



Energy's Role in Green Buildings

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Energy Important in Green

Green buildings need to be energy efficient

- Prevents greenhouse gas and other air emissions
- Path to sustainability
- Improves cost-benefit of green buildings
- Indirect benefits and links with indoor air
- Market perceives green to be synonymous with energy efficient



The Green Expectation

“My green high performance building will be 30% more energy efficient”





High Efficiency Expectations

30% more energy efficient than what?

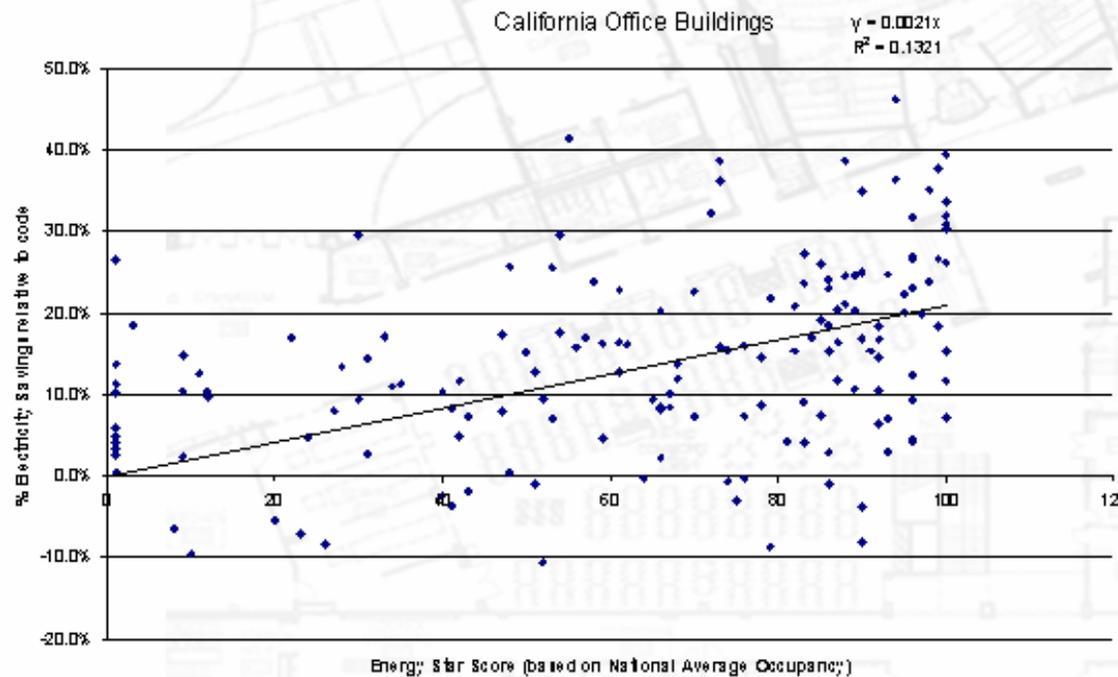
- Green building ratings vary on energy efficient requirements and measurement
- Energy efficiency should be a strong requirement in rating systems
- Buildings should perform in the top 25% nationwide
- Technology & code targets do not guarantee energy performance





What delivers energy performance?

Exceeding code?



Buildings 20% better than code can have an energy performance score ranging from 1-100.

Not sending right market signal.

Source: NBI, California Board for Energy Efficiency, EPA

Better than code buildings is weakly correlated to performance



Energy Performance Gap

Code not measure of performance:

- Does not account for critical design decisions:
 - site and orientation
 - fuel choice (electric or gas)
 - HVAC system type (chiller, DX, etc)
- Does not address system integration or result in annual building energy use estimates
 - Plug loads, elevators, refrigeration, sizing
- Does not require buildings meet a certain “fixed” energy budget.
 - ASHRAE appendix addresses some baseline issues



ENERGY STAR can help

Target Finder

(Estimated Energy Use Target in kbtu/sq ft)



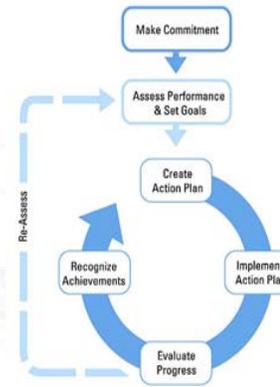
Portfolio Manager

(Verified Energy Use)



Corporate Energy Management

(Ensuring Portfolio-wide reductions)





If it's not energy efficient ...



...it's not on a sustainable path.