

Fairfax County Green Building Program

Board of Supervisors
Environmental Committee
November 26, 2007



What is a Green Building?

An approach to building design, construction, and management that -

- reduces or eliminates the negative impact of buildings on the environment,
- promotes high building performance, and
- promotes occupant health.

Why be Green?

- According to EPA and the Department of Energy, buildings account for:
 - 33% CO₂ emissions
 - 40% Energy consumption
 - 25% Wood harvest*
 - 40% material use*
 - 12% Potable water use

* Wood harvest and material use data from USGBC



Why be Green?

- Environmental Benefit (MWCOCG Report)
 - Reduce building energy use by 30-50%
 - Reduce emissions (VOC, NO_x, CO₂)
 - Improve stormwater runoff
 - Reduce heat island effect
 - Support the Board of Supervisors' Environmental Agenda and the Cool Counties efforts

- Business case for green buildings
 - Decrease in operating cost
 - Conserve County resources (water and energy)
 - Increase worker wellbeing and productivity



Green Building Standards

- USGBC Leadership in Energy and Environmental Design (LEED):
 - recognized national standard,
 - rigorously enforced certification program,
 - accepted and familiar standard within the design and building communities, and
 - developed standard that addresses a broad consideration of environmental impacts

LEED Building Standards

LEED Certification Levels

(69 total points available)

- LEED Certified 26 to 32 points
- Silver Level 33 to 38 points
- Gold Level 39 to 51 points
- Platinum Level 52+ points

LEED's Six Categories:

1. Sustainable Site Development
20% (14 possible points)
2. Water and Water Efficiency
7% (5 possible points)
3. Energy Efficiency and Renewable Energy
25% (17 possible points)
4. Materials and Resources
19% (13 possible points)
5. Indoor Environmental Quality
22% (15 possible points)
6. Innovative and Design Process
7% (5 possible points)

Green Building Business Case

USGBC Case Study

□ Increased Cost for LEED Certification Levels

■ Platinum	6.8%	(NAIOP 15%)
■ Gold	2.2%	(NAIOP 10%)
■ Silver	1.9%	(NAIOP 5%)
■ Certified	0.7%	(NAIOP 0 to 4%)

□ Benefit

- 8-9% decrease in operating cost (USGBC)
- Decrease in overall life cycle cost
- Maintenance
- Human (productivity, sick leave, worker comp)

Green Building Case Study

Fairfax Center Fire Station – LEED Silver (target)

- ❑ Total additional LEED cost \$255K
(4% cost increase)
- ❑ Energy and water savings \$15K annually
(22% savings)
- ❑ 17 year payback (simple payback)
- ❑ Over a 40 year life of the building equates to a present worth savings of approximately \$306K

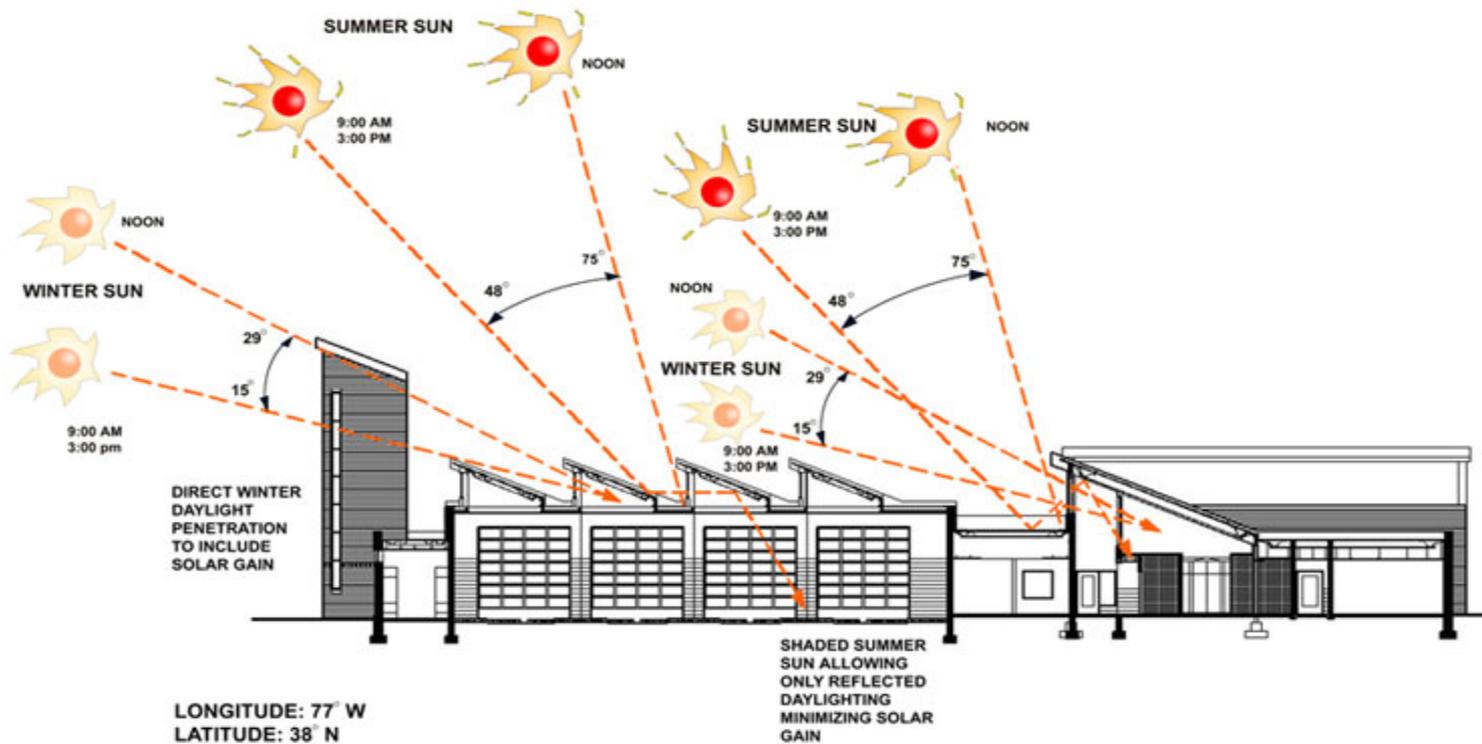
Crosspointe FS

Recycled
Content
materials – cork
board and
bamboo flooring



Crosspointe FS

Passive solar system
energy savings.



Crosspointe FS



Waterless urinal
water conservation
measure

Green Building Case Study

WSSI Office Building - LEED Gold

- Total additional LEED cost \$436K
(7.2% cost increase)
- Total utility savings \$28K annually
(36% savings)
- 15.7 year payback

Other Benefits of Building Green

- Human benefits
 - Reduction in sick building issues
 - Improved productivity due to improved indoor air quality and improved natural light
 - Reduced absenteeism
 - Increased test scores
- Numerous studies support improvements to indoor work environments result in improved worker productivity.
- Staff costs are ten times higher than the cost of buildings they occupy. A one percent increase in staff productivity is equal to a 10% increase in building cost.

County Green Building Program

- Draft Policy for County facilities (handout)
 - LEED Certification targets:
 - Silver Certification projects over 10,000 sqft
 - Certified level projects 2,500 - 10,000 sqft
 - Highest practical level projects under 2,500 sqft
 - Exceptions for specialty type facilities
- Current Projects (matrix handout)
- Impacts to CIP
 - 2-4% increase in project costs. Anticipate cost can be absorbed in existing CIP budgets depending on other factors (escalation, site issues, changing requirements)
 - CIP projects will be analyzed on a case by case basis for budget implications.

Green Roofs / Cool Roofs

- What are green roofs?
 - Intensive
 - Extensive
- What are cool roofs?
 - High reflectivity, low heat absorption
- Comparable benefits



	Intensive	Extensive	Cool
Heat Island	Yes	Yes	Yes
Insulation	Yes	Yes	Yes
Air Quality	Yes	Yes	Yes*
Stormwater	Yes	Yes	No
Habitat/biodiv	Yes	No	No
LEED Credit	Yes	Yes	Yes
1 st Cost	+\$22/sf	+\$17/sf	+\$0.50/sf

Green Roof / Cool Roof Cost Considerations

- 30,000 square foot new library
 - Additional cost for extensive on half the roof -
 $\$17/\text{sf} * 15,000 \text{ sf} = \$255,000$
 - Cost for a cool roof on whole building –
 $\$0.50/\text{sf} * 30,000 \text{ sf} = \$15,000$
 - Cost for “on-the-ground” BMP (rain garden) \$110,000.
- Economics change in highly urbanized areas where on-the-ground solutions are less feasible.
- Other factors – maintenance and life cycle costs



Green Roofs Recommendation

- LEED Certification Approach
 - Do not require specific techniques or practices such as green roofs – allow design teams the flexibility to obtain LEED points based on the specific needs of each project.
 - Staff will analyze projects on case by case basis for feasibility for green roof
 - Staff will continue to develop green roof pilot projects and monitor their performance (Herrity parking garage, Providence Community Center, Bus Operations Facility, Government Center roof terraces)

Other

- ❑ Training for DPWES project management and code enforcement staff
- ❑ Active Involvement with Building Code development and stormwater regulations
- ❑ Existing Building Efforts – Lighting upgrades, Energy Management Control System installations, energy efficient equipment upgrades.



Next Steps

- Adopt Green Building Program
- Biannual Report to the Board of Supervisors on program results



Questions

