

The GSA logo is a blue square with the letters 'GSA' in white, sans-serif font.A photograph of the Ponte Vecchio in Florence, Italy, at sunset. The bridge is a long, covered walkway with multiple arches over the Arno River. Buildings are built on top of the bridge, and the warm light of the setting sun reflects on the water and the buildings.

GSA
Office of Federal
High-Performance Green Buildings

August 11, 2009

Washington, DC

Kevin Kampschroer

- Steering Committee Establishment
- Standards (e.g., 189)
- Measurement:
 - Intensity vs. Productivity
 - Promise vs. Performance
- Portfolio Approaches
- Budget Changes

- Renewable Energy
- Guiding Principles
- Measurement

- 40% of Annual US Energy Use
- 30% of CO₂ Production
- 40% of Ozone Depletion
- 35% of Municipal Solid Waste
- 30% of Wood And Raw Materials Use
- 25% of Water Use
- 30%+ of Buildings Have Poor Indoor Air Quality
- & Most People Spend About 90% Of Their Time Indoors

- Laws
 - National Environmental Policy Act, 1969
 - Clean Air Act, 1970; amended 1990
 - Resource Conservation & Recovery Act, 1976; amended 1994
 - Energy Policy Acts, 1992, 2005

- Executive Orders
 - 13101 Greening the Government through Waste Prevention, Recycling & Federal Acquisition
 - 13123 Greening the Government through Efficient Energy Management
 - 13134 Developing & Promoting Biobased Products and BioEnergy
 - 13148 Greening the Government through Leadership in Environmental Management
 - 13327 Federal Real Property Asset Management
 - 13423 Strengthening Federal Environmental, Energy, and Transportation Management

- 30% Portfolio-wide Reduction In Energy Consumption In 10 Years
- 20% Water Reduction
- 55% Less Use Of Fossil Fuel Generated Energy—New Buildings AND Renovations
- Maintain Pre-development Hydrology
- Focus On Existing Buildings
- Also Leasing

Office of Federal High-Performance Green Buildings

- Commercial High-Performance Green Buildings;
- Activities Within GSA;
- Federal Green Building Advisory Committee;
- Rating System & Levels;
- Research And Development Information;
- Standards For All Types Of Federal Facilities;
- Green Practices Throughout The Asset Life Cycle;
- Change Federal Budget Practices; and
- Demonstrate Innovative & Emerging Technologies.

*To be most successful, green building strategies should be incorporated into all phases of the project—
from programming & budgeting
to design & construction
to commissioning, operating & maintenance.*

- Collaboration From Beginning Of The Project
- Multi-disciplinary Design Teams
- Commitment From All Parties
- Integrated/Systems Approach
- Life-cycle Costing & Life-Cycle Materials Analysis

Better Working Environment

Improved Occupant Health & Comfort = Higher Productivity

↑ Recruitment

↑ Job Retention

↓ Job Training

↓ Absenteeism

↓ Liability risks

↓ Workers compensation claims



- >250 Projects; 50 States, 2 Territories & DC
- 17 New Construction; \$1 Billion
- 43 Major, Whole-Building Modernizations
- 200 Limited-Scope Projects
- \$4.3 Billion for Existing Buildings
- National Program Management

- New Construction Constrained
- Existing Buildings: Expert Choice
- High-Performance Esp. Energy
- Jobs; Speed
- Execution Risk
- ROI
- Others, e.g., Historic Significance

- Major Modernization Triage
- Limited Scope Projects:
 - Re/Retro-Commissioning
 - Building Tune Up
 - Lighting
 - Mechanical Systems
 - PV Roofs; Cool Roofs, Planted Roofs
- Free-Standing PV; Wind

For:

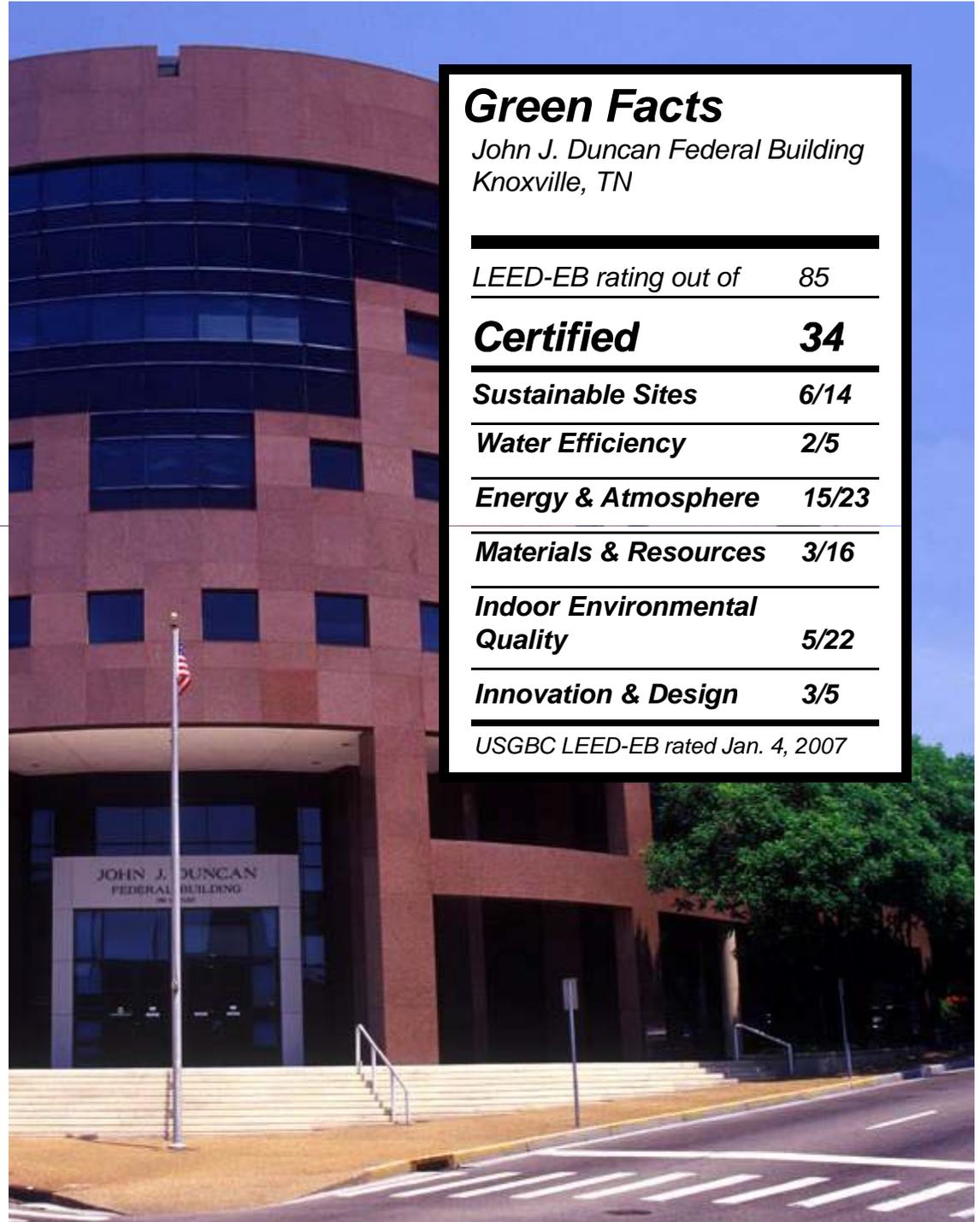
- Lighting w/ & w/o Ceiling Replacement
- LEDs for Garages and Parking Lots
- Exit Stairway Lighting
- PV & PV Integrated Membrane Roof
- Planted Roof, Cool Roof
- Performance Criteria for Whole and Partial Building Modernization
- Lighting Controls
- Commissioning; Energy Audits
- Meters & Data Feeds from Meters
- Improvements to Existing Engineering Design, Generally

95 Energy Star
Score

50% Water use
reduction

60% Total
Energy use reduction

100%
Occupancy rate after
renovations



Green Facts

John J. Duncan Federal Building
Knoxville, TN

LEED-EB rating out of 85

Certified 34

Sustainable Sites 6/14

Water Efficiency 2/5

Energy & Atmosphere 15/23

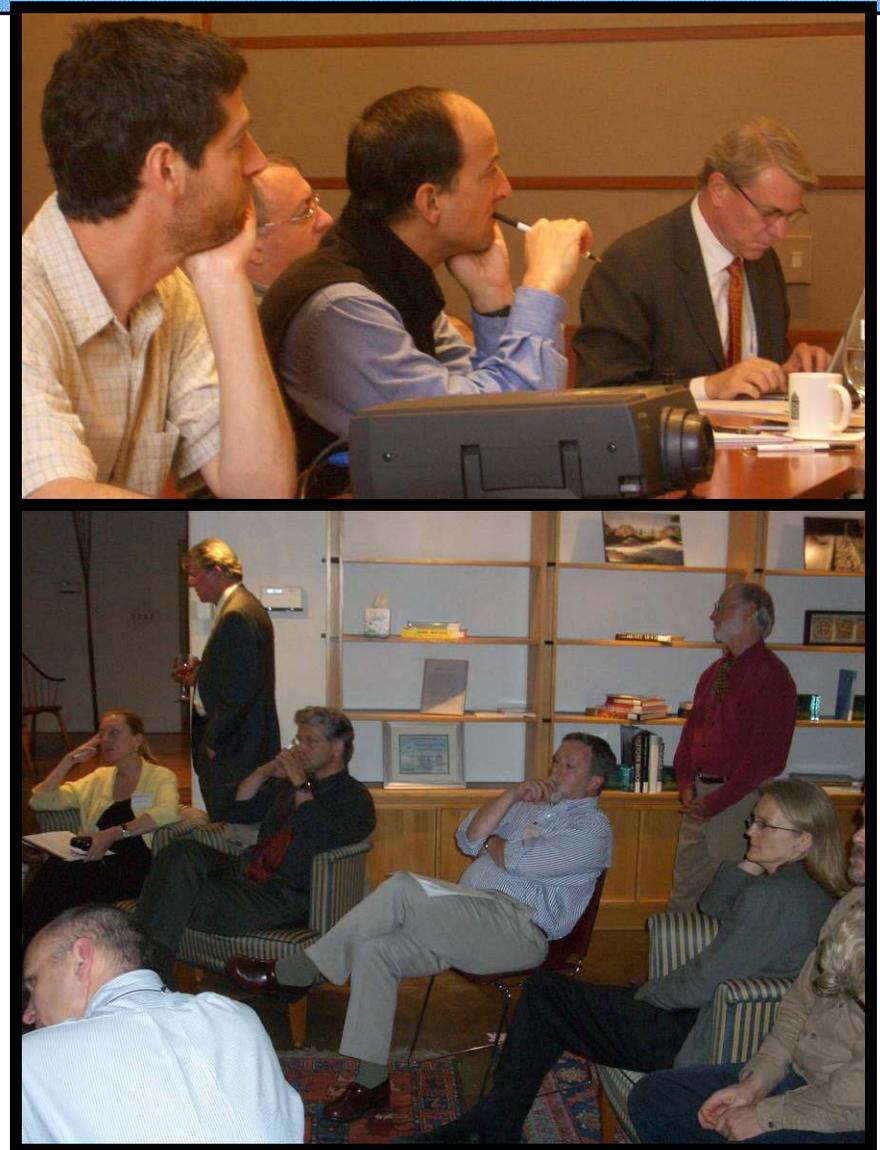
Materials & Resources 3/16

Indoor Environmental
Quality 5/22

Innovation & Design 3/5

USGBC LEED-EB rated Jan. 4, 2007

“All buildings grow out of and reflect the unique character of their place and are an integral, value-adding, reciprocal member of the living system of which they are a part.”



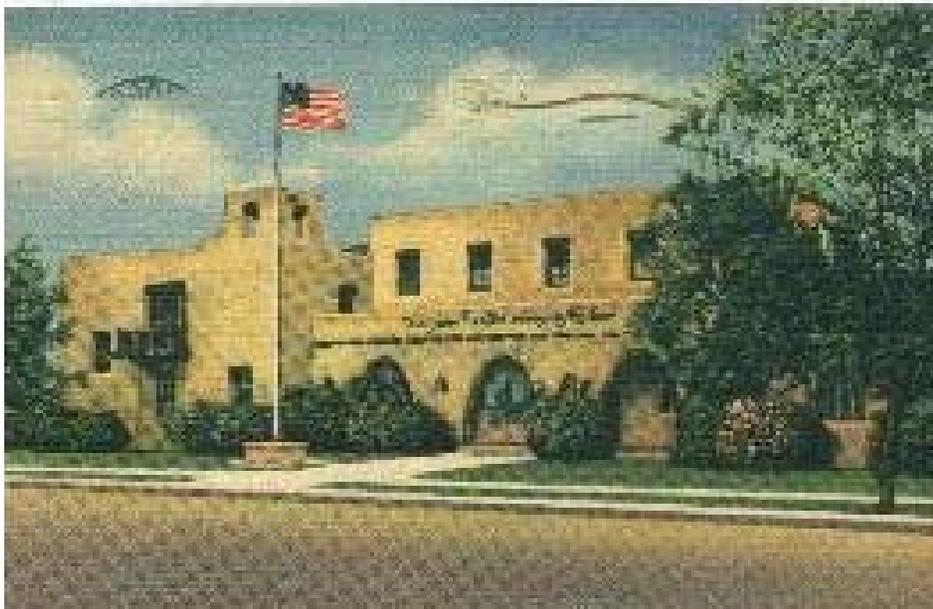
GSA

1900's



GSA

1930's



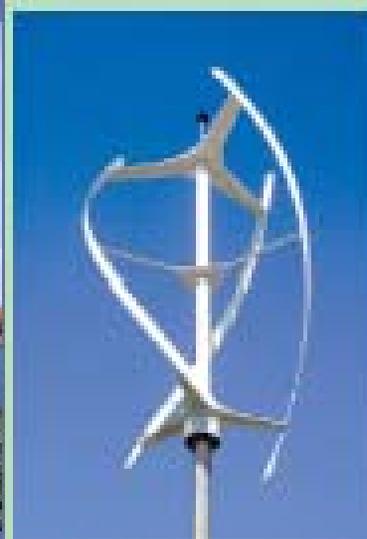


GSA

2000's



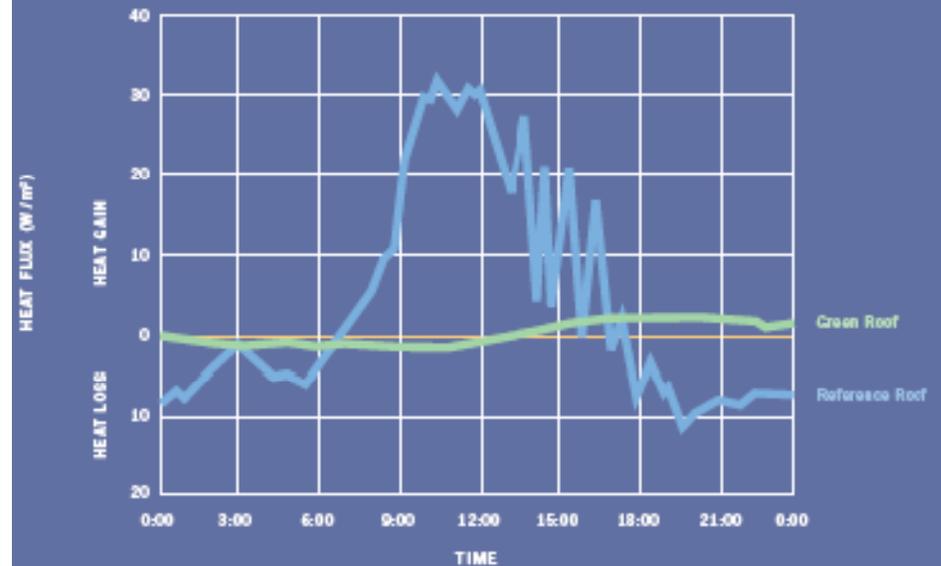
- Geothermal
- Light
- Envelope
- Wind
- Solar
- Roofs



AVERAGE DAILY HEAT FLOW THROUGH ROOF SYSTEMS



HEAT FLOW THROUGH ROOFING SYSTEMS



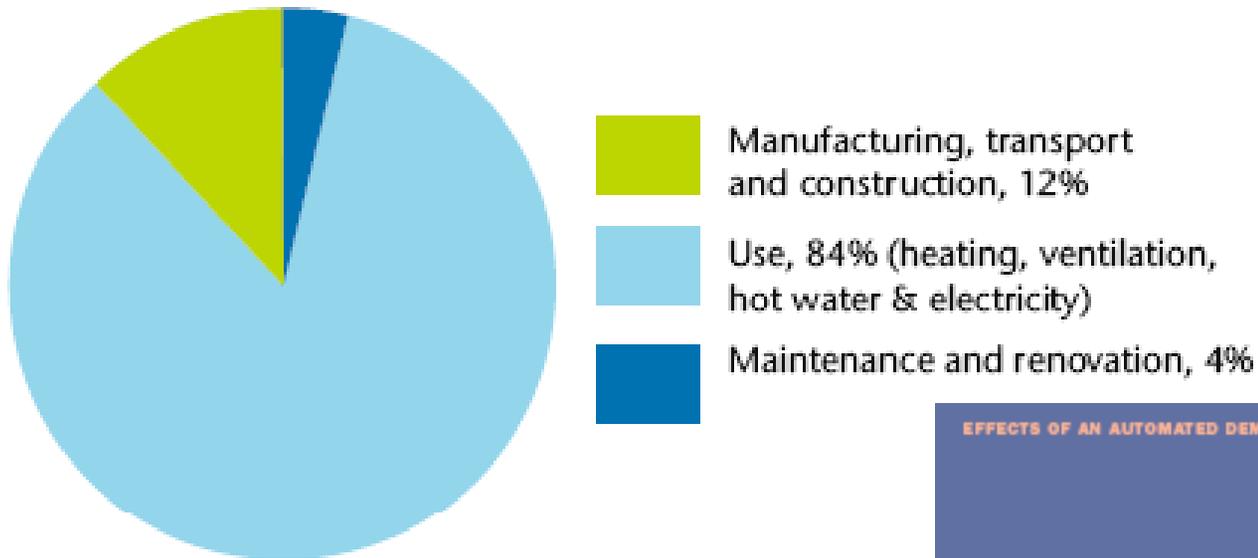
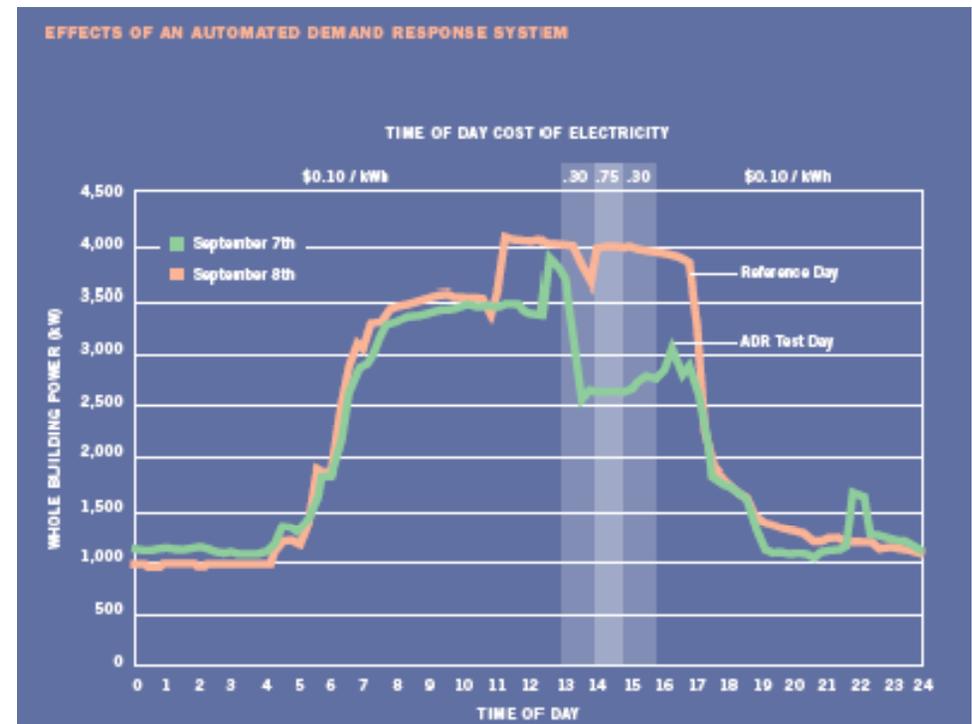
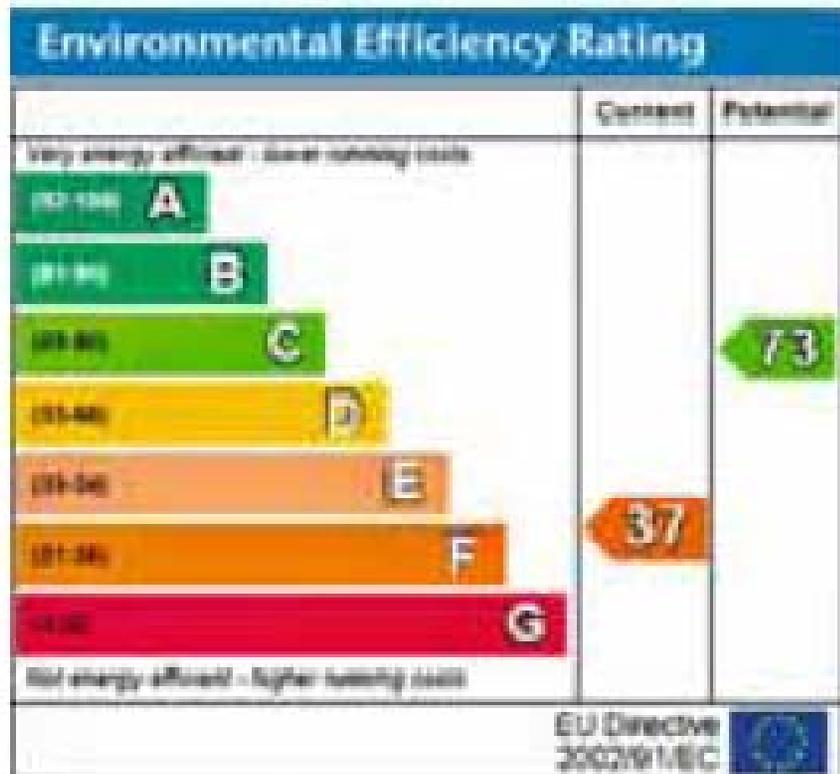


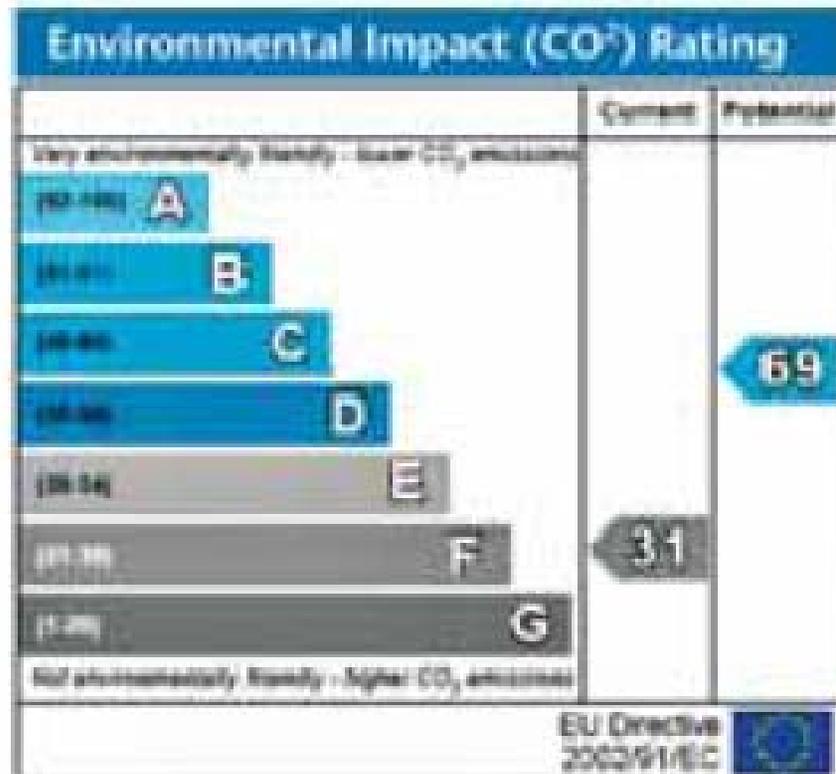
Figure 7: Life cycle energy use¹⁵



- Energy Intensity
- Fuel Source
- LEED
- Building
- Organization
- GHG Emissions
- Fuel Result
- LEEP
- Portfolio
- Enterprise....Country



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

- Office of Federal High-Performance Green Buildings
(and Commercial @ Dept. of Energy)
- Stimulus/Infrastructure Investment
- “Cap & Trade”
- Technology Emphases
- Greenhouse Gas Measurement & Reduction

Can We Avoid Sinking This?



GSA

Or This?

