costs
- Funding
- Lack of awareness of long-term benefits through reduced O&M costs
- Design/construction decisions
- Decision-making process varies among school districts
- Life cycle cost estimating





Program Goal and Energy Savings

Existing Schools Goal

30% improved efficiency in existing schools (over ASHRAE 90.1-1999)

New Schools Goal

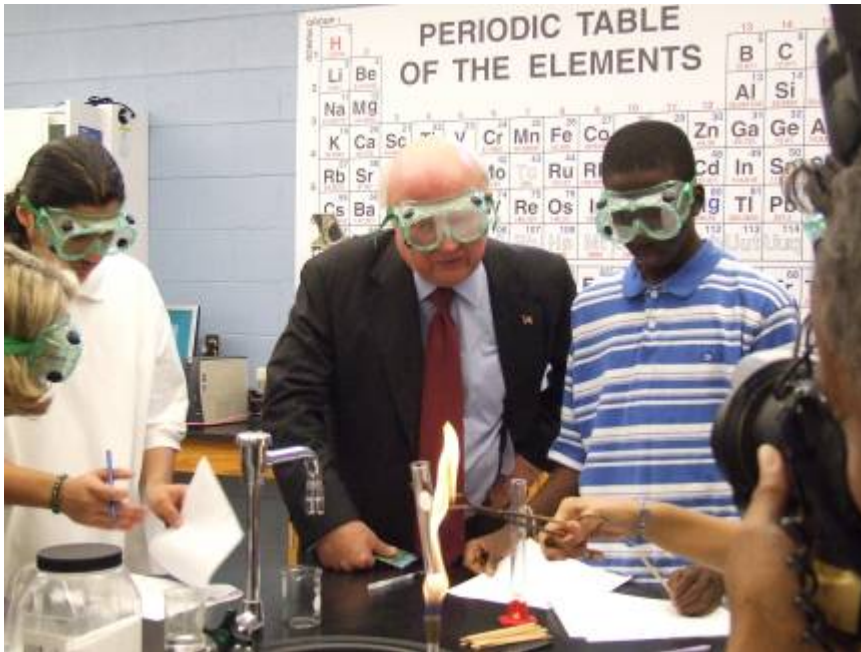
50% improved efficiency in new schools and major renovations and additions (over ASHRAE 90.1-1999)

Energy Savings

Anticipated total energy savings from the EnergySmart Schools Initiative would be 0.002 quads of energy and \$14 million in cost savings in schools by 2020



DOE's Role in EnergySmart Schools



- Provide technical assistance in advanced building technologies and practices
- Monitor/collect data to document best practices
- Bring together partners and stakeholders at the national and regional levels
- Provide information (databases, etc.) that link money sources to schools
- Provide information resources



Strategic Pathways

Goal: 50% Energy Savings in New Construction and Major Renovations and Additions and 30% Energy Savings in Existing Schools

1. Provide Best Technical Information

ASHRAE 30% Design Guide

Financing Guide

Decision-Maker Brochures/ Case Studies

Evaluation and Documentation

2. Persuade Key Stakeholders

Presentation and Marketing

Peer-to-Peer Exchanges

3. Partnerships

Energy Efficiency Partnerships

Other Federal Agencies and Key Stakeholders
NSBA, AASA, ASBO, CEFPI

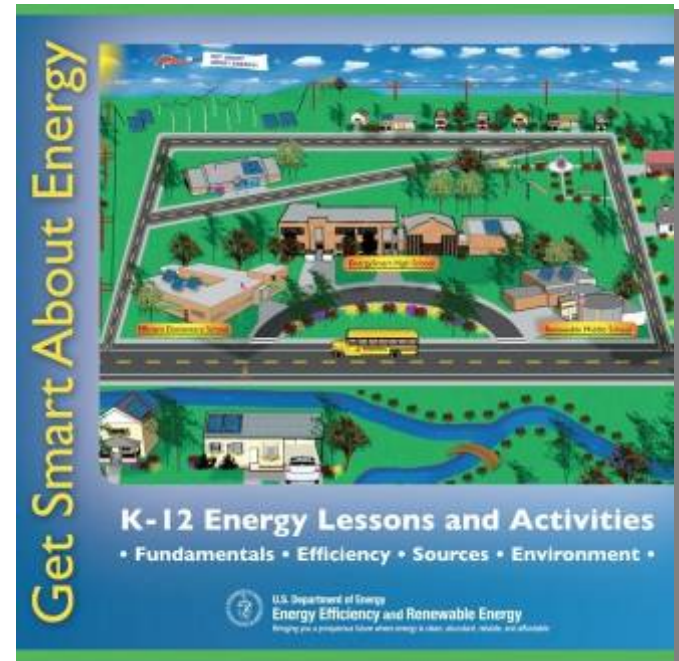
School Decision-Makers

School Boards, Superintendents, Facility Managers, and Business Officials



Get Smart About Energy CD-ROM

- **A curriculum enhancement tool with over 100 energy-related lessons and activities**
- **Organized by grade level (K-4, 5-8, 9-12) and by topic (Energy Fundamentals, Efficiency and Conservation, Sources of Energy Environmental Impacts)**
- **Aligned to National Science Education Standards**
- **Distributed through the ESS partner network**





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"How to" Guides

With the right planning, EnergySmart schools can be built for about the same initial cost as conventionally-built schools. Yet the ongoing savings are substantial. So are the benefits to health and comfort, the environment, and staff and student satisfaction.

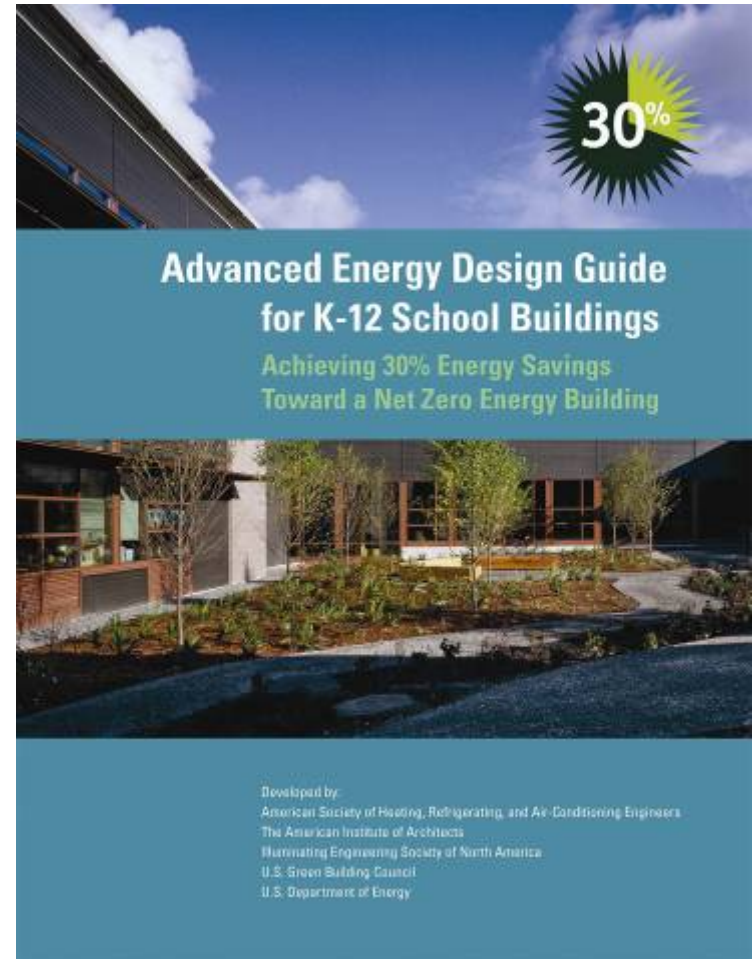




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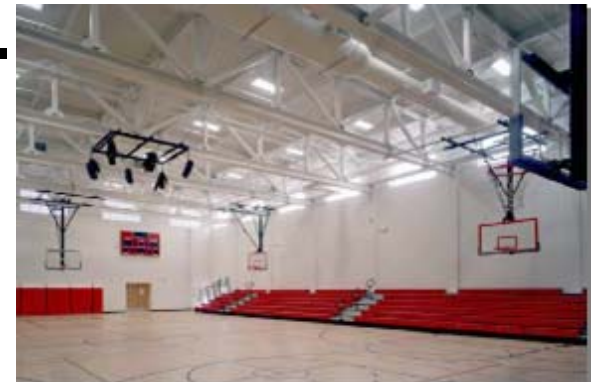
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ASHRAE Advanced Energy Design Guide for K-12 School Buildings



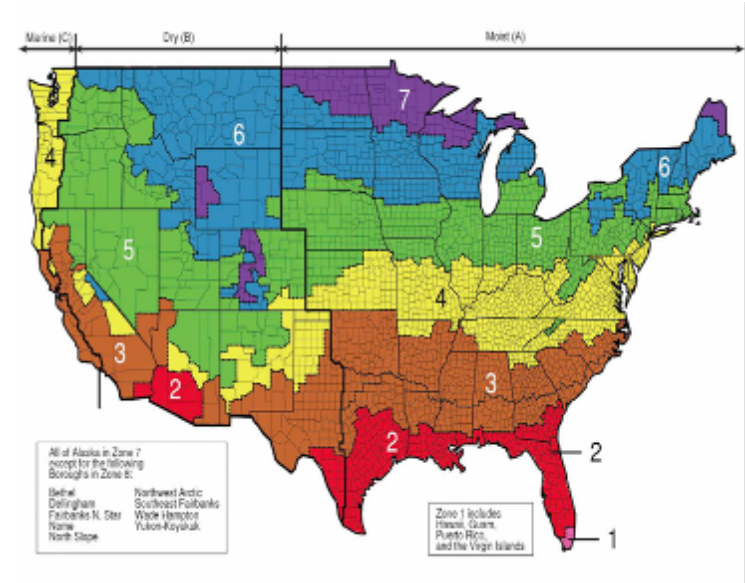


- Achieve 30% energy savings over the minimum code requirements of ANSI/ASHRAE/IESNA Standard 90.1-1999...
- ***Without*** having to resort to detailed calculations or analyses.





- Explains integrated design
 - Checklists
 - Suggested targets
- Savings by climate zone
 - 8 climate zones
 - Prescriptive path
 - No modeling required
 - Helps earn CHP, LEED, or other credits





- Case studies
 - Learn from others by climate zone
- Advice for getting it done
 - How to avoid problems
 - Savings via appliances, equipment options
 - Other energy savings measures





- Developed in collaboration with:
 - The American Institute of Architects (AIA),
 - The Illuminating Engineering Society of North America (IESNA)
 - The U.S. Green Building Council (USGBC)
 - The U.S. Department of Energy (DOE).





- Free download at ashrae.org under *Technology*
 - 34,000 downloads already
- DOE emailed most of you with link to the Guide
- ASHRAE sent out 16,000 hard copies to school districts





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