

Water- How to Protect, Conserve, and Save!

“The Future of Water Use in Maryland”



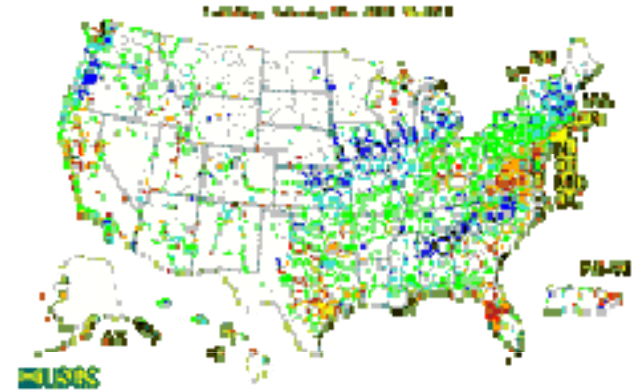
Harford County Green Business Network
March 24, 2011

- WATER USAGE IN THE U.S.
- LEED RATING SYSTEM
 - Overview
 - Sustainable Sites
 - Water Use Reduction
- WATER ECONOMICS
 - Return on Investment
 - Grants
 - Tax Incentives
- WHAT YOU CAN DO
 - Education/ Advocacy
 - At Home/ Work



Estimated Use of Water in the United States in 2005

- 410 Billion gallons per day withdrawn
- 210 Bgal/d- for thermoelectric power generation
- 128 Bgal/d for irrigation
- 13% of water used for Public supply/ consumption



Estimated Use of Water in Harford County in 2005

- Population= 239,259
- 36,440 served by groundwater supply. 106,940 by surface water supply
- 3.75 Million gallons per day-groundwater withdrawal
- 4.89 Mgal/d surface water withdrawal

•LEED (Leadership in Energy and Environmental Design)- USGBC www.usgbc.org



•GREEN GLOBES-(US & Canada)- Green Building Initiative (GBI).
www.greenglobes.com/



•BREEAM (*BRE Environmental Assessment Method*)- Worldwide www.breeam.org/



•NAHB National Green Building Program www.nahbgreen.org



3rd Party Verification:

- 1. Peace of mind/credibility**
- 2. Government Incentives/ tax credits/ fast-track permitting**
- 3. Mandatory for some building types (Schools/ Gov't bldgs./Certain municipalities)**



Leadership in Energy and Environmental Design

A leading-edge system
for certifying the
greenest performing
buildings in the world

LEED® Facts
Building size 12,500 square ft
Type of building

LEED for Core & Shell Development
Certification awarded July 27, 2006

Platinum 49*

Sustainable Sites	13/15
Water Efficiency	5/5
Energy & Atmosphere	12/18
Materials & Resources	6/9
Indoor Environmental Quality	10/13
Innovation & Design	3/5

*Out of a possible 62 points

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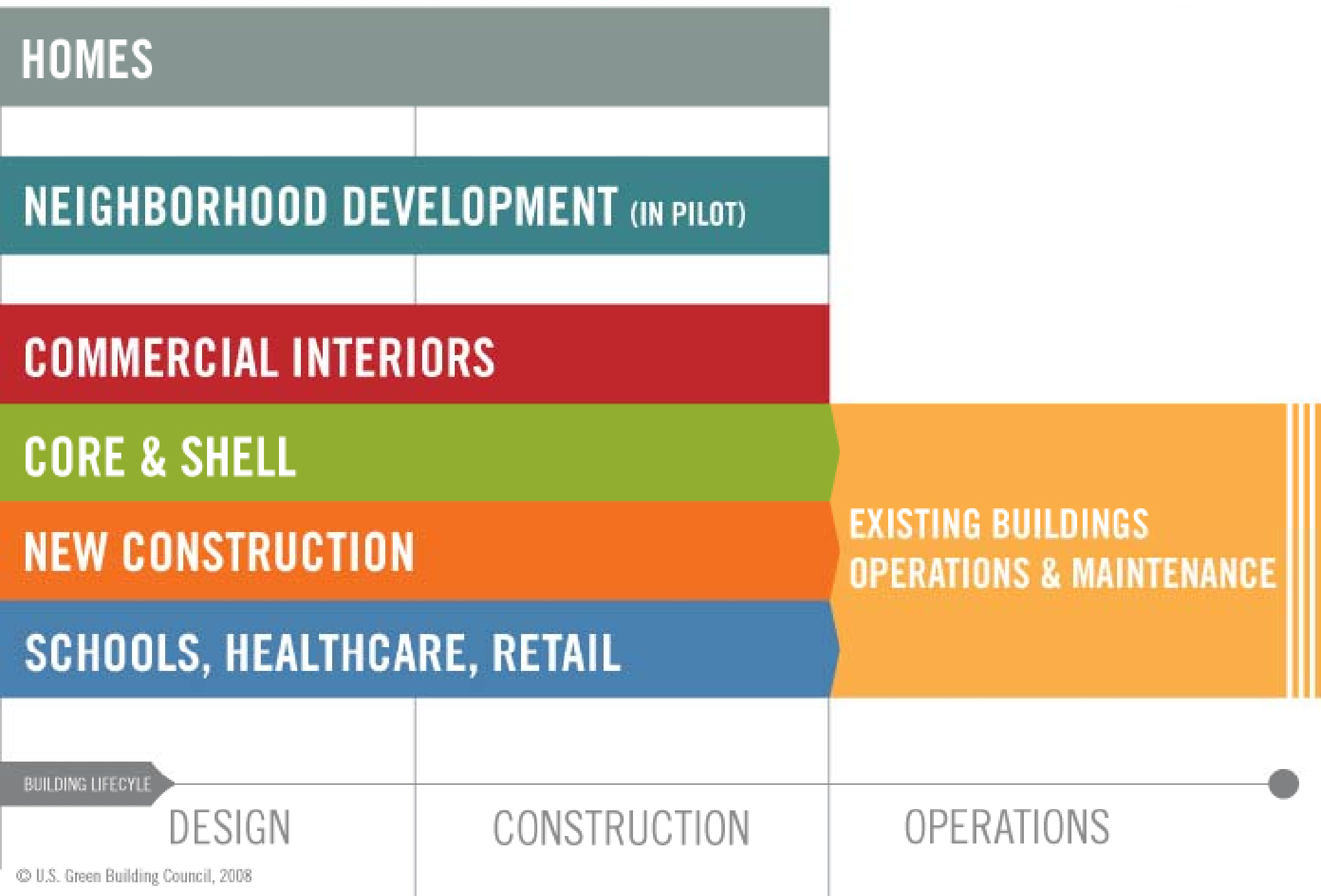
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What Is Green Building?



LEED address the complete lifecycle of buildings:



USGBC has four levels of LEED:



Project Name	Owner	City	State	Country	LEED Rating System
AASF ADDITION/ALTERATION		Aberdeen	MD	US	LEED NC 2.2
APG- Land Bay F Building 2	St. John Properties, Inc.	Aberdeen	MD	US	LEED CS 2.0
C2 Integration Facility		Aberdeen	MD	US	LEED NC 2.2
Consolidated North Building	USACE Philadelphia District	Aberdeen	MD	US	LEED NC 2.2
Habi-Tech I		Aberdeen	MD	US	LEED for Homes (Single Family) 1.0
LEED Certification- Frito Lay Aberdeen		Aberdeen	MD	US	LEED EB 2.0
Non-Med Chem Biological Defense Facility		Aberdeen Proving Grounds	MD	US	LEED NC 2.2
North Gate Business Park, Lot A		Aberdeen	MD	US	LEED CS 2.0
North Gate E1		Aberdeen	MD	US	LEED CS 2.0
North Gate E2		Aberdeen	MD	US	LEED CS 2.0
North Gate E-3		Aberdeen	FWA	US	LEED CS 2.0
North Gate Lot C		Aberdeen	MD	US	LEED CS 2.0
North Gate W1		Aberdeen	MD	US	LEED CS 2.0
Perryman/Enterprise Bldg 2		Aberdeen	MD	US	LEED CS 2.0
RAYTHEON ABERDEEN		Aberdeen Proving Ground, Md	MD	US	LEED NC 2.2
US Army Research Laboratory - VTD		Aberdeen	MD	US	LEED NC 2.2
USAMRICD	USACE- Baltimore District	Aberdeen Proving Ground	MD	US	LEED NC 2.2
VCC Gate 24		Aberdeen	MD	US	LEED NC 2.2
VCC Gate 715		Aberdeen	MD	US	LEED NC 2.2

Relevant Credits (LEED NC, CS, Schools)

- SS 6.1 Stormwater Design-Quantity Control (1 point)
Option 1: Sites with Existing Imperviousness 50% or less
Option 2: Sites with Existing Imperviousness more than 50%

- SS 6.2 Stormwater Design-Quality Control (1 point)
Meet MDE SWM Act requirements-effective 5/4/10

- SS 7.2 Heat Island Effect- Roof (1 point)
Option 1: High SRI Roof. Option 2: Vegetated roof on 50% of roof area. Option 3: Combination roof.

- WE PR 1 Water Use Reduction (Required)
20% less water than baseline case

- WE CR 1 Water Efficient Landscaping (4 points)
Option 1: Reduce by 50% (2 points). Option 1: No Potable Water Use or Irrigation (4 points)

- WE CR 2 Innovative Wastewater Technologies (2 points)
PV, Wind, Solar Thermal, Geothermal, Biofuel, low-impact hydro, wave/tidal

- WE CR 3 Water Use Reduction (4 points)
30%, 35%, 40% or more

- WE CR 4 Process Water Use Reduction (Schools Only-4 points)

Relevant Credits (LEED EB O+M)

- SS 6 Stormwater Quantity Control (1 point)
reduce impervious cover, increase on-site infiltration, eliminate pollution from runoff

- SS 7.2 Heat Island Effect- Roof (1 point)
Option 1: High SRI Roof. Option 2: Vegetated roof on 50% of roof area. Option 3: Combination roof.

- WE PR 1 Minimum Indoor Plumbing Fixture and Fitting Efficiency (Required)
reduce indoor fixture and water use in buildings

- WE CR 1 Water Performance Management (2 points)
Option 1: Whole building Metering. Option 2: Sub-metering

- WE CR 2 Additional Indoor Plumbing Fixture and Fitting Efficiency (5 points)
10%, 15%, 20%, 25%, 30% reduction

- WE CR 3 Water Efficient Landscaping (5 points)
Eliminate use of potable water for irrigation-50%, 62.5%, 75%, 87.5%, 100%

- WE CR 4 Cooling Tower Water management (2 points)
reduce potable water consumption for cooling tower equipment thru effective mgmt. or use of nonpotable water makeup

RP

Credit 1 Regional Priority

Regional Credits are simply existing LEED credits that are determined to be of paramount importance to our area (via zip code). If achieved, one extra bonus point is awarded. For example, **Aberdeen, MD's zip code is 21001.**

SS 4.1 Alternative transportation- Public Transportation Access

Rail Station Proximity, Bus Stop Proximity, Pedestrian access (Schools)

SS 5.1 **Site Development- Protect or Restore Habitat**

*Case 1: Greenfield Sites (limit disturbance), Case 2: Previously Developed Areas, **Green Roof credit***

SS 6.2 **Stormwater Design-Quality Control**

Meet new MDE SWM 2010 requirements-effective 5/4/10

WE 2 **Innovative Wastewater Technologies**

Reduce Potable water use for sewage by 50%, treat 50% of wastewater on-site

EA 1 Optimize Energy Performance

Energy Simulation, ASHRAE design guide, Core Performance

EA 2 On-site Renewable Energy

PV, Wind, Solar Thermal, Geothermal, Biofuel, low-impact hydro, wave/tidal

FWM Water Conservation

Water Use Reduction (LEED)-achieve points for 30% reduction
Strategies:

- Low-flow fixtures
- Occupancy sensors
- Waterless urinals, dual-flush toilets
- Reduce irrigation (or no irrigation)
- Rainwater harvesting/ cisterns/ rain barrels
- Graywater recycling (to flush toilets or irrigate)



- U.S. Green Building Council (USGBC)
- International Code Council (ICC)
- American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
- Illuminating Engineering Society of North America (IES)
- American Institute of Architects
- American Society for Testing Materials

A set of standards intended to facilitate and accelerate the construction of green buildings in the US

CHAPTER 7: WATER RESOURCE CONSERVATION AND EFFICIENCY

Section 701: GENERAL

Section 702: FIXTURES, FITTINGS, EQUIPMENT AND APPLIANCES

Section 703: HVAC SYSTEMS AND EQUIPMENT

Section 704: WATER TREATMENT DEVICES AND EQUIPMENT

Section 705: SPECIFIC WATER CONSERVATION MEASURES

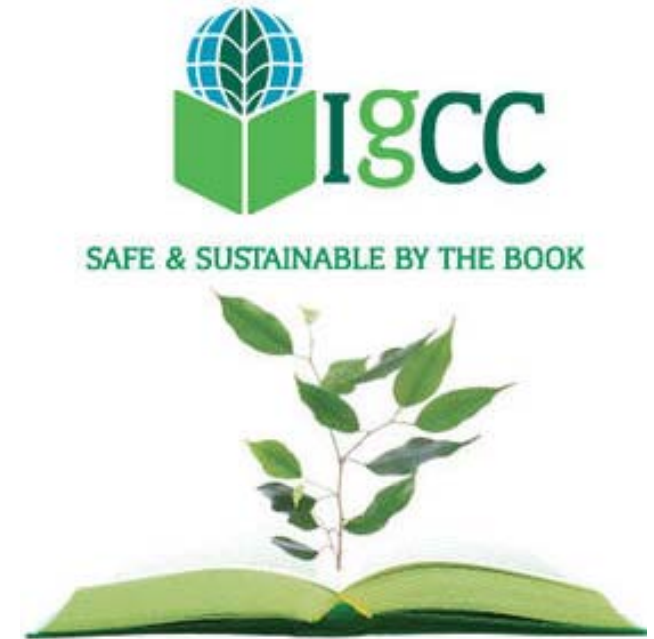
Section 706: NON-POTABLE WATER REQUIREMENTS

Section 707: RAINWATER COLLECTION AND DISTRIBUTION SYSTEMS

Section 708: GRAYWATER SYSTEMS

Section 709: RECLAIMED WATER SYSTEMS

Section 710: PROJECT ELECTIVES



REDUCING INDOOR POTABLE WATER CONSUMPTION

Case study 1: Commercial Building in Boston, MA

- replaced 126 3.5 gallons-per-flush (gpf) toilets with low flow, 1.6 gpf toilets
- Reduced water usage by 15%
- additional cost= \$32,000
- Estimated Annual Savings \$22,800
- Payback= 1.4 years



Case study 2: Commercial Building in Boston, MA

- Installed 30 faucet aerators, reducing annual water consumption by 190,000 gallons
- Material and labor cost= \$300
- Annual Savings= \$1,250
- Payback= 2 months



Grants

- **Clean Water State Revolving Fund- Green Project Reserve (GPR)**

National GPR Funding for Water Efficiency= \$159M

(Maryland Funded 31 projects that Qualified for the GPR)

- **Maryland Agricultural Water Quality Cost Share (MACS) Program**

For Conservation measures/BMP's on farms

http://www.mda.state.md.us/resource_conservation/financial_assistance/macs/index.php

Chesapeake Bay Watershed Initiative

<http://www.pa.nrcs.usda.gov/programs/cbwi/index.html>

Chesapeake Bay Trust Mini Grants

http://www.cbtrust.org/site/c.enJIKQNoFiG/b.2028473/k.BBF6/Mini_Grant_Program.htm

WaterSMART Water and Energy Efficiency Grants

<http://www.grants.gov/>

Tax Incentives

- Primarily related to solar hot water heating (solar/thermal)

WATER SENSE- An EPA Partnership Program

Save Water, Save Money

- Average Household spends as much as \$500 per year on Water + Sewer bill
- Make a few changes, save average \$170 per year

Save Water, Save Energy

- Delivery & treatment of American Public Water supply consumes 56 Billion kWh per year
- A faucet running for 5 minutes uses as much energy as a 60w light bulb does in 14 hours



www.epa.gov/WaterSense



What you can do

- Install Dual-flush Toilets & water efficient showers and faucets
- Install rain barrels at work and at home
- Use green roofs, pervious pavers, rain gardens, and other ESD strategies
- Educate yourself about EPA Water Sense Labeled products
- Don't buy bottled water, instead install a water filter
 - Plastic bottles have high embodied energy, high carbon footprint (transportation factors) and contain off-gases that result when the low-grade plastic is heated during transit
- Get Involved: U.S. Green Building Council Maryland Chapter
 - Your local branch, The Northern Chesapeake Branch, serves Harford, Cecil, Kent, and Queen Anne's counties
 - Membership is not expensive, and it entitles you to discounts on LEED workshops, reference guides, and events.
 - www.usgbcmd.org and www.usgbc.org (national site)

Next USGBC Branch Event:

Topic: Rain Gardens

When: April 21, 2011, 5:30pm

Where: Abingdon Public Library

Register: www.usgbcmd.org





Chuck Cooper, Assoc. AIA, LEED AP +

Project Manager, Director of Sustainability

Frederick Ward Associates

5 South Main Street

Bel Air, MD 21014

410.879.2090 office

410.937.6459 cell

ccooper@fredward.com