U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Transforming the American Buildings Market

Remarks by David Rodgers
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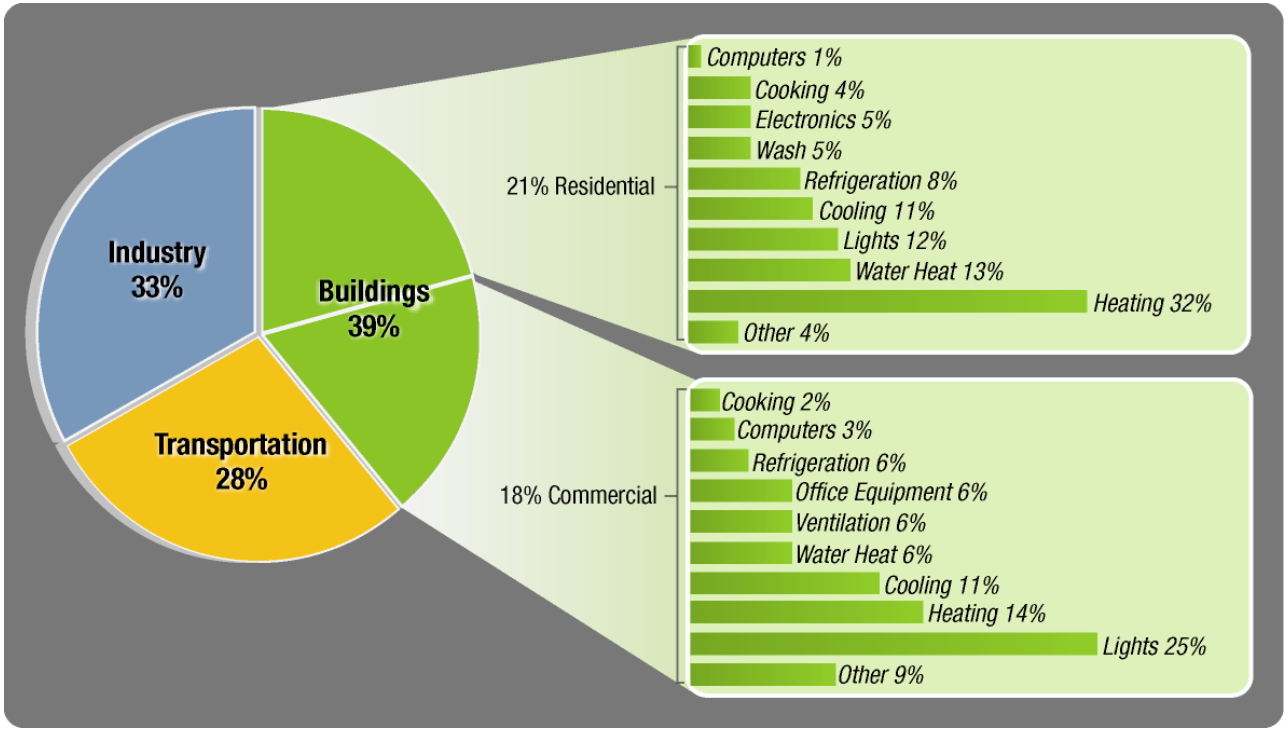
Office of Energy Efficiency and Renewable Technology




Buildings: Huge Savings Opportunities

Buildings consume 39% of total U.S. energy

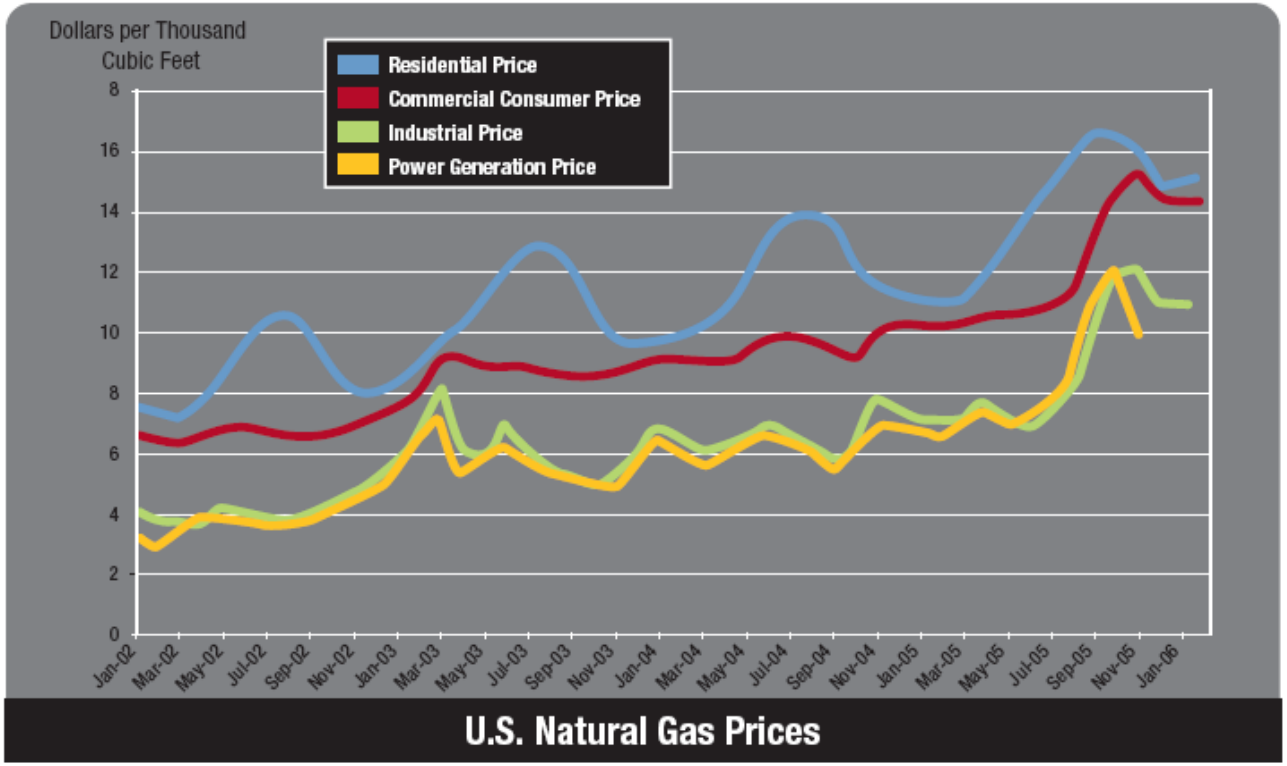
- 71% of electricity
- 53% of natural gas (primary consumption)



Source: 2005 Building Energy Databook with remainder equal to SEDS adjustment.

Factor 1: Rising Demand and Prices

- Continued increases in energy demand …
- Plus upward pressures on energy prices



U.S. Natural Gas Prices

Factor 2: Pending Infrastructure Costs

- Power generation, T&D, and natural gas T&D systems stressed, raising reliability concerns
- Billions of dollars in investments projected
- Yet permitting and siting are increasingly challenging
- Uncertainties about regulations add further risks

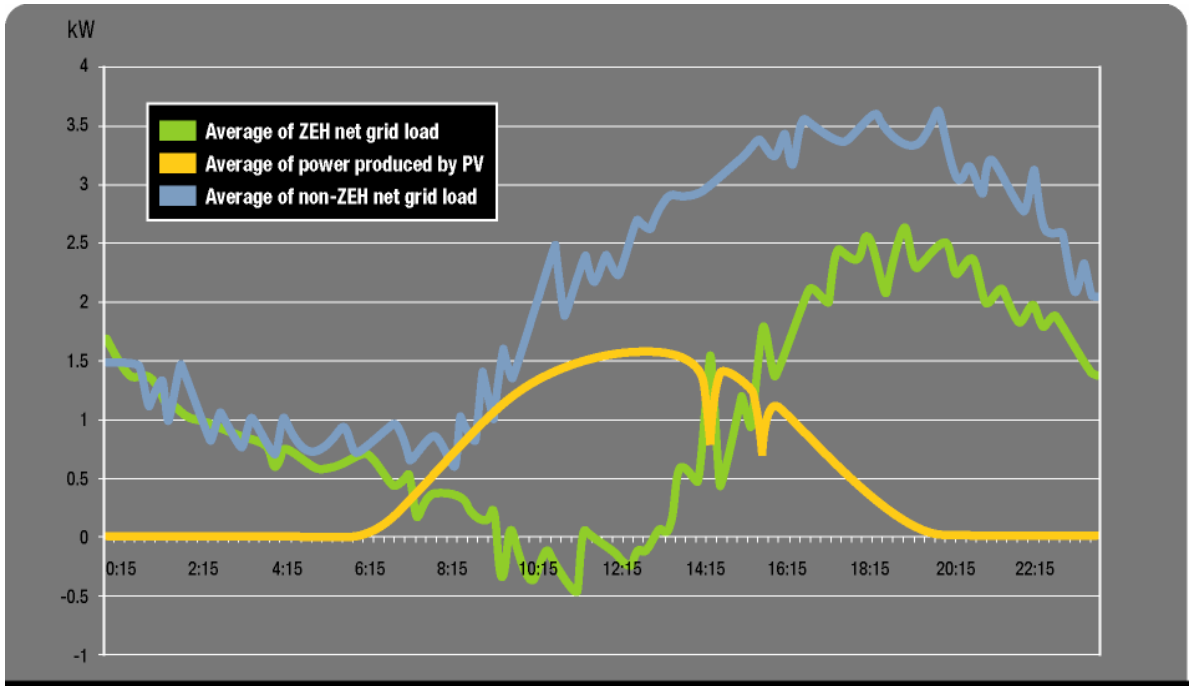
Factor 2: Pending Infrastructure Costs

- Closing in on "zero-peak-demand" communities

California experience:
Per person electricity use held in check since the 1970s

Otherwise would have been 50% higher, at cost of $16 B per year

CEC estimates 25% of savings due to building standards – $4 B per year



Average Peak Demand ZEH vs. Non-ZEH

Based on July 15, 2005 data from the Sacramento Municipal Utility District
High temperature 107 degrees F, min temperature 71 degrees F

Factor 3: Disaster Mitigation

- Combine energy efficiency and disaster resistance during rebuilding

Factor 4: Energy Policy Act 2005

- Policy Drivers
  - Energy affordability and reliability
  - Reduced environmental impacts of energy use
  - Reduced dependence on foreign sources

How EPACT 2005 Will Help

Residential buildings efficiency

- **Home improvements** – Tax credits to consumers
- **New homes** – Tax credits for eligible contractors
- **Appliances** – Tax credits for manufacturers

How EPACT 2005 Will Help

Commercial buildings efficiency

- Tax credits for new construction and retrofits
- Upgrades to lighting, HVAC, hot water, and the building envelope



How EPACT 2005 Will Help

Government buildings to lead the way

- Existing Federal buildings – 20% cut by 2015
- Agencies to buy energy efficient products
- New Federal buildings – 30% less energy use
- Water conservation and sustainable design

How EPACT 2005 Will Help

Distributed heat and power

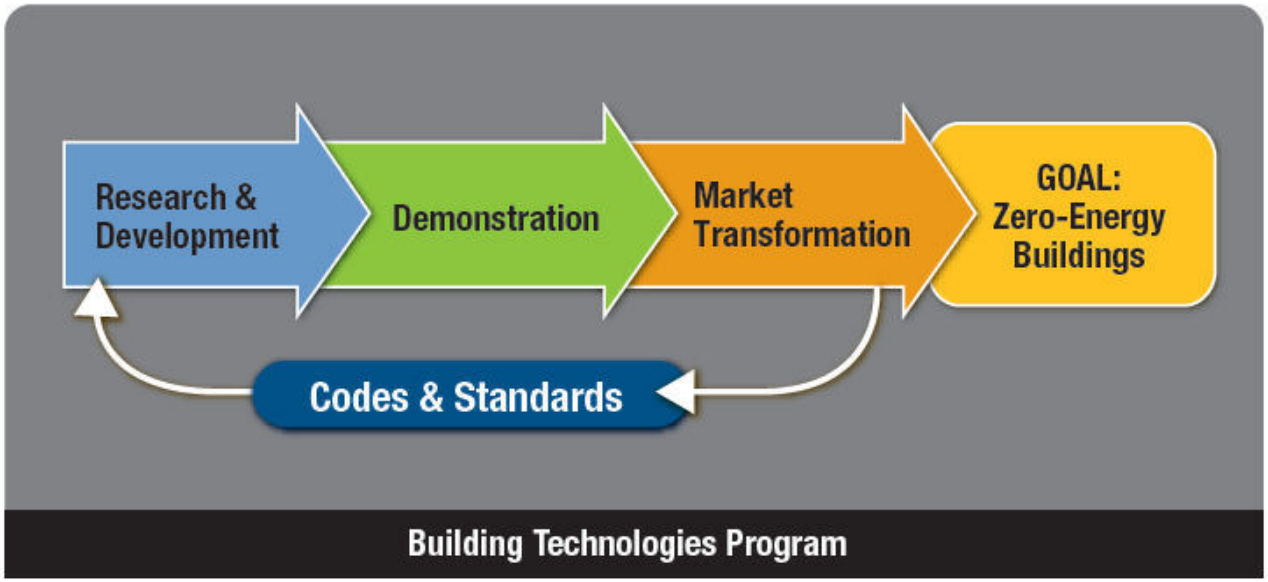
- Production credit extended: geothermal, biomass, landfill gas
- Tax credit up to 30% for solar power or hot water
- Tax credit for fuel cells or microturbines
- Grid connection and net metering

Building Technologies Program

R&D and demonstration:
Drive up technology performance and drive down costs

Integrate within whole-building systems

Market transformation:
Strategic, cross-Program efforts to accelerate market acceptance



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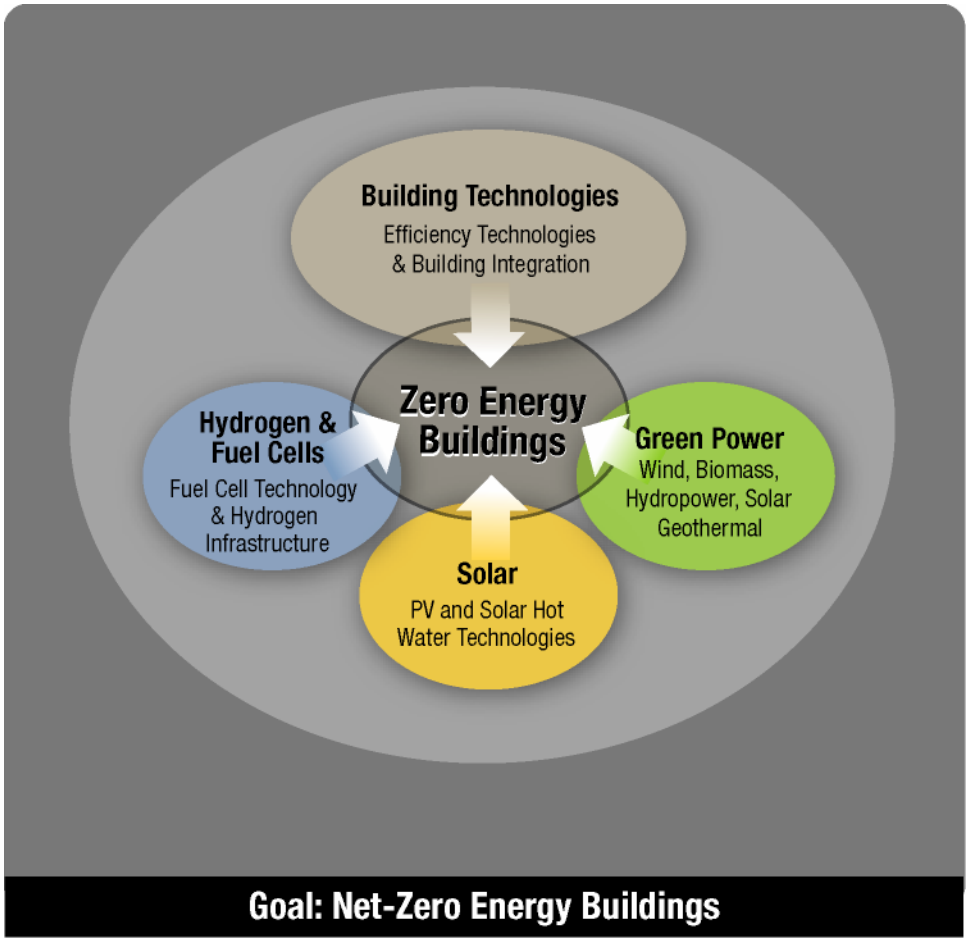
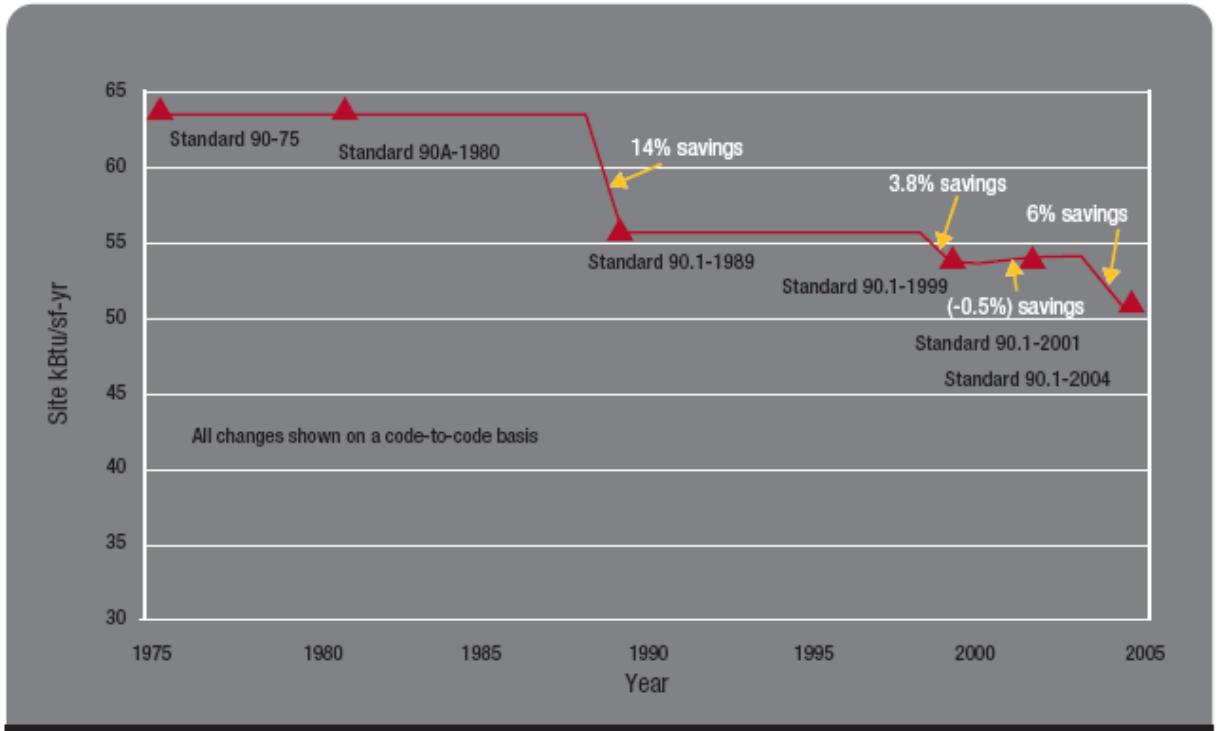
Platform for Mainstreaming Efficiency and Renewables



Buildings Infrastructure

- The life of building stock is significantly longer than fleet lifetimes
- There is a significant “lost opportunity” cost in not creating highly efficient new buildings
- Full life-cycle cost analysis would lead to significantly more efficient building solutions
- Codes solidify gains and extend them to the rest of the building industry

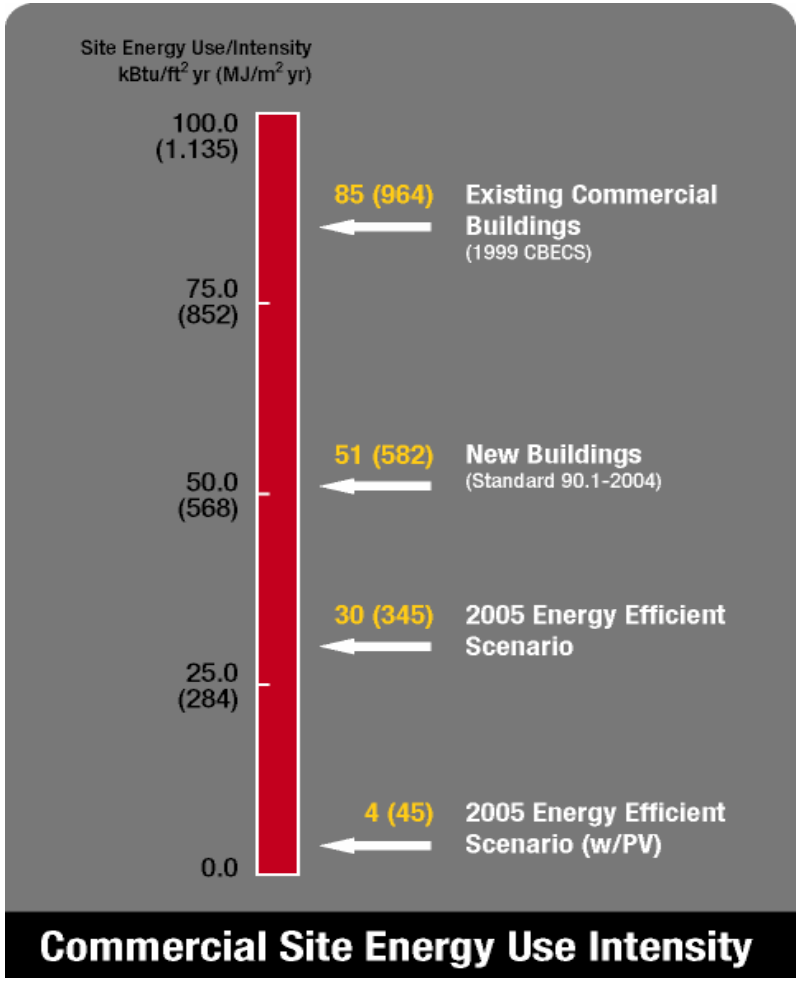
Decades of Progress



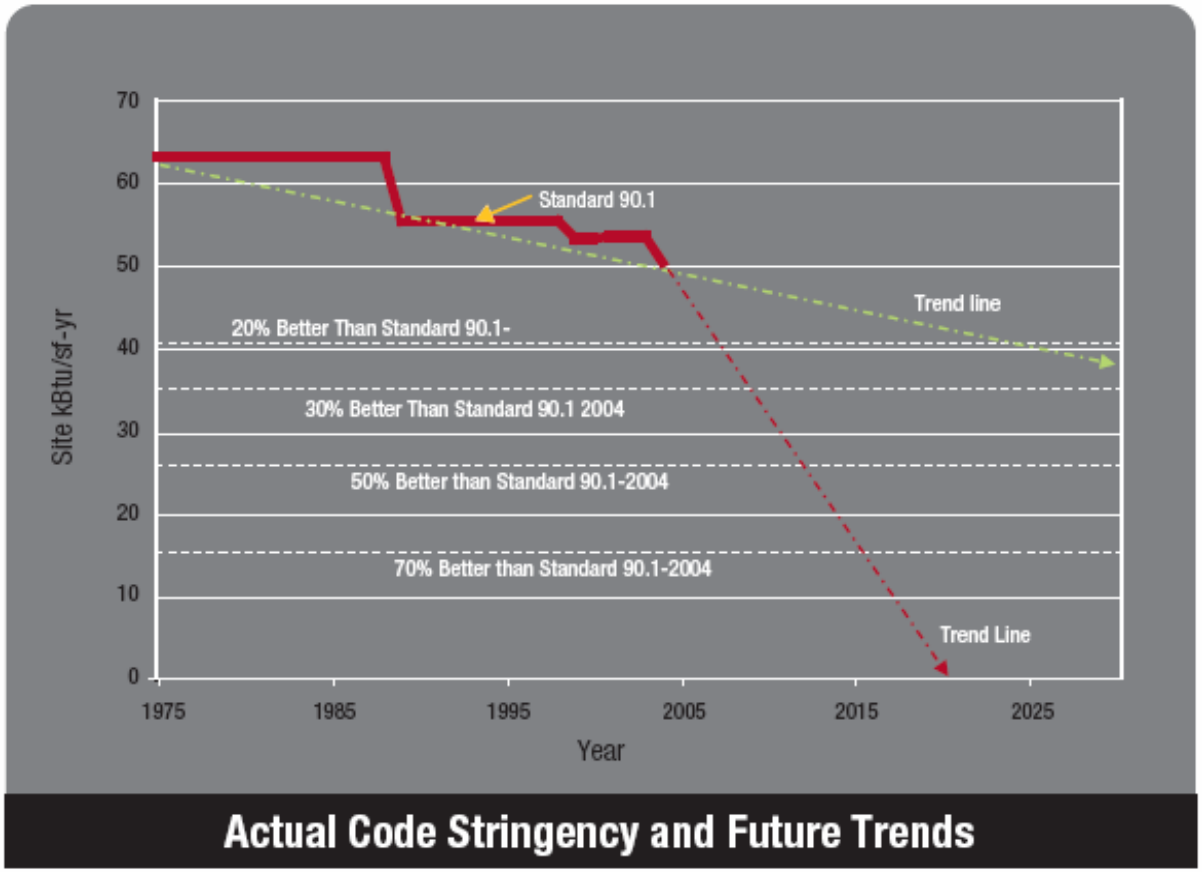
Decades of Progress — New Commercial Construction Code Stringency 1975-2004 (site kBtu/sf-yr)

Moving Commercial Buildings to Zero Energy

From 2005 NREL report:
Are Zero-Energy Commercial Buildings Achievable?



Code Trendline



Actual Code Stringency and Future Trends

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Code training webcasts --1000 participants per session

Thank you!