

# environmental change from the inside



**JRGBC**

JAMES RIVER GREEN BUILDING COUNCIL

# agenda

**What is LEED®?**

**What other systems are “out there”**

**What is the state of LEED in VA?**



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**Architects**

**Product  
Manufacturers**

**Building  
Owners**

**Federal,  
Local,  
and State  
Governments**

**Nonprofit Leaders**

**Planners**

**USGBC**

**Engineers**

**Financial  
Planners**

**Utility  
Managers**

**Interior  
Designers**

**Landscape  
Architects**

**Building  
Tenants**

**Property  
Managers**

**Code  
Officials**

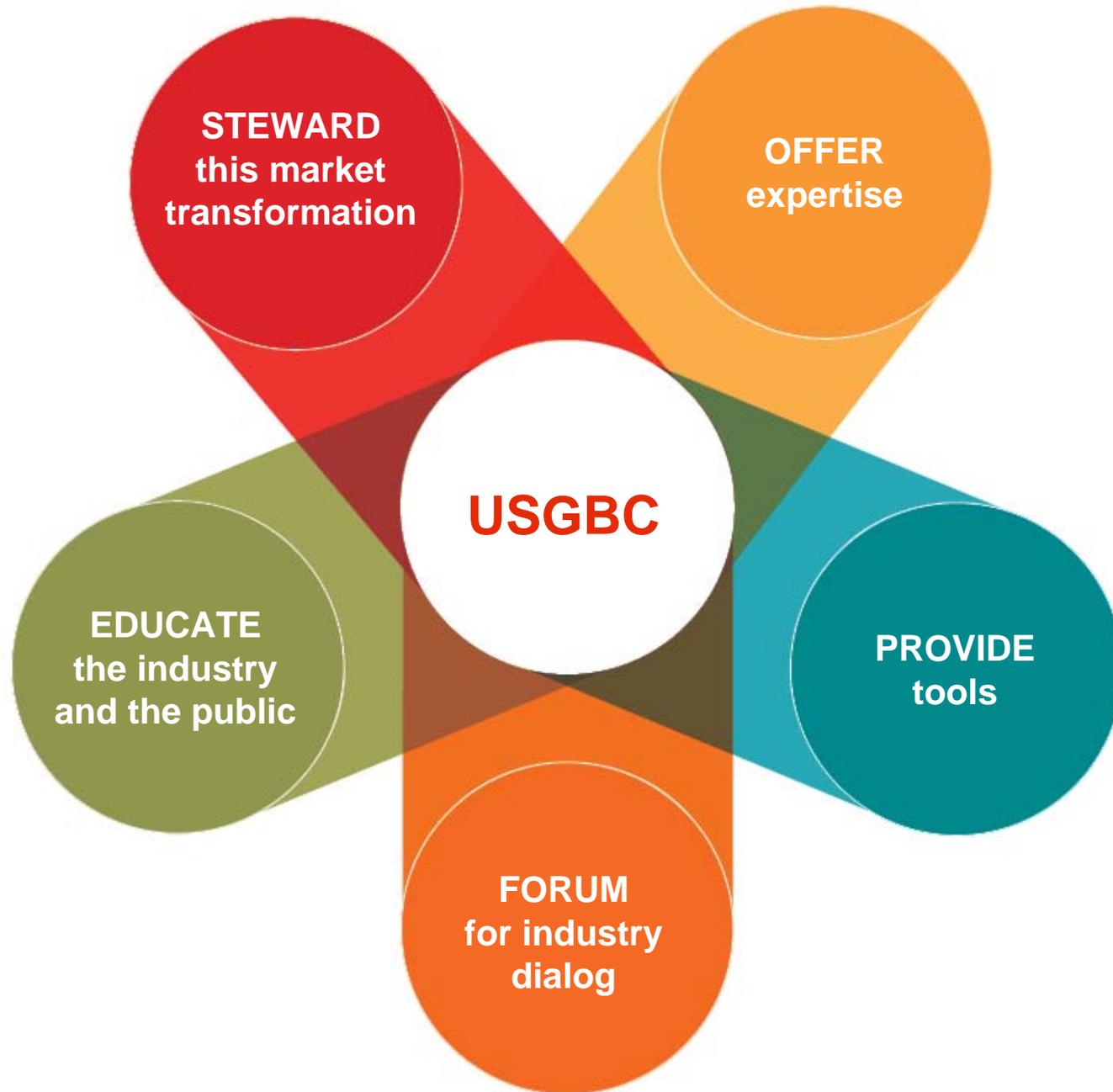


**Who are we?**

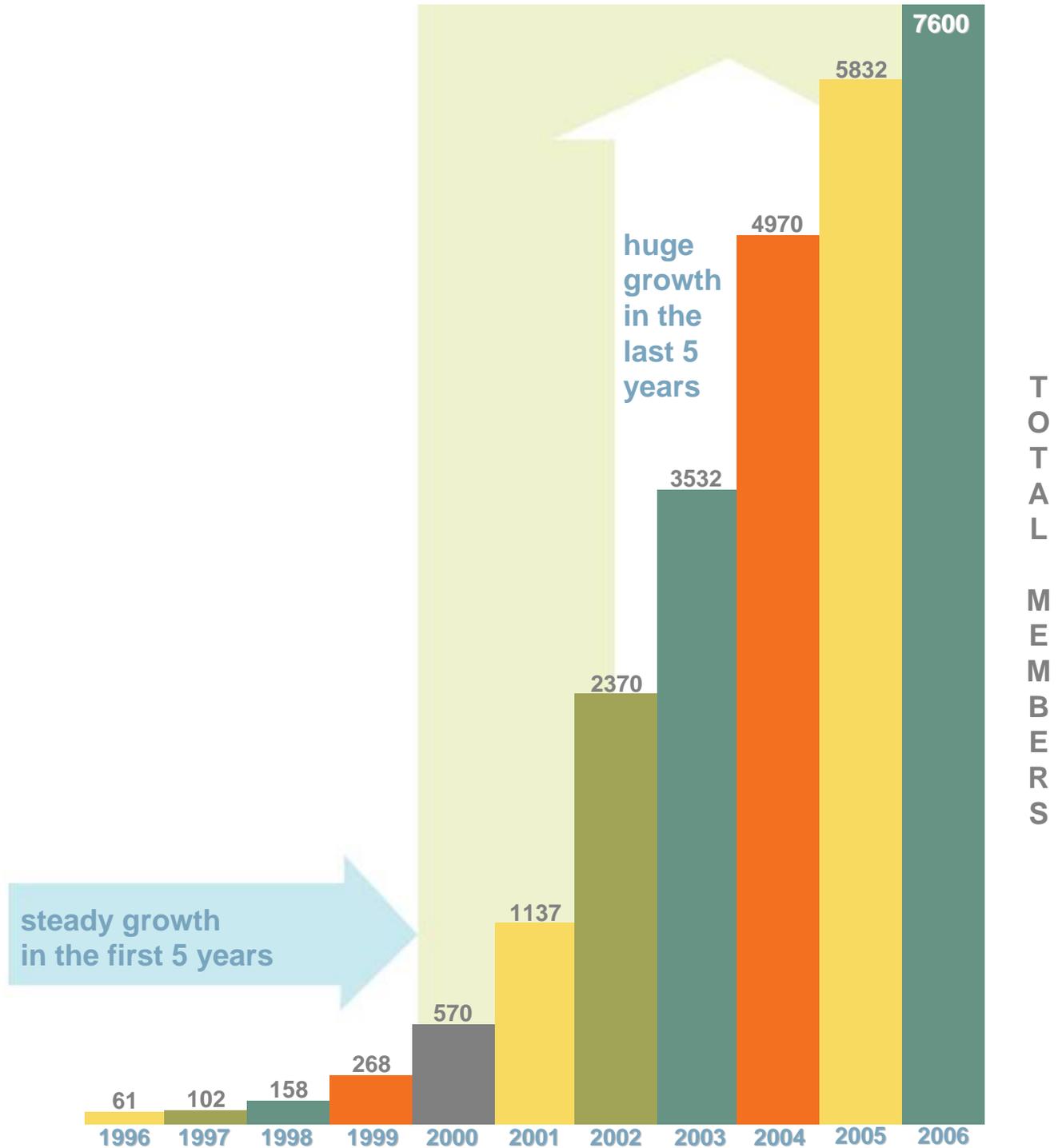
**USGBC is a community of leaders working to transform the way buildings and communities are designed, built, and operated.**

**We envision an environmentally responsible, healthy, and prosperous environment.**





**USGBC  
membership  
growth reflects  
the expansion  
of green  
buildings in  
the market**



# USGBC Chapters, Organizing Groups, & Affiliates

As of 04/06

Alaska

# USGBC x 68

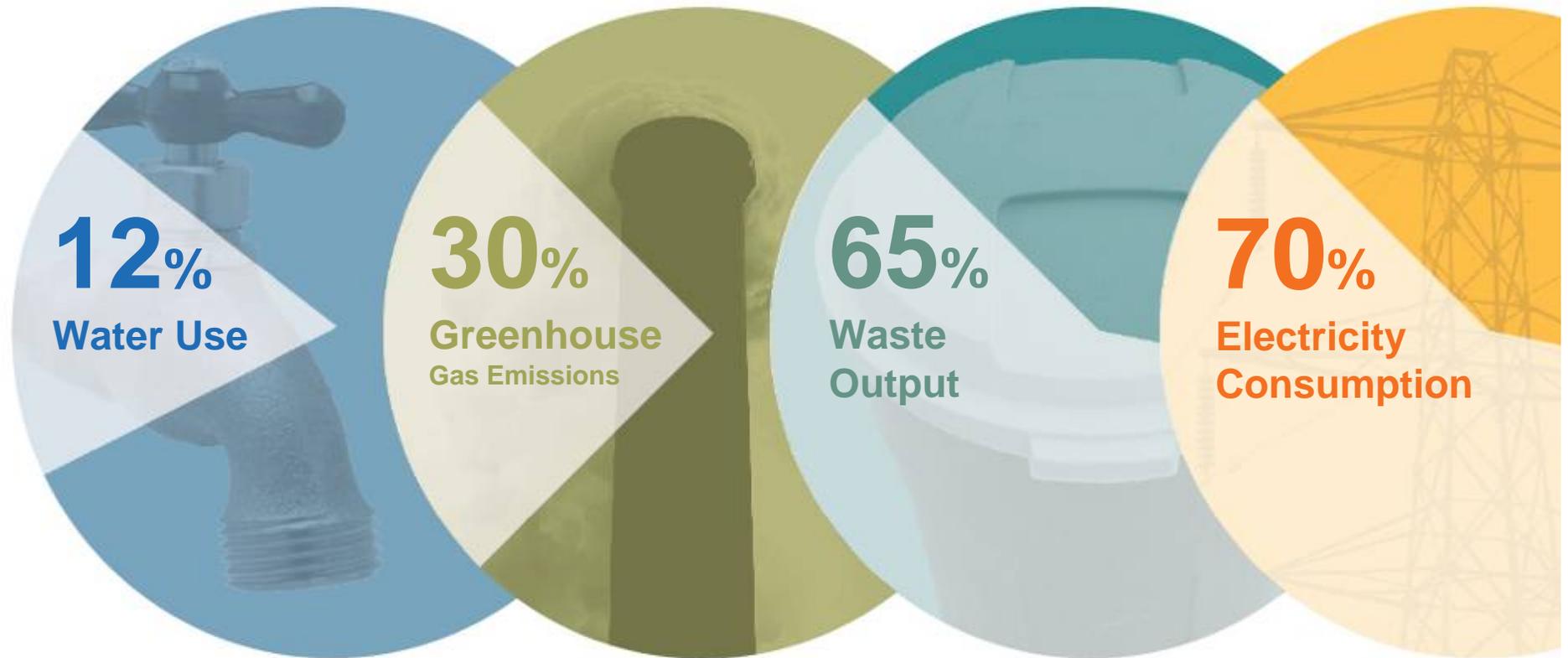
Hawaii

- USGBC Chapters
- Organizing Groups
- Affiliates

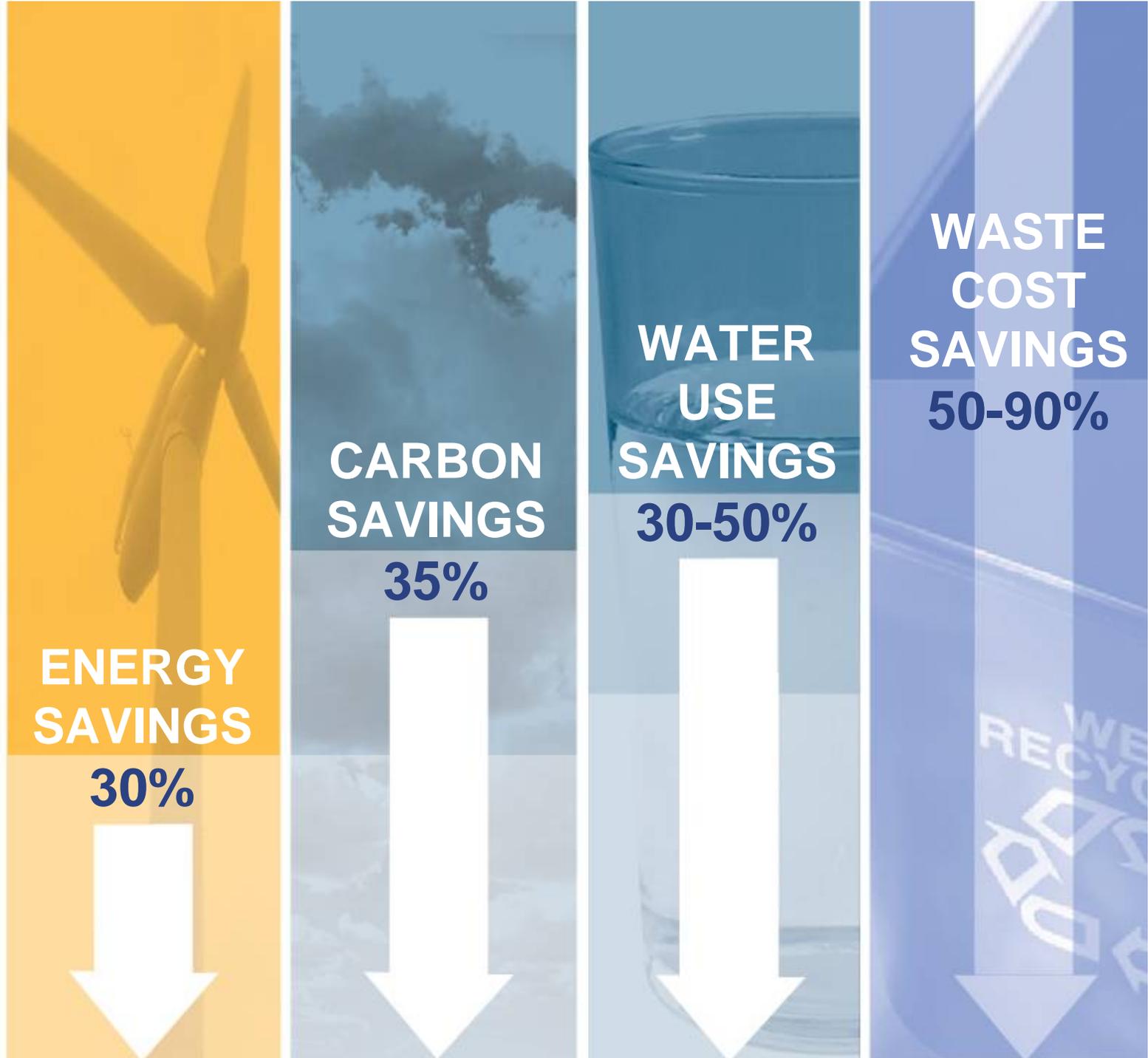
Caribbean



## U.S. Building Impacts:

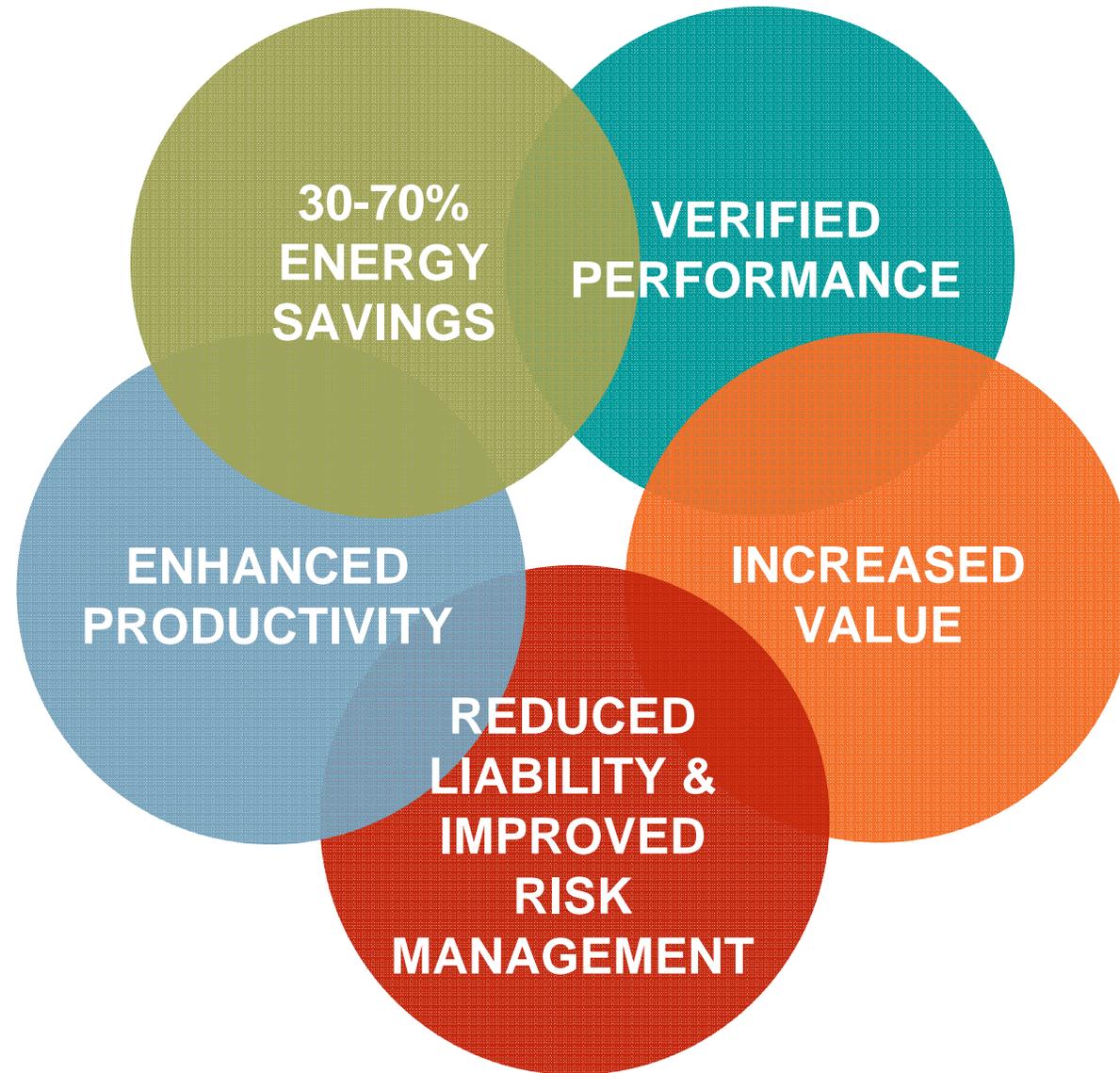


**Average Savings of Green Buildings**

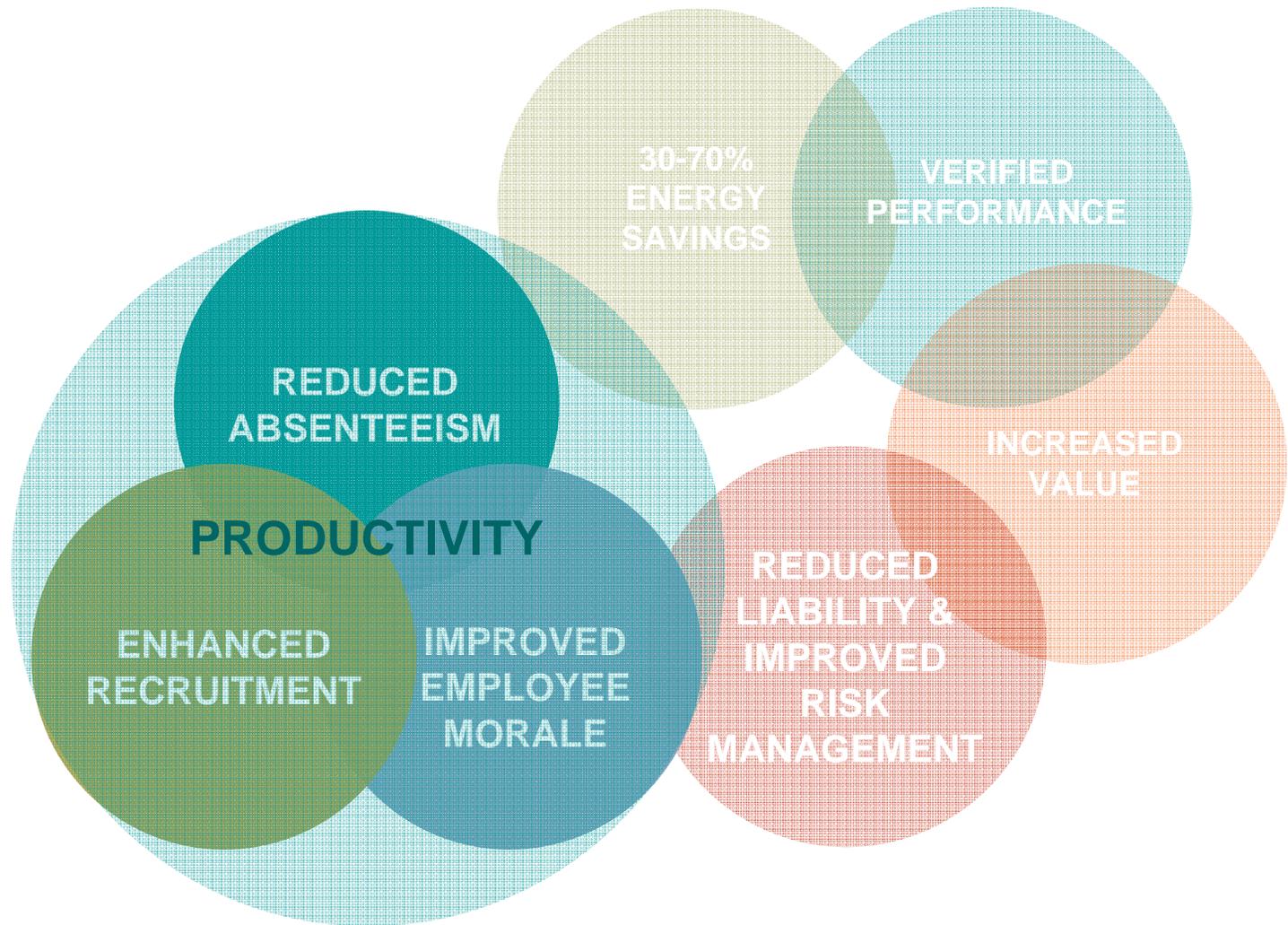


Source:  
Capital E

**Improved  
Bottom  
Line.**

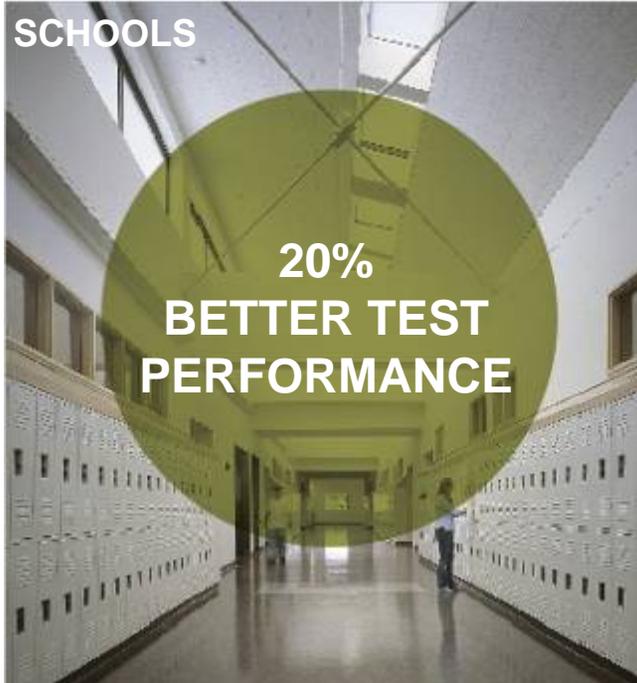


# Improved Bottom Line.



**Increased  
Productivity.**

**SCHOOLS**



**20%  
BETTER TEST  
PERFORMANCE**

**HOSPITALS**



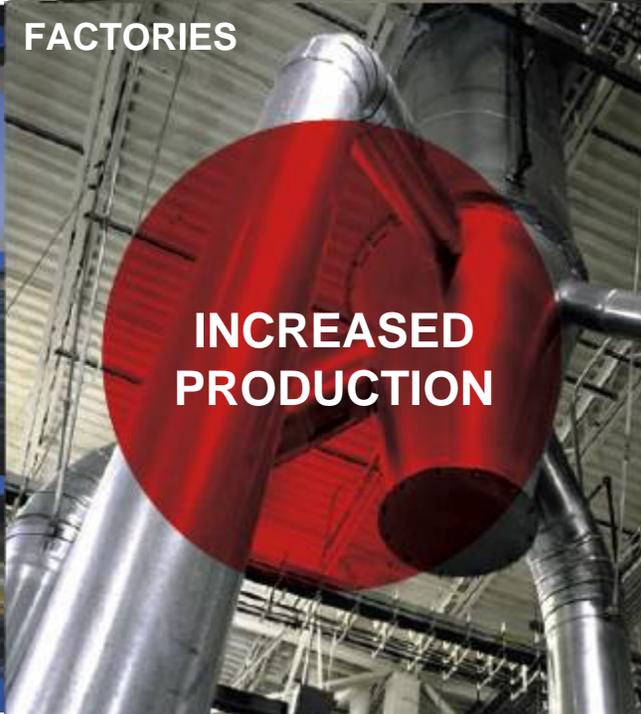
**EARLIER  
DISCHARGE**

**RETAIL**



**INCREASE  
IN SALES PER  
SQUARE FOOT**

**FACTORIES**



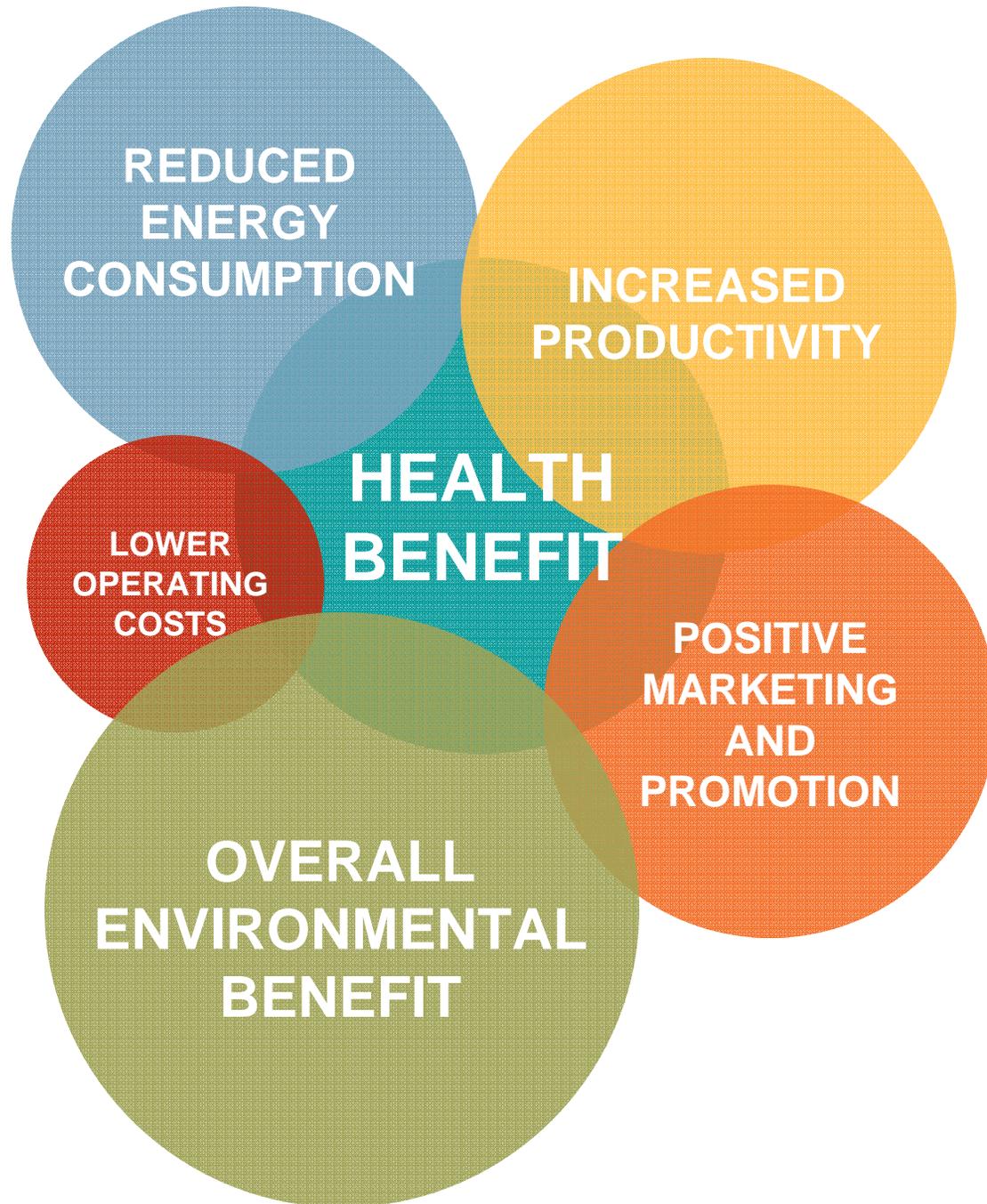
**INCREASED  
PRODUCTION**

**OFFICES**



**2-16%  
PRODUCTIVITY  
INCREASE**

**Occupants and tenants perceive value of working in a green building to be:**



# What is the LEED System?

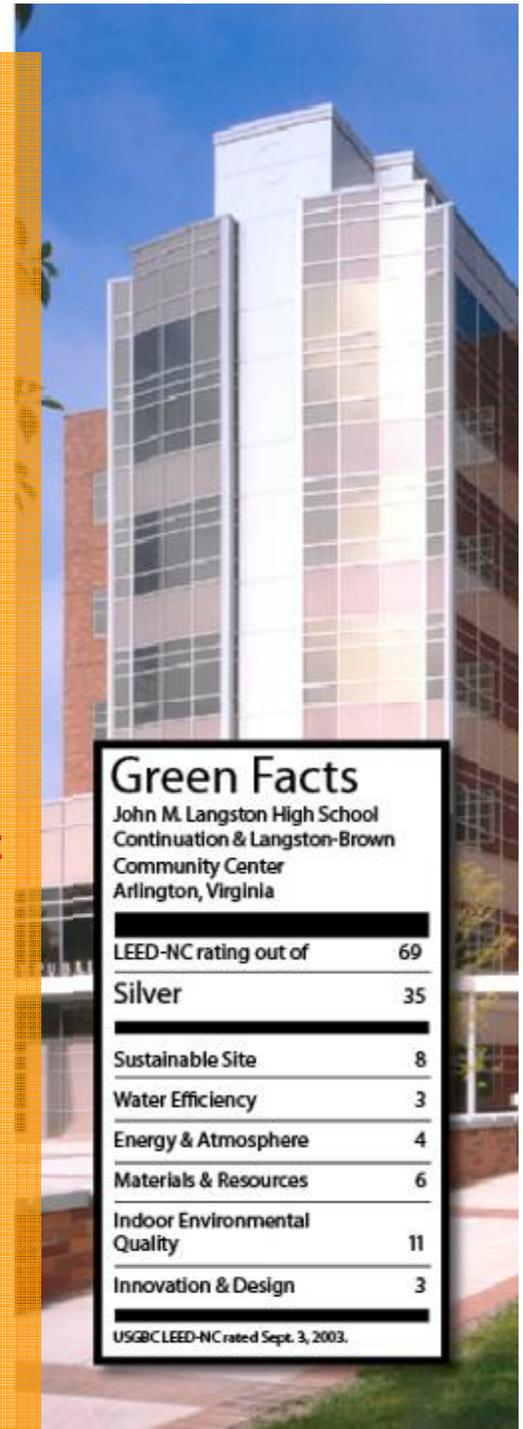
## LEADERSHIP in ENERGY and ENVIRONMENTAL DESIGN

A leading-edge system for certifying  
**DESIGN, CONSTRUCTION, & OPERATIONS**  
of the greenest buildings in the world

Scores are tallied for different aspects of efficiency and design in appropriate categories.

For instance, LEED assesses in detail:

1. Site Planning
2. Water Management
3. Energy Management
4. Material Use
5. Indoor Environmental Air Quality
6. Innovation & Design Process



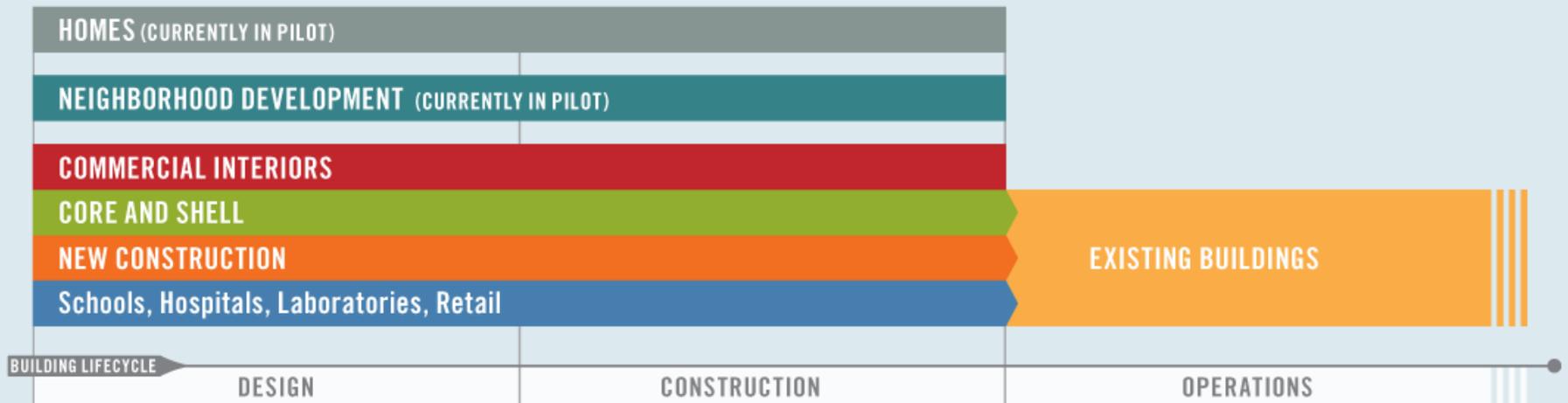
## Levels of LEED Ratings

**Green Buildings  
worldwide are certified  
with a voluntary,  
consensus-based  
rating system.  
USGBC has four  
levels of LEED.**



# LEED addresses the complete lifecycle of commercial buildings.

Programs are in pilot for Homes and Neighborhoods.



**Increase  
in LEED  
Projects  
in three  
years.**

**2002:**  
More than  
80 million  
square feet.

**2003:**  
More than  
141 million  
square feet.

**2004:**  
More than  
180 million  
square feet.

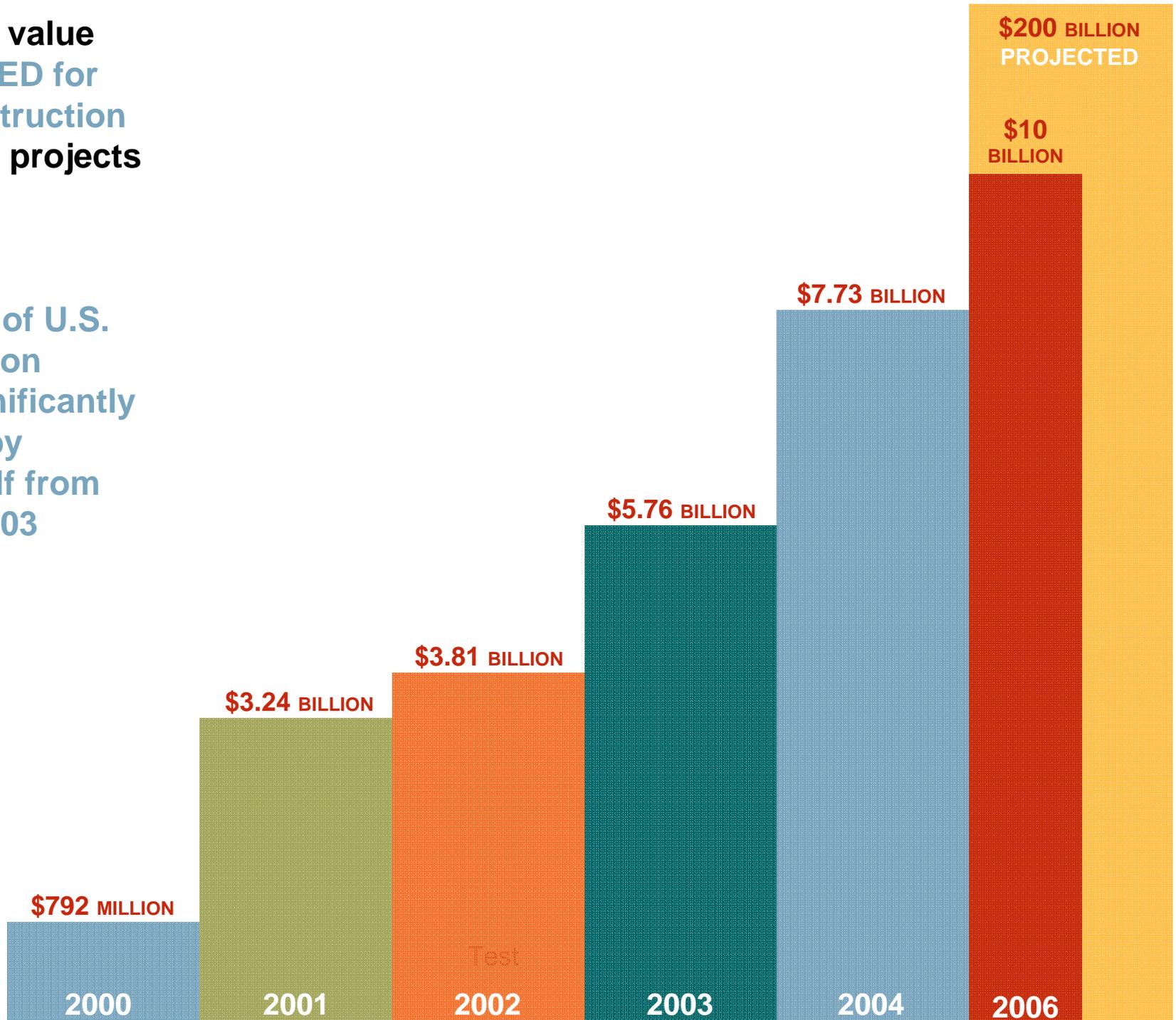
**2005:**  
500 million  
square feet.

**2006:**  
642 million  
square feet.



# Estimated value of new LEED for New Construction registered projects

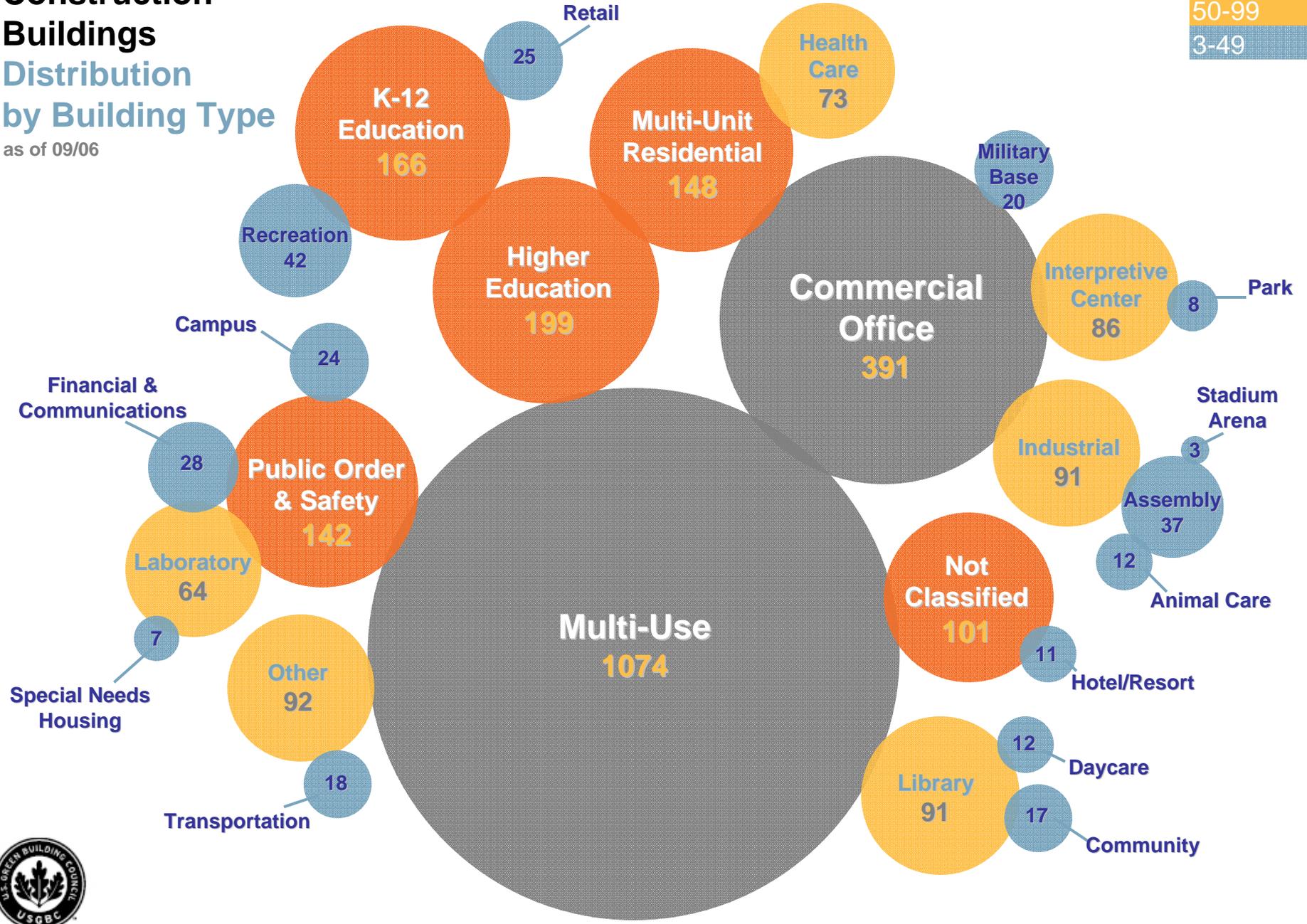
The value of U.S. construction starts significantly declined by almost half from 2000 to 2003





# LEED for New Construction Buildings Distribution by Building Type

as of 09/06



# agenda

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# Others “out there”

<b>BREEAM</b> Building Research Establishing Environmental Assessment Tool	Developed in the UK
<b>GB Tool</b>	Part of International Green Building Challenge program
Energy Passport	Developed in Germany; focuses on energy performance only
GreenStar	Developed in Australia
<b>CASBEE</b> Comprehensive Energy Assessment for Building Environmental Efficiency	Developed in Japan
<b>Green Globes</b>	Developed in Canada



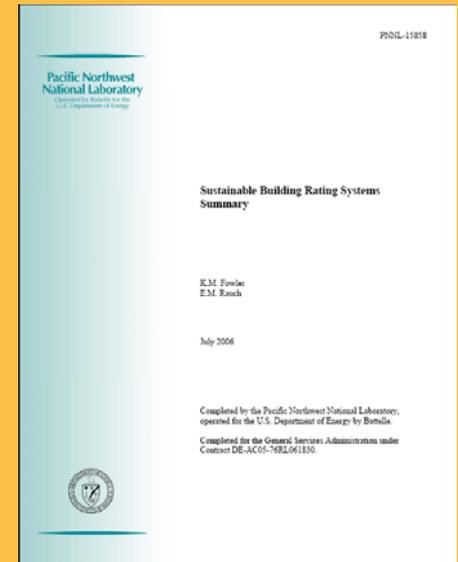
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# GSA Evaluation

GSA buildings are typically built for a 100 year life following stringent guidelines to enhance the asset value. GSA's Design Excellence program compels design teams to create the highest quality buildings. It is commonly recognized that a whole building, integrated design approach upholds a sustainable or green building design, which in turn provides the optimal performance for the desired design goals. Sustainable design tools used for GSA projects must set parameters to improve quality, decrease the life cycle environmental impact, and optimize life cycle costs of the buildings. The tools must support long-term performance for an innovative and flexible future. GSA must evaluate its buildings consistently using one system in order that the projects can be compared equally with other GSA buildings, other Federal buildings, and the U.S. building market. Using one sustainable building rating system allows for comparisons and benchmarking of existing buildings as well as a mechanism to track GSA's progress toward designing and operating the best buildings for their occupants.

LEED® is currently the dominant system in the United States market and is being adapted to multiple markets worldwide. The currently available LEED® rating systems address all of the GSA building and project types. A *Product Development and Maintenance Manual* is publicly available which governs how changes are made to the LEED® rating systems. The steps followed for the development of U.S. Green Building Council rating system products include technical development by committee, pilot testing, public comment period, approval by council membership, and then release for public use. For the existing LEED® rating systems, minor updates can occur no more than once a year, while major updates are expected to occur on a 3-5 year cycle, and will follow a defined process including a public comment period. Documentation of the quantifiable sustainable design measures are provided to the U.S. Green Building Council, the developer of the LEED® rating system, for third-party verification. The assessors have been trained and must pass an assessor examination. More than 400 U.S. buildings have received LEED® ratings and more than 3400 buildings are registered and therefore potentially seeking certification. LEED® is not only the U.S. market leader, but is also the most widely use rating system by Federal and state agencies, which makes it easy to communicate a building's sustainable design achievements with others.



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# GSA Evaluation

Based on the results of the study, GSA finds that the U.S. Green Building Council's LEED® rating system continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA projects. The LEED® rating system:

- Is applicable to all GSA project types;
- Tracks the quantifiable aspects of sustainable design and building performance;
- Is verified by trained professionals;
- Has a well-defined system for incorporating updates; and
- Is the most widely used rating system in the U.S. market.



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# Virginia's success

	Project Name	Owner	City	State	Country	LEED Rating		Project Name	Owner	City	State	Country	LEED Rating
1	ODU Engineering & Computational Sciences	Old Dominion University	Norfolk	VA	US	<u>Certified</u>	14	Kersey Creek Elementary School	Hanover County Public Schools	Mechanicsville	VA	US	<u>Silver</u>
2	Pentagon Metro Entrance Facility	Pentagon Renovation Office	Arlington	VA	US	<u>Certified</u>	15	<u>One Potomac Yard</u>	Crescent Resources, LLC	Arlington	VA	US	<u>Gold</u>
3	<u>John M. Langston High School Continuatio</u>	Arlington Public Schools, Arlington Coun	Arlington	VA	US	<u>Silver</u>	16	<u>Two Potomac Yard</u>	Crescent Resources, LLC	Arlington	VA	US	<u>Gold</u>
4	<u>Personnel Support Facility</u>	US Navy	Virginia Beach	VA	US	<u>Silver</u>	17	Wetland Studies and Solutions, Inc.	WSSI	Gainesville	VA	US	<u>Gold</u>
5	Remote Delivery Facility		Arlington	VA	US	<u>Certified</u>	18	QTG Bottling Plant	QTG	wytheville	VA	US	<u>Gold</u>
6	Weinstein Hall	University of Richmond	Richmond	VA	US	<u>Certified</u>	19	NRECA II	NRECA	Arlington	VA	US	<u>Silver</u>
7	Wilderness Road State Park Visitor Cente	VA Dept of Conservation & Recreation	Ewing	VA	US	<u>Certified</u>	20	Navy Bachelor Enlisted Quarters Replacem	Navy	Lackey	VA	US	<u>Certified</u>
8	New Dormitories at Barksdale Field	College of William and Mary	Williamsburg	VA	US	<u>Certified</u>	21	New Kent Safety Rest Area and Informatio	VDOT	New Kent County	VA	US	<u>Gold</u>
9	CARmax Home Office	CARmax	Richmond	VA	US	<u>Silver</u>	22	Liberty Three	Liberty Property Trust	Chesapeake	VA	US	<u>Silver</u>
10	William & Mary Rec Center Renovations/Ad	William & Mary	Williamsburg	VA	US	<u>Certified</u>	23	Natural Body - Ryan Park	Natural Body Spa & Shoppe	Ashburn	VA	US	<u>Silver</u>
11	Hermitage Elementary School	Virginia Beach City Public Schools	Virginia Beach	VA	US	<u>Certified</u>	24	Conservation International	Conservation International	Arlington	VA	US	<u>Silver</u>
12	P526 Aircraft Maintenance Hangar	Dept. of the Navy	Norfolk	VA	US	<u>Certified</u>	25	Sigal Construction Corporate Offices	Sigal Construction	Arlington	VA	US	<u>Silver</u>
13	Airborne Mine Countermeasures Facility	Dept. of the Navy	Norfolk	VA	US	<u>Certified</u>	26	PNC Bank Branch - Ashburn Crossroads, VA	PNC Realty Services	Ashburn	VA	US	<u>Silver</u>
							27	PNC Bank Branch - Bristow		Union	VA	US	<u>Silver</u>

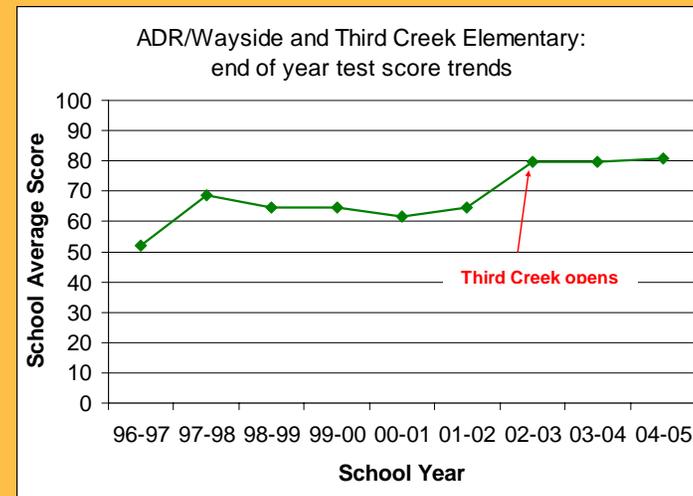
Plus 169 additional LEED registered projects



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# Virginia's success



ASHRAE 90.1 ECB cost = 112,109 \$/yr  
 Proposed = 86,446 \$/yr  
**Modeled Savings = 22.89%**

Actual Bills	8/02-7/03	8/03-7/04	8/04-7/05
Electric	= \$65,560	\$65,981	\$58,392
Gas	= \$17,663	\$16,637	\$16,222
Total	= \$83,223	\$82,618	\$74,614
<b>Actual Savings</b>	<b>= 25.76%</b>	<b>26.30%</b>	<b>33.50%</b>
	<b>= \$28,886</b>	<b>\$29,491</b>	<b>\$37,495</b>

**Savings to date = \$95,872**

Budget: \$10,020,000

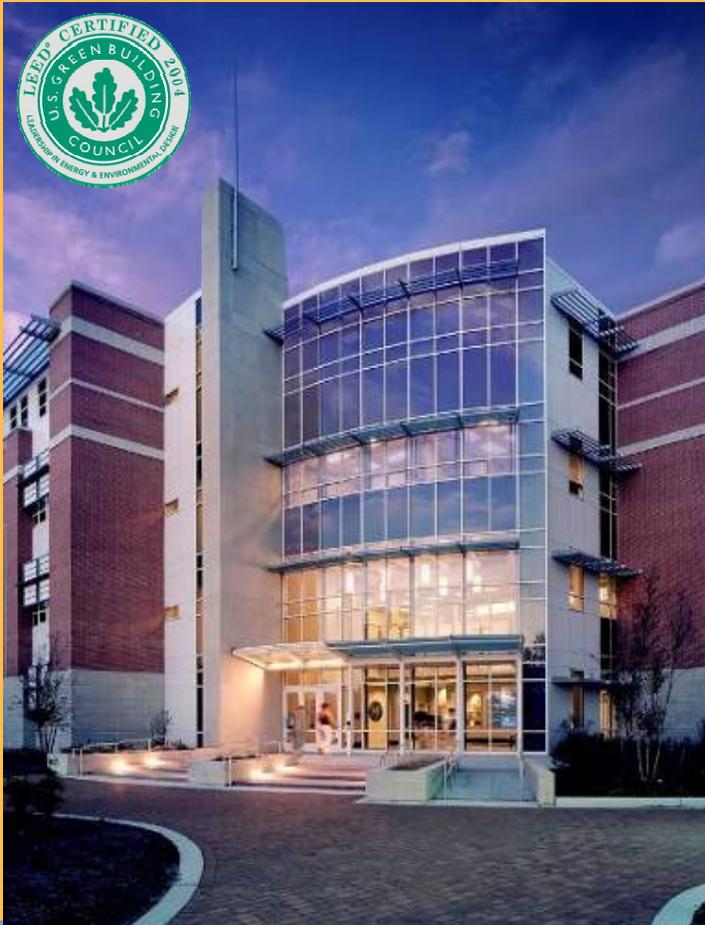
Bid: \$ 9,844,594



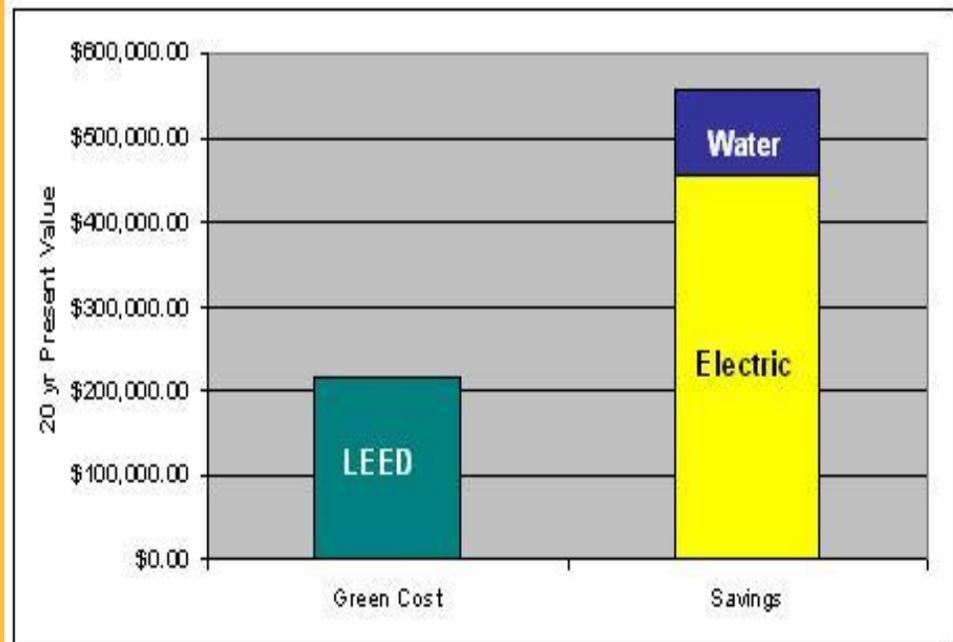
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# Virginia's success



- Positive bid environment in 2003
- Project \$1.0 M +/- under budget
- No quantifiable bid premium for LEED Certification



Budget: \$11,820,000

Bid: \$ 10,522,000

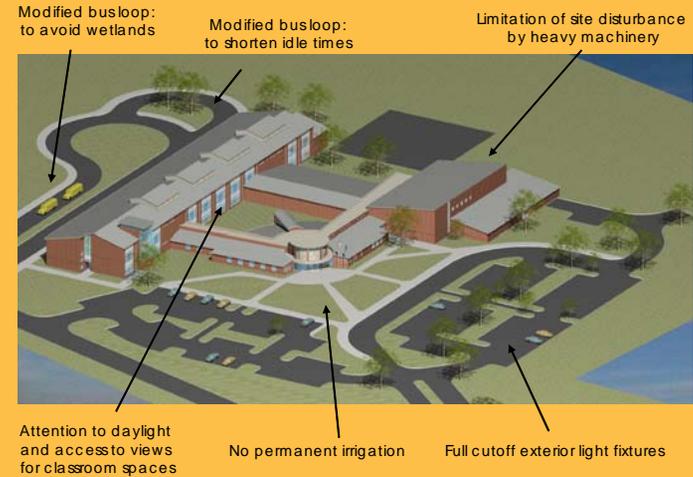
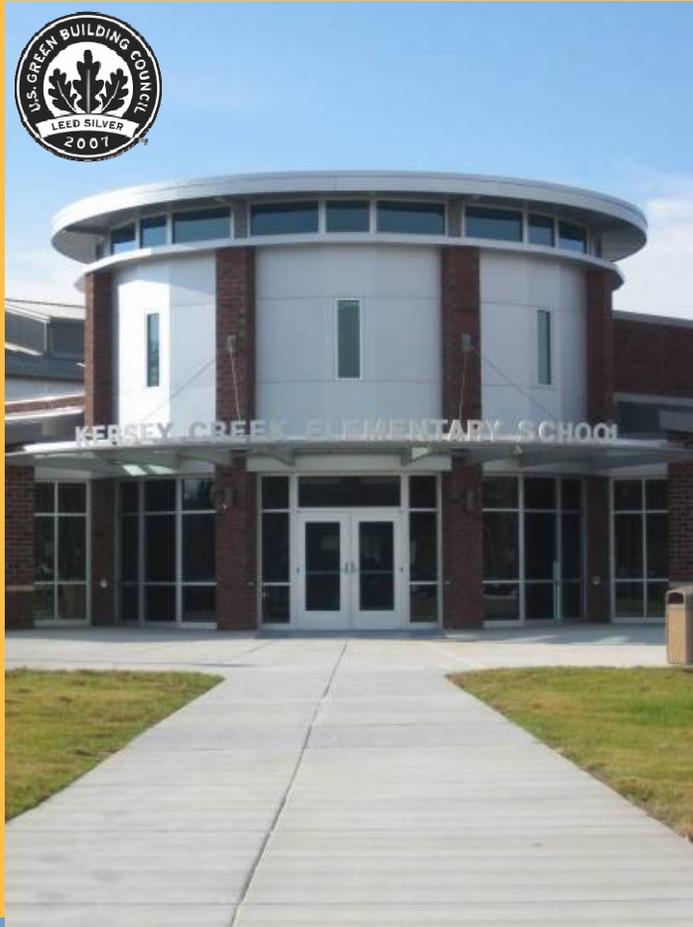


**JRGBC**  
Photo Credit: Steve May, Inc.

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# Virginia's success



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# Virginia's success



Photo courtesy of Seve Maylone

Total waste diverted 52.58%

Concrete/Brick	305 tons
Metal products	61 tons
Wood products	10 tons



Photos courtesy of Seve Maylone

Element	Code	WM Recreation
Roof Insulation	R-15	R-31
Wall Insulation	R-9	R-20
Glazing	U-.57	U-.35
Gas boiler efficiency	75%	80%
Lighting power density	1.4 w/sf	1.3 w/sf
Energy Recovery	Not required	70%

% Savings = 9%



**First LEED Certification on campus!**

**VSBN Special Recognition (2007)**



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# Virginia's success



## Rockett's Landing

41 townhouses  
now under construction  
on the James River  
just to the east of  
downtown.

Being developed by  
Scandia Development Corp

Will be market rate  
high performance units



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Carter Woods

by the Better Housing Coalition  
in Eastern Henrico

for low income elderly

These are the kind of units  
that could be built to LEED  
for HOMES standards to be  
launched in November.



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# questions?



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