Best Practices: Policies for Building Efficiency and Emerging Technologies

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Topics

- U.S. policies on building energy efficiency: Appliance standards, building energy codes, ENERGY STAR program, and tax incentives
- Development of improved technologies
- The influence of new technologies on energy efficiency policy

Appliance Standards

Over 50 products are covered by DOE's appliance standards program. These are known as "covered products."

- Covered products are responsible for 82% of residential building energy consumption, 67% of commercial building energy consumption, and approximately half of industrial energy consumption.
  - In 2009, the Nation's 113 million households and 5.4 million commercial buildings consumed approximately 39.2 quadrillion Btu (quads) of energy annually, about 41 percent of the U.S. total.
  - Residential buildings use 22 percent of the U.S. total and commercial buildings use 19 percent. Industrial equipment and processes comprises 29 percent of the national total.
  - Energy use in buildings costs $413.3 Billion ($2009).

Program Impacts

Setting appliance standards is one of the Federal Government's most effective energy saving programs:

- Standards that went into effect from 1988 to 2006 will have an estimated cumulative energy savings of 39 quads by 2020, and 63 quads by 2030.
- Cumulative net present value of consumer benefit amounted to $64 billion at the end of 2005, $241 billion by 2030, and $269 billion by 2045, while the cumulative cost of DOE's program over the past 20 years is in the range of $200-250 million.
- Annual carbon savings will reach 38 million tons by 2020 and the cumulative savings by 2045 is estimated at 1,200 million tons.

Energy Codes

- **50% Goal—for Increased Energy Savings By 2015**
  - Need to go beyond prescriptive approaches
  - Exploring performance-based options and alternative paths to compliance
  - Voluntary Codes: Submitted outcome and performance-based proposals
- **70% Initiative for Increased Adoption By 2015**
  - Comprehensive adoption strategy
  - Goal: 40 states to adopt target codes or most current model codes by 2015
  - Goal: 10 states to adopt the target codes or more efficient in FY2011
- **90% Compliance By 2017**
  - Continue technical and financial support to the states
  - Increase the number and availability of compliance guides and field measurement tools

ENERGY STAR

- Recognized, Trusted Symbol
  - Provides consumers with the means to distinguish efficient products and buildings
- Voluntary Partnership
- Marketing Platform

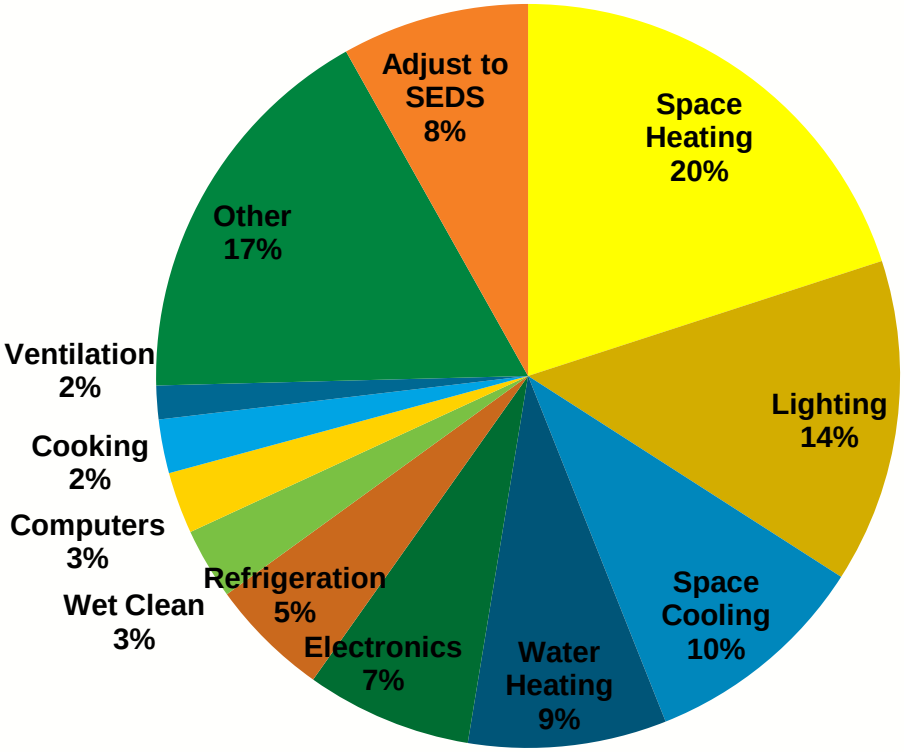
Tax Incentives

- Tax incentives are available for homeowners and businesses that purchase and install energy-efficient equipment or make energy efficiency improvements to homes and buildings.
- Fuel-efficient vehicles and energy-efficient appliances and products provide many benefits such as better gas mileage - meaning lower gasoline costs, fewer emissions, lower energy bills, increased indoor comfort, and reduced air pollution.
- In addition to federal tax incentives, some consumers may also be eligible for utility or state rebates, as well as state tax incentives for energy-efficient homes, vehicles and equipment.

Development of improved technologies

- Pioneer new development and deployment of energy efficient technologies and practices
- Advance innovative technologies for appliances, equipment and products
- Integrated building approaches

Developing technologies address high end uses.



U.S. Buildings Energy by End Use (2010)
(Source: Building Energy Data Book 2009)

- Solid State Lighting
- Windows and Thermal Envelope (Heating, Cooling and Lighting)
- Advanced Heating and Cooling
  - Solar Heating and Cooling
- Water Heating
- Appliances and Miscellaneous Electric Loads (Refrigeration, Wet Clean, Cooking, Computers and Electronics)
- Analysis Tools
- Sensors and Controls

The influence of new technologies on energy efficiency policy

- Develop and promote efficient, affordable, and environmentally friendly technologies, systems, and practices for our nation's residential and commercial buildings
- Foster economic prosperity, lower greenhouse gas emissions, and increase national energy security
- Simultaneously provide the energy-related services and performance expected from our buildings

→ Therefore, this influence will allow standards, codes, voluntary programs, and incentives to improve and assist in creating the benefits desired.