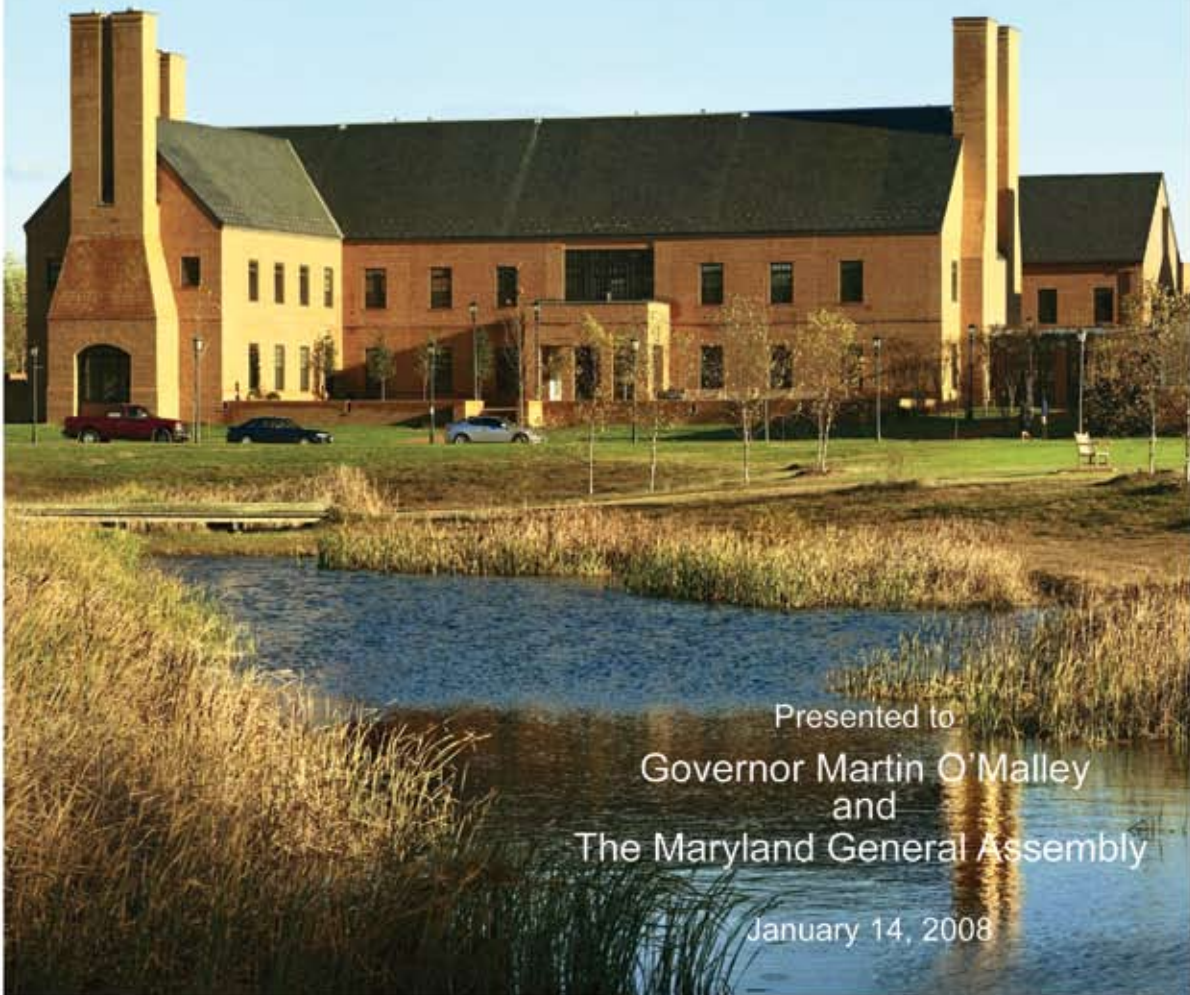




MARYLAND
GREEN BUILDING COUNCIL
2007 ANNUAL REPORT



Presented to
Governor Martin O'Malley
and
The Maryland General Assembly

January 14, 2008

COVER PHOTO: Goodpaster Hall at St. Mary's College – planned to achieve full LEED™ Silver certification. Completed in the fall of 2007, the building is a 52,000 square-foot classroom and laboratory building. The green features will yield 30% energy reduction and 40% water reduction, resulting in \$65,000 a year in savings to the college. Additionally, the facility utilizes healthier and more sustainable building materials, recycled 80% of construction waste, and 75% of its materials are recycled.

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PRODUCTION CREDITS:

Stephen Gilliss, Architect, Maryland Department of General Services

Dave Humphrey, Director of External Affairs, Maryland Department of General Services

Thomas Nappi, Graphic Design, Maryland Department of Human Resources

Caroline Varney-Alvarado, Maryland Department of Housing and Community Development



Martin O'Malley
Governor
Anthony G. Brown
Lt. Governor



Alvin C. Collins
Secretary

MARYLAND DEPARTMENT OF GENERAL SERVICES
OFFICE OF THE SECRETARY

January 14, 2008

The Honorable Martin O'Malley
Governor of Maryland

The Honorable Thomas V. Mike Miller, Jr.
President of the Senate

The Honorable Michael E. Busch
Speaker of the House of Delegates

The Honorable Members of the General
Assembly of Maryland

Re: Maryland Green Building Council Annual Report

Ladies and Gentlemen:

The Maryland Green Building Council, created by Chapters 115 and 116 of the 2007 Laws of Maryland, is privileged to submit to you our first Annual Report.

In your charge to the Council, you asked that we make recommendations for the implementation plan for a State higher performance building program. Specifically, you directed the Council to: (1) evaluate current high performance building technologies; (2) provide recommendations concerning the most cost-effective green building technologies that the State might consider requiring in the construction of State facilities, including consideration of the additional cost associated with the various technologies; and, (3) develop a list of building types for which green building technologies should not be applied, taking into consideration the operational aspects of facilities evaluated, and the utility of a waiver process where appropriate. To meet this challenge the Council reviewed past executive and legislative efforts in this area, considered many of the written studies on these subjects, and conducted site visits of buildings that are nationally and, even internationally, recognized as pioneers in the green building technology field. The Council fully discussed and carefully evaluated all of this information in making this Annual Report.

301 West Preston Street
Baltimore, Maryland 21201-2305
(410) 767-4960
FAX (410) 333-5480



Toll Free 1-800-449-4347
e-mail: Alvin.Collins@dgs.state.md.us
TTY users 1-800-735-2258



Page Two
Maryland Green Building Council

The members of the Maryland Green Building Council believe that issuance of this Report and its favorable consideration by the Governor and the General Assembly is a significant step in making the State a leader in the field of high performance building technologies. The benefits to the State of a fully implemented high performance building program are substantial. Energy costs are rising while at the same time essential life-sustaining resources such as water are becoming scarcer. There is also an alarming body of evidence that buildings are a significant contributor to the earth's greenhouse gases, a dominant factor in global warming. Embarking on an aggressive green building program can help address these concerns, particularly if State government demonstrates the leadership necessary to show the private sector that it can be accomplished and done effectively in a fiscally-prudent manner.

The Council has recommended a minimum Silver rating as established by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) building rating system for all newly-constructed or significantly-renovated State buildings, and the provision of an additional 2% construction allowance to achieve this standard. However, the data on green buildings indicate that, in many instances, a 2% construction premium was sufficient for projects to achieve a LEED Gold rating. The Council encourages the Governor and the General Assembly to urge agencies to pursue a Gold rating where possible within the budget allocations provided.

During the 2008 General Assembly session, and perhaps in subsequent years, legislation will be necessary to enact the Council's recommendations into law. Furthermore, the quest to achieve sustainable building standards is a dynamic process that will require oversight in the immediate future. The Council stands ready to assist the executive and legislative branches of the State as they see fit to meet this challenge in the years ahead.

The members of the Council appreciate the opportunity you have afforded them to serve our State. We hope that our efforts will benefit you, the citizens of Maryland, and most importantly, our children, grandchildren, and generations to come.

Respectfully submitted,

Albert Winchester III, Chairman
Maryland Green Building Council



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Maryland Green Building Council Membership

GUBERNATORIAL APPOINTEES

Albert “Buz” Winchester, III
PO Box 129
4840 Riverside Drive
Galesville, MD 20765
410-867-1968
bmtwinchester@comcast.net

Mark M. Bundy, Ph.D.
1111 Kings Heather Drive
Mitchellville, MD 20721
301-785-3962
mmbundy@verizon.net

Anja S. Caldwell
7711 Glenmore Spring Way
Bethesda, MD 20817
240-314-1095
anja.s.caldwell@mcpsmd.org

Peter C. Doo, Architect
531 Piccadily Road
Towson, MD 21204
443-463-5859
peter@DooConsulting.net

David E. Pratt, Consultant
8924 Blade Green Lane
Columbia, MD 21045
410-715-2588
david.pratt@loraxllc.com

C. Denise Watkins, A.I.A.
Marks, Thomas Architects
1410 Key Hwy
Baltimore, MD 21230
410-539-4300 work
denisew@marks-thomas.com
410-448-2513 home
cdwatkins@cavtel.net



DEPARTMENT MEMBERS/DESIGNEES

Department of General Services

Alvin C. Collins, Secretary
Department of General Services
301 W. Preston Street Room 1401
Baltimore, MD 21201
410-767-4960
410-333-5480 fax
Alvin.Collins@dgs.state.md.us

Stephen Gilliss, DGS staff
410-767-4675
410-333-7558 fax
Stephen.Gilliss@dgs.state.md.us

Department of Budget and Management

Chad Clapsaddle, Executive Director
Office of Capital Budgeting
Department of Budget and Management
301 W. Preston Street, Suite 1209
Baltimore, Maryland 21201
410-767-4579
chadc@dbm.state.md.us

Maryland Energy Administration

Walt Auburn
Assistant Director, Energy Efficiency Programs
Maryland Energy Administration
1623 Forest Drive, Suite 300
Annapolis, MD 21403
410-260-7204
Contact: Betty Wilson 410-260-7752
wauburn@energy.state.md.us

Department of Housing and Community Development

Caroline Varney-Alvarado, Special Assistant
Office of the Secretary
Department of Housing and Community Development
100 Community Place
Crownsville, Maryland 21032
410-514-7336
varney-alvarado@mdhousing.org



Department of Natural Resources

Sean McGuire, Natural Resources Planner
Office for a Sustainable Future
Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
410-260-8727
smcguire@dnr.state.md.us

Maryland Department of Planning

Matthew Power, Deputy Secretary
Maryland Department of Planning
State Office Building
301 West Preston Street, Room 1101
Baltimore, MD 21201
410-767-4485
410-767-4480 fax
mpower@mdp.state.md.us

Maryland Department of Transportation

Michelle D. Martin
Office of Planning
Maryland Department of Transportation
7201 Corporate Center Drive
Hanover, MD 21076
410-865-1285
410-865-1198 fax
mmartin@mdot.state.md.us

Meg Andrews (Alternate)
Environmental Planning Manager
Office of Planning & Capital Programming
Phone: 410-865-1287
Fax: 410-865-1198
Mandrews1@mdot.state.md.us

Maryland Department of the Environment

Stephen Pattison, Assistant Secretary
Department of the Environment
Montgomery Park Business Center
1800 Washington Blvd.
Baltimore, Maryland 21230-1718
410-537-3086
SPattison@mde.state.md.us or:
njackson-bey@mde.state.md.us

University System of Maryland

Mark Beck
Director of Capital Planning
University System of Maryland
3300 Metzertott Road
Adelphi, Maryland 20783
301-445-1984
mbeck@usmd.edu

Interagency Committee on School Construction

David Lever, Executive Director
Interagency Committee on
School Construction
200 West Baltimore Street
Baltimore, Maryland 21201
410-767-0610
dlever@msde.state.md.us





EXECUTIVE SUMMARY

On April 24, 2007, Governor Martin O'Malley approved House Bill 942 – Section 4-809 of the State Finance and Procurement Article – entitled “Maryland Green Building Council.” This law re-established the Maryland Green Building Council (the Council) in the Department of General Services (DGS), providing for private sector membership, State agency membership and assistance and staffing by the DGS.

Now, the State of Maryland has the opportunity to make sustainability a priority in planned capital improvements by bringing high performance green building to Maryland State government.

Green, or high performance buildings, use less energy, consume less water, generate fewer pollutants, produce less solid waste and provide healthier indoor environments. The endorsement of high performance green building by the State in its own new facilities will help to stimulate increased awareness of the value of this practice in the private sector.

To that end, the Council was charged with the following tasks:

Task 1. Evaluate Current High Performance Building Technologies

Task 2. Provide recommendations for cost effective green building technologies that the State might consider requiring in the construction of State facilities

Task 3. Develop a list of building types for which green building technologies should not be applied; consider a waiver process where appropriate

Task 4. Report to the Governor and the General Assembly as to recommendations for the implementation of a State High Performance Building Program.

Six private sector members and designees from ten State departments and agencies were selected in September 2007 and met for the first time on October 26, 2007. The Council recognized that a previous effort in the early days of green building met with resistance due to a lack of understanding of the long-term cost benefits. Therefore, the Council chose to focus on clarifying the economics of the implementation of the program throughout its research. Evaluations of the latest high performance building technologies yielded insights on how the State could cost-effectively incorporate green building into State facilities and determine which facilities would be best served by green building strategies. The Council worked on all of the assigned tasks; however, much of its time was devoted to Task 4 -- the recommendation of a State High Performance Building Program, which could be implemented as soon as possible.

The Council recommends a program that requires all new or substantially renovated buildings, 7,500 gross square feet (gsf) and larger, to meet the US Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED™) Silver rating or better. This would apply only to buildings that are fully State funded or owned and are “occupied” buildings (starting with buildings funded for design beginning in FY 2009). Warehouses, garages,



maintenance facilities, and other similar building types would be exempt from the requirement; however, the use of green building strategies would be encouraged. State agencies should be able to apply for a waiver by providing a detailed explanation to the Council that demonstrates why a proposed project should not meet the Program requirements. A draft of the Council's Program has been included in this report as Appendix I.

The Council recommends that several "strategies" provided in the LEED™ Rating System be made mandatory, but does not recommend the use of specific green building technologies. This is to allow for maximum flexibility in the design of projects.

The Council has recommended an additional 2% total investment in the design and construction appropriation for high performance buildings to accommodate anticipated front end costs. At the same time, there would be a related reduction in the Operating Budget Projection reported by the Department of Budget and Management.

Recommendation Summary

1. It is the Council's recommendation that legislation be passed which codifies a "Maryland High Performance Green Building Program" including the following requirements.
 - a. All new, or substantially renovated, fully State funded and owned buildings 7,500 gross square feet and over shall achieve a LEED™ Silver rating or better.
 - b. All new fully State funded and owned buildings smaller than 7,500 gross square feet shall incorporate as many high performance green building design strategies as possible.
 - c. Certain "unoccupied" building types such as warehouses, garages, maintenance facilities, and other similar building types shall be exempt; however, all State buildings shall incorporate as many high performance green building design strategies as possible.
 - d. A simple waiver process shall be available for projects and agencies that anticipate an unforeseen hardship in complying with the Program. The Council shall evaluate any waivers as part of its ongoing function based on the particulars of the building type, anticipated hardship and the "green" track record of similar building types nationally.
2. The Council recommends that it not evaluate or recommend specific high performance technologies at this time, but rather allow design professionals to use a free market approach to design, employing the technologies deemed appropriate for each specific project.
3. The Council recommends the inclusion of an additional 2% (of the cost of construction) allowance in the Capital Budget cost estimate for each covered project to assist project teams in achieving a LEED™ Silver certification, or, if possible, a LEED™ Gold Certification.



INTRODUCTION

We must change the way in which growth and development occur in Maryland so we can provide for environmentally-friendly and socially responsible development for future generations. Sprawling, low-density, single-family housing and commercial development have dominated local growth patterns and this is no longer sustainable.

The Council was charged with establishing a “State Higher Performance Building Program” (the Program) and providing recommendations on standards and criteria for use by the Program. The recent legislation creating the Maryland Green Building Council stipulated that the Council include members representing environmental, business, and citizen interests, as well as those State agencies with large facility portfolios and related responsibilities, to ensure that a diversity of opinions and concerns was represented. The Council will serve as an ongoing forum for recommending and monitoring State actions related to energy efficiency and sustainability issues and policies in the development and maintenance of its facilities. The Council’s recommendations will not only save Maryland taxpayers millions of dollars by spending less to heat, cool and illuminate State facilities, it will also help Maryland grow smarter and meet its commitment to protecting the environment, restoring the Chesapeake Bay, and improving air quality.

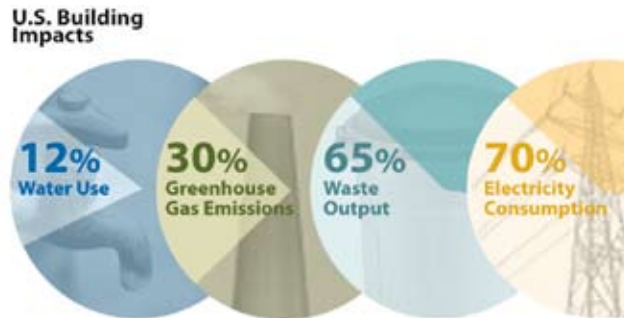
After its first meeting, the Council understood that it must quickly recommend standards and criteria for implementing high performance green building concepts. A subcommittee was formed to study and make recommendations on the issues identified by the legislation. A second subcommittee was formed to study and report on the economics of green building.

The accompanying document, entitled *Maryland’s High Performance Green Building Program*, represents the completion of the Council’s initial task to recommend a “State higher performance building program” and provides recommendations on standards and criteria for use by the Program. The Council was also tasked with evaluating programs and providing recommendations on high performance green building in subsequent annual reports to the Governor and General Assembly.

BACKGROUND

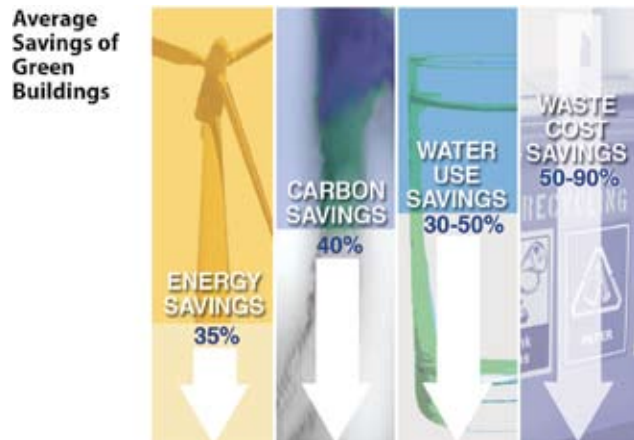
A high performance green building philosophy provides for design and construction in a manner that encourages efficient use of raw materials and natural resources, protects the environment, and promotes sustainable communities. “Green Building” is not a particular style, technique, or practice; rather, it is a philosophy of land development that fosters environmental responsiveness, resource efficiency, and community and cultural sensitivity.

High performance green building is about more than just saving energy and money. High performance buildings have less of an impact on the site and the environment, use less energy in their construction and operation, consume less water, generate fewer air and water pollutants, produce less solid waste and provide healthier indoor environments for their occupants. Some of these techniques provide direct economic and physical benefits to the building owner/operator (reduced energy and water cost and higher occupant productivity) while others provide more regional benefits (reduced water treatment costs, reduced water usage, improved air and water quality, and fewer materials sent to local landfills).



Interest in green building can be traced back to the oil crisis of the 1970s and the need for increased energy efficiency. During that time, recycling in the United States was becoming increasingly more commonplace. In the 1980s, the emergence of the “sick building syndrome” increased concern for worker health and productivity. Toxic material emissions were also examined. Projects in water-scarce areas began developing ways to conserve that resource. Many early green designs focused on one element at a time -

- usually energy efficiency or use of recycled materials. During the 1980s and 1990s, green designers began to realize the integration of all these factors would produce the best results in the form of high performance green buildings.



Related State Efforts

The State of Maryland has been a leader in environmental resource protection for many years, incorporating sustainability in many of its projects and practices. The following are just a few examples of the use of high performance green building principles already at work throughout the State:



- In July 2007, Governor O'Malley announced his 'EmPOWER Maryland Initiative', which sets as a goal a 15% reduction in statewide energy use by 2015. To achieve this goal, the State will use a slate of policy options which include: improving building operations, expanding the use of Energy Performance Contracting for both State-owned and private facilities, increasing the State Agency Loan Program, purchasing Energy Star appliances and fixtures and expanding the Community Energy Loan Program.
- On April 20, 2007, Governor O'Malley signed two Executive Orders that directly addressed Maryland's impacts on climate change. The first officially stated that Maryland would join the Regional Greenhouse Gas Initiative to control greenhouse gas emissions in the region. The second created the Maryland Climate Change Commission charged with providing recommendations and tracking policies that address both the causes and results of climate change and sea level rise.
- In parallel with the Green Building Council, the Maryland General Assembly passed legislation creating the Green Building Task Force during the 2006 Session. While the Council focuses on State-owned facilities, the Task Force was charged with analyzing the private sector's role in implementing environmental design principles, including green building and innovative site design to mitigate stormwater runoff.
- The Commercial Green Building Tax Credit Program was signed into law in 2001 with \$25 million dollars in tax credits available between 2001 and 2012. By the end of 2006 all of the tax credits had been allocated to 18 projects totaling 2.4 million square feet of building space. The program has been highly successful in stimulating the construction of green building space in Maryland using the U.S. Green Building LEED™ guidelines.
- The Department of General Services (DGS) has collaborated with the Maryland Energy Administration (MEA) on Energy Performance Contracts, implemented green leasing criteria, purchased energy saving products and equipment for State agencies and recently completed green building pilot projects for St. Mary's College and the Department of Natural Resources (DNR). DGS has developed a program to provide commissioning services for new building projects.
- The Maryland Department of the Environment (MDE) has completed a Stormwater Management manual emphasizing the use of environmentally sensitive development to enhance ground water recharge, water quality, and greener development. The Maryland Water Conservation Plan is a three-pronged plan to achieve statewide water conservation through State and community conservation efforts as well as education/outreach programs. MDE also permits the reuse of treated wastewater for irrigation and other uses. MDE's high performance green headquarters is Maryland's first "Green Lease" using LEED™ criteria and



Montgomery Park, Baltimore



developed with DGS's Office of Real Estate. This collaboration has resulted in the redevelopment of the long abandoned Montgomery Ward warehouse building in Baltimore (over 1.3 million square feet) using green building construction. MDE works closely with the Maryland Department of Transportation (MDOT) to insure that transportation and air quality goals are consistent and compatible. The Voluntary Cleanup/Brownfields Programs have created the opportunity to streamline the cleanup process for contaminated industrial and commercial sites, thereby facilitating their reuse and integration of green practices.

- MEA and DGS have worked together to reduce the energy usage of the State's existing buildings, reporting the results of their efforts since 1992.
- DNR has implemented stringent afforestation and reforestation programs as well as Green Building Outreach programs.
- MDOT has developed statewide mass transit programs and is headquartered in a new, LEED™ Gold Certified building adjacent to the Baltimore/Washington Thurgood Marshall International Airport.
- The Maryland Department of Housing and Community Development (DHCD) Maryland Codes Administration helps to ensure that buildings meet minimum standards for health and safety. Maryland's building codes law is called the Maryland Building Performance Standards (MBPS). The 2006 International Energy Conservation Code is now part of the MBPS and therefore applies throughout the State. These building codes help projects achieve higher energy efficiency standards.



MDOT Headquarters - LEED Gold

- The Public School Construction Program (PSCP) has a history of promoting Green Building principles through the encouragement of effective and efficient planning, design, construction, operation and maintenance of public schools. The PSCP is currently working to develop methods to assist school systems and their design professionals to implement Green Building principles in all of their projects. The Public School Construction Program envisions that Green Building concepts and features will be incorporated into all public school buildings in the near future.

The Council provides a framework to integrate all of these efforts and to change the way the State designs, constructs, and operates its buildings.



Photo by: Ken Wyner Photography



State and Local Government Green Building Initiatives and Policies

Because state and local governments own and operate facilities for decades, they have been at the forefront in promoting and mandating environmental design and green building principles. Specific to high performance buildings, a Massachusetts study conducted in late 2005 identified no less than nineteen states that have active or emerging green building programs for the public sector. In an August 2007 report, the United States Green Building Council (USGBC) identified 24 states and more than 90 local governments that specifically identify LEED™ as the basis for public high performance building policies, initiatives, and mandates.

The mid-Atlantic region specifically is a hotbed of innovation and policy development to promote and implement green building in public-owned facilities. Maryland led the region when then-Governor Parris Glendening signed the original Executive Order in May 2001 creating the Maryland Green Building Council and two LEED Silver State pilot projects. Since then, regional States adopted similar initiatives. For example, Pennsylvania created its Green Government Council that, among other efforts, promotes green building, and New York implemented several economic incentives to promote green building, including its Green Building Tax Incentive that was the basis for a similar effort adopted by Maryland. Washington, D.C. became a regional leader when it passed legislation in late 2006 that mandates all facilities with more than 50,000 gross square feet (gsf) to meet LEED™ Silver by 2012.

Maryland's local governments are also doing their part to reduce negative environmental impacts and maximize resource efficiency relating to high performance building. In 2006, both Baltimore City and Montgomery County passed significant green building legislation. Baltimore City will require all private and public facilities with more than 10,000 gsf to meet LEED™ Silver certification. Montgomery County mandates all public facilities greater than 10,000 gsf to achieve LEED™ Silver, and private buildings will need to meet LEED™ Certification. Howard County has green building requirements and provides significant permit fee reductions for green building designs, and offers property tax credits. The availability of tax credits is also offered by Baltimore County.

The State of Maryland is also a leader in implementing environmental design in higher education facilities. Over the last year, institutions of the University System of Maryland (USM) have joined universities nationwide by adopting the "American College and University Presidents Climate Commitment," including a rededication to achieve a LEED™ Silver certification as a minimum for all new and renovated buildings as a major step toward achieving climate neutrality. The USM also opened the State's first LEED™ Gold Certified academic building, the Camille Kendall Academic Center in Shady Grove. Harford Community College also is a regional leader. Several of its facilities are LEED™ Certified and higher, the grounds demonstrate several low impact development techniques like living roofs and rain gardens, and even have a sustainability curriculum for its students.

Public schools are quickly adopting high performance building measures. Montgomery County Public Schools opened a LEED™ Gold certified school in September of 2006, the first LEED™ certified school in Maryland. Great Seneca Creek Elementary School in Germantown is also the school system's first pilot for a third party certification for energy and environmental design. The school system established a Green Building Program in 2002 with LEED™



accredited staff to coordinate green building efforts. This program is funded through operation and maintenance savings. Great Seneca Creek Elementary School, for example, is expected to save about \$60,000 a year in utilities over a conventionally designed school building. Montgomery County passed a green building mandate for the public and private sector in 2006. This mandate requires all publicly funded buildings, including the school system's new school buildings, to achieve at minimum a LEED™ Silver certification. Operation and maintenance savings resulting from ten new high performance schools in the capital improvement plan (CIP) to be built by 2012 are expected to accumulate savings of about one million dollars per year. As the cost for utilities rise these savings will increase accordingly and make new buildings less of a liability to taxpayers.



Great Seneca Creek Elementary School, Montgomery County - LEED Silver

Photo by: Ken Wyner Photography



HIGH PERFORMANCE GREEN BUILDING TECHNOLOGY

Tasks 1 and 2: Evaluating High Performance Green Building Technologies

The Council, in its first meeting, discussed the assigned task of evaluating current high performance building technologies or methods and providing recommendations for cost effective technologies that the State might consider requiring in the construction of its new facilities.

The membership, however, agreed that given the time frame for the report, the limited resources of the Council and other factors, specific technology recommendations should not be made.

Many of the most effective energy saving technologies are simply smart design principles. The appropriate siting and orientation of a building can greatly affect the amount of energy it requires. Simply increasing the insulation thickness and air tightness in the building envelope or using a light colored roofing material can make a big difference in the heating and cooling loads created. There are some obvious technologies such as low flow plumbing fixtures and high-efficiency lighting (lighting efficiency is changing yearly). The Council has addressed these issues by recommending that Maryland mandate strategies, but not specific technologies in the High Performance Green Building Program. These would include requiring the design team to obtain four LEED™ Energy and Atmosphere credits (minimum reduction of energy use by 28%) and mandatory Water Use Reduction credits.

Each building project poses unique issues and challenges to the design team due to its function, site location, and occupancy. The Council recommends that all designs incorporate a flexible mix of strategies and technologies rather than by a prescribed list of technologies. For example, the requirement of the use of geothermal heating and cooling systems would not be practical for a large building on a site with a limited size or which is located on a rocky region of the State such as Western Maryland. This system, however, might be cost effective and appropriate for a building with a large site located in areas adjacent to the Western Shore of the Chesapeake or the sandy soils of the Eastern Shore. The use of photovoltaic panels in large applications remains a relatively expensive technology at this time, however, changes in the cost of energy, changes in manufacturing methods, or scientific research could make this technology cost effective in the future. Ice storage cooling systems may make sense for a building located in a major metropolitan area where off-peak power discounts are available, but not in a more remote location without power peaks. Pervious (porous) paving methods such as loose stone may be appropriate on the Eastern Shore where snowfall is minimal, but impractical in the snowy mountains of Western Maryland where the need to plow regularly might make this impractical. Because of the diversity of conditions in Maryland, designers should be able to choose from a menu of options most appropriate for the particular project at hand.

The proper design of a new building is also much like a natural ecosystem in that all of the components are interconnected. Mandating a specific technology could easily limit the creative process of the design team and force other less effective or inappropriate design decisions based on following the mandate.



The Council recommends that these decisions should be made on a project specific basis by the design team at the time of the design. This “free market” design approach will also allow new technologies to evolve and outdated ones to fade away. Over time, the most cost effective technologies will become part of the high performance green building design philosophy on their own strengths.

The development of green building projects by the State may over time reveal technologies that are time-tested and universally applicable, but at this time the Council does not believe it is in the best interest of the State or the building users to recommend requiring specific technologies. The Council will review and reconsider this position on a yearly basis.





HIGH PERFORMANCE GREEN BUILDING PROGRAM IMPLEMENTATION

Task 4: Program Implementation

The Council was tasked to “provide recommendations for the implementation of a State higher performance building program”. As mentioned earlier, the Council created two subcommittees -- one to provide recommendations for the implementation of the program and the other to explore the economics of implementing such a program. This section of the report will deal with the implementation of a State High Performance Green Building Program.

Despite leading efforts in green building in 2001, the State of Maryland has more recently lagged behind other states and jurisdictions in the implementation of a wide-reaching high performance green building program. The subcommittee focused on making Maryland’s “High Performance Green Building Program” easy to implement and administer in a short time frame.

The Council recognizes the need for a system of metrics for building performance and studied several green building rating systems for application in the State’s Program. The Council determined that the U. S. Green Building Council’s (USGBC) LEED™ (Leadership in Energy and Environmental Design) Green Building Rating System is by far the most recognized and utilized third party verification system in use worldwide. The system was carefully developed by USGBC members over a seven-year period and is a voluntary, market-driven rating system which evaluates a building’s performance from a whole building perspective. Members of the USGBC include, but are not limited to, developers, architects, contractors, product manufacturers, universities, and governmental bodies. It is now worldwide in scope and therefore allows the best comparisons with other jurisdictions and private development. The system is flexible and non-prescriptive as it encourages the design team to use the best strategies for each individual project. LEED™ has been in use for nearly ten years and continues to be revised and updated to uphold and increase building performance and to keep up with the latest developments in high performance green building. LEED™ continues to be developed and now includes systems for New Construction, Contract Interiors, and Existing Buildings; and is currently developing systems for housing as well as community development. These additional systems may be useful as the State’s program may continue to expand in the future.

Sustainable Sites	14 points
Water Efficiency	5 points
Energy & Atmosphere	17 points
Materials & Resources	13 points
Indoor Environmental Quality	15 points
Innovation & Design Process	5 points
TOTAL	69 points
<hr/>	
LEED Certified	26-32 points
LEED Silver Rating	33-38 points
LEED Gold Rating	39-51 points
LEED Platinum	52+ points

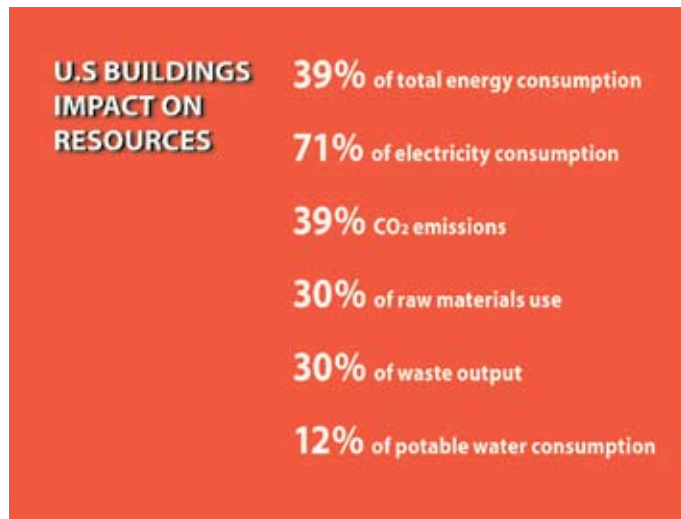
Most importantly, LEED™ has an in-place third party review system that will require no governmental oversight or creation of bureaucracy. The cost of a rating review is modest and can be easily accommodated by the project’s budget.



As a member of the USGBC, the State will have the opportunity to be involved in the continued development of the LEED™ system and has access to LEED™ training at reduced costs. The yearly membership cost is modest and at this time several State agencies are already members of the USGBC. After reviewing other green building rating systems, the Council recommends the use of the USGBC LEED™ Green Building Rating System.

The LEED™ system has four levels of certification: Certified, Silver, Gold, and Platinum. Projects achieve a rating based on the use of design strategies in five areas: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources and Indoor Environmental Quality. Of the 24 states currently listed on the USGBC Web site as using the LEED™ System, at least 10 require a rating of LEED™ Silver or higher. In addition, the City of Baltimore has instituted a LEED™ Silver requirement for its buildings as well as privately owned buildings. Montgomery County and Howard County have enacted similar measures. Based on this trend, the Council recommends a minimum Silver rating be required for qualified State buildings and all efforts should be taken to achieve a Gold rating where possible. This demonstrates the State’s commitment to high performance green building; providing a “leading edge” but still attainable goal. The Council will reconsider this level on a yearly basis.

In determining which building projects shall qualify for the compliance requirement, the committee again looked at other similar jurisdictions and reviewed typical State projects. Most jurisdictions require compliance for buildings in excess of 5,000 to 10,000 gsf. Based on this review the committee recommends that buildings 7,500 gsf or larger of new construction or major renovations be required to comply. A major renovation is defined as a renovation in which the building shell (exterior walls, floors and roof) will be reused for the new construction. In major renovation projects, existing HVAC, electrical, plumbing and other systems are to be replaced.



The Council further recommends that buildings less than 7,500 gsf shall employ high performance green building strategies with a goal of LEED™ Silver, but will not be required to obtain the certification.

Additionally, the Council recommends that certain utility type buildings (warehouses, maintenance buildings, garages and similar types) of any size should not be required to be certified at this time. However, their design teams shall employ green building principles in their design and construction wherever practicable. The Council also recommends that all design teams for State-owned Capital Budget funded building projects that are not required to be LEED™ certified shall report on the green building principles employed in the project.



In studying the LEED™ system, the Council found that certain points for specific design strategies should be required for all qualifying buildings. These credits are for strategies that the Council considers vital to the intent of establishing higher performance green building projects or are in the State’s best interest. These are:

Sustainable Sites – Light Pollution Reduction – 1 point

These goals are in line with the findings of the State of Maryland Task Force to Study Lighting Efficiency & Light Pollution in Maryland from March of 2002.

Water Efficiency -Water Use Reduction – 2 points

These goals will help local jurisdictions comply with MDE’s Water Supply Capacity Management Plan Guidance Document and the new Water Resources Element (WRE) which was passed in 2006 as part of the Comprehensive Land Use planning process. This process requires that by October 2009, localities with planning and zoning authority must demonstrate how their water supply needs will be met in conformance with their land use plan. In addition, water conservation will also realize actual operational cost savings at minimal or no additional cost.

Energy and Atmosphere – Optimize Energy Performance – 4 points

This requirement exceeds Governor O’Malley’s ‘EmPOWER Maryland Initiative’ program, is a major impetus for employing high efficiency principles, reduces emissions of pollutants and greenhouse gases, reduces dependency on fossil or carbon based fuels and will realize actual operational cost savings.

Materials and Resources – Construction Waste Management – 2 points

Construction waste including product packaging, demolition waste and construction material waste takes up a great amount of space in public landfills. Recycling of these materials can also reduce energy and water by substituting them for new materials which would need to be mined or processed. Many paper, cardboard, stone, concrete, metal and other materials are recyclable. Recycling of these waste materials should become a common construction practice.

Indoor Environmental Quality – Low Volatile Organic Compounds (VOC) Emitting Materials – 2 points

Many new low VOC products are currently on or entering the market at minimal additional cost making them a cost effective way to improve indoor air quality. Fumes from high emitting products can be dangerous to building occupants and are one of the primary complaints from workers concerning indoor air quality.

IEO & Worker Productivity

- ✓ Improve Worker Productivity
- ✓ Reduce Absenteeism
- ✓ Reduce Liability
- ✓ Reduce Turnover

Task 3: Program Waivers

The Council was also charged with making recommendations on “the utility of a waiver process where appropriate.” The Council asserts that the requirements that were developed as part of this study and report are reasonable and achievable for all State building types other than those specifically excluded by the Program. However, there is always the possibility of an unforeseen project type or hardship condition. Therefore, the Council recommends that State agencies may apply for a waiver by providing a brief (no more than two pages) letter of request to the Council explaining why a proposed project should not meet Program requirements. The waiver request should be provided in MS Word or pdf format to DGS for distribution and review and consideration by the Council three months prior to the submission of the Part I building program to the Department of Budget and Management. At this time there is no recommended format for this process.



HIGH PERFORMANCE GREEN BUILDING ECONOMICS

Myths and Realities

High performance green building projects are commonly perceived as being more expensive to construct than conventional buildings. To evaluate this perception, the Council reviewed a number of studies and data that examined the costs of green buildings. The studies demonstrate that green buildings are not significantly more expensive to construct than conventional buildings, and the cost of building green has steadily decreased over the past decade as architects, engineers, and contractors have gained more experience with green building concepts. The findings of several major studies of green building costs are summarized below.

The most often quoted study analyzing the premium of green design is the 2003 Report, - The Costs and Financial Benefits of Green Building, by Greg Kats (<http://www.cap-e.com/spotlight/index.cfm?Page=1&NewsID=25770>). The Kats Study analyzed 33 government-owned facilities in California and buildings nationwide and concluded that “The average premium for these green buildings is slightly less than 2%”(Kats, viii). The Kats Study also presented evidence that building green gets less expensive over time. The data indicate that the premium is lowest for the most recently completed LEED™ Silver buildings (2001 – 2002). Although the data also show that the premium is higher for buildings expected to be completed in 2003 and 2004, this reflects the fact that building cost estimates tend to be slightly high, or conservative. The data also includes both novice-built green buildings and those completed by more experienced owner/contractor project teams. This is important because the data include both the higher costs of first-time green building efforts and the lower-cost buildings completed by experienced project teams. Thus, the downward trend in cost reflects the actual experience of both first-time and experienced project teams.

According to Kats, the trend of declining project costs associated with experienced green building project teams has been experienced in Pennsylvania, Portland, and Seattle. Portland’s three LEED™ Silver certified buildings were finished in 1995, 1997, and 2000. These projects had cost premiums of 2%, 1%, and 0%, respectively (Kats, p. 18). Seattle has also seen the cost of LEED™ Silver buildings drop from 2-4%

Year of Completion	Average Green Cost Premium
1997-1998	2.20%
1999-2000	2.49%
2001-2002	1.40%
2003-2004	2.21%
Average of 18 Silver buildings	2.11%

several years ago to 1-2% (Kats, p. 18). In support of this data, during its research efforts in 2002, staff for the Council interviewed planners and implementers of green design in Seattle. At that time, staff estimated green premiums of around 3-4%, with most of the premium attributed to the learning curve to work with and implement green building techniques. By 2006, the same jurisdictions were following the national allowance estimates of 1-2%.



In 2006, the U.S. Green Building Council analyzed the cost of LEED™ certified green buildings from across the country and found that the average cost premium for LEED™ Certified is 0.66%, for LEED™ Silver is 1.9%, and for LEED™ Gold is 2.2%. When compared to the cost data from the Kats Study, this data further supports the trend of declining project costs for green buildings.

The most recent study of green building costs, *Cost of Green Revisited*, by Davis Langdon, 2007, compared the cost of 138 conventional buildings to 83 buildings designed to meet LEED™ certification ([http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-](http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/)

[Revisited/](http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/)). In evaluating the cost of five building types – academic buildings, laboratories, libraries, community centers, and ambulatory care facilities - the Langdon Study found no statistically significant difference in average costs for green buildings compared to non-green buildings. The study noted that “many project teams are building green buildings with little or no added cost, and with budgets well within the cost range for non-green buildings with similar programs (Langdon, 2007, p. 3). The Langdon study concluded the following (p. 10):

- There is a very large variation in building costs, even within the same building category.
- Cost differences between buildings are due primarily to functional requirements and program type.
- There are low-cost and high-cost green buildings.
- There are low-cost and high-cost non-green buildings.

Despite these conclusions, it is important to note that Langdon does not conclude that green buildings do not have additional costs. Rather, Langdon concludes that buildings cannot be budgeted based on averages. Differences in project costs are the result of differences in the specific functional requirements and program type of a proposed building. This suggests that the goal of building green and any potential associated costs should be integrated and interwoven into project design and initial budget estimates.





Langdon also notes that many project teams identify green design as a separate feature or add-on to a project. This idea leads many architects and contractors to unnecessarily add costs to green buildings. This tendency is particularly true for less-experienced project teams. Langdon concludes that “until design teams understand that green design is not additive, it will be difficult to overcome the notion that green costs more” (Langdon, 2007, p. 3).

Fiscal and Economic Benefits of Green Design

Focusing solely on upfront costs ignores the long-term costs of operations, maintenance, deconstruction, and occupancy of the building. Fiscally, the commercial building industry recognizes that the initial design and construction of any facility is only about 2% of its life-cycle cost projected to 40 years. That means that for every \$1 million in design and construction costs, there will be nearly \$50 million in additional costs over the life of the facility. By this calculation, a relatively small \$10 million construction project will eventually cost the State a half of a billion dollars.

Further, the term ‘premium’ looks only at upfront, capital expenditures and ignores savings opportunities. The Kats Study concluded that LEED™ Certified and Silver buildings yield a twelve-fold return on investment over 20 years, so an initial investment of \$100,000 to incorporate green design would yield more than \$1.2 million in taxpayer savings. An internal study of Maryland DNR properties found that the average age of its facilities is more than 50 years, so given the length of State facility life cycles, the fiscal impacts and opportunities to the State’s coffers are considerable.

Local Economy

- ✓ Deceased Waste to Landfills
- ✓ Increased Reuse of Materials and Salvage Industry
- ✓ Local & Regional Green Collar Jobs
- ✓ Economic Investment Opportunities

In addition to fiscal opportunities to State and local governments, green design and related State initiatives spur significant investment in local economies. Sometimes called “green-collar” jobs, environmental goods and services represent one of the fastest-growing sectors of the U.S. economy. Amicus, a local green building center, enjoys 500% annual growth and is expanding its business throughout Maryland. Tecta America, a national roofing company with offices and living roof projects in Maryland, employs more than 200 workers and generates \$4 million in revenue. Tecta America recently developed an innovative living roof modular system and decided to use local manufacturers, thereby increasing employment and economic growth in Maryland. On a larger scale, a 2006 report from the Maryland-based International Center for Sustainable Development suggests that an investment of \$1 million annually by Maryland into the clean energy industry would, over 20 years, yield 144,000 new jobs, \$973 million in government revenue, and \$16 billion in gross State product over the next 20 years.

Further, actions and policies undertaken by the State of Maryland yield a ripple effect to local governments and the private sector. Waste and material refuse burden local government landfills and budgets. In contrast, increased efforts to reuse existing materials and redirect waste to recycling centers can actually provide direct revenue to local governments and indirectly lengthen the life of local landfills. Additionally, investing in innovative, environmentally-friendly industries will spur “green-collar” growth in the private sector.



Lastly, high performance facilities are healthier, promote greater worker productivity, support government's efforts to lead by example, and secure a more sustainable future for all of Maryland's residents. The following are specific benefits delineated by topic:

- **Energy:** Energy costs are increasing and putting intense budgetary pressure on operating expenditures. Further, Maryland is committed to reducing energy use to comply with the EmPOWER Maryland Initiative. There is no greater way to reduce energy consumption than by implementing green building design. Current estimates by the U.S. Green Building Council demonstrate that high performance green buildings save on average 35-45% in energy use as compared to their traditional counterparts.
- **Water:** Even though about two-thirds of the world is covered by water, less than 1% of it is accessible and potable. Therefore, water must be recognized as a finite resource. Here in Maryland, population growth coupled with increases in impervious surfaces is putting enormous pressure on water resources. In fact, many Maryland jurisdictions have recently imposed building moratoriums due to lack of water availability. Green buildings – both commercial and residential – save considerable amounts of water. Nationally, green buildings save more than 30% when compared to conventional facilities.
- **Waste Minimization:** A considerable, though too-often overlooked, component of green building is waste minimization. More than 40% of local landfills are comprised of building materials. Green building puts a premium on reducing initial construction waste, reusing existing building materials, deconstructing (instead of demolishing) facilities, and employing recycling efforts within the building. These efforts significantly reduce waste usually headed to local landfills, divert recyclable materials to processing centers, and provide revenue to local jurisdictions.



Social Benefits of Green Design: More than just Dollars and Cents

In addition to fiscal savings and economic opportunities, high performance green buildings also yield significant societal and human health advantages. A major benefit of green buildings is indoor air quality. Americans are inside some sort of building more than 93% of the day, and the effects of our indoor environment are considerable. Much of our furniture, paints, sealants, and office equipment emit, or “off-gas,” chemicals like formaldehyde and volatile organic compounds. In contrast, green products use more naturally-produced and -manufactured products that result in healthier surroundings.

The result of a cleaner office environment is a significant contribution to a firm's bottom-line due to the improved health of its labor force. Recent studies conclude that green buildings



reduce absenteeism, enhance recruitment, improve employee retention, and increase worker productivity. Benefit figures vary by building type and industry, but quantifiable estimates of increased productivity range from 2% to 15%.

Such benefits are not just for adult workers. Many studies available to date show how school facilities directly affect academic outcomes. A 2002 report compiled by Mark Schneider for the National Clearinghouse for Educational Facilities outlines the impacts of indoor air quality, thermal comfort, humidity, acoustics, lighting and even aesthetics to student performance. Because green design optimizes environmental conditions in a school building in an integrative manner, test scores improve accordingly. The latest study from the National Research Council's Committee to Review and Assess the Health and Productivity Benefits of Green Schools, "Green Schools: Attributes for Health and Learning," was conducted in 2006. The report concludes with ten findings and recommendations, linking indoor air quality, building envelope, lighting, acoustics, building conditions and system maintenance to human health and performance. All of the findings and recommendations can be directly linked to the known benefits of green building and high performance design and are addressed in currently available green building rating systems for schools, such as the system provided by the Collaborative for High Performance Schools and the U.S. Green Building Council's LEED™ for (new) Schools, which was released in April of 2007.

Green Building Case Studies

Since 2002, several facilities have achieved LEED™ green building certification and can now be analyzed for cost effectiveness. In Maryland, there are no less than 24 LEED™ Certified (or higher) buildings and almost 200 LEED™ Registered projects. A complete analysis of all facilities in Maryland was not possible within the timeframe of this report, though the Council did identify a few specific projects to gain insight into the costs and economics of green design.

St. Mary's College – Goodpaster Hall

In 2002, the Department of General Services initiated green building pilot projects at two locations, including St. Mary's College in southern Maryland. The College initiated four specific buildings to incorporate green building practices, with one – Goodpaster Hall – planned to achieve full LEED™ Silver certification. The building is a 52,000 gsf classroom and laboratory building designed in a southern Maryland brick vernacular style to blend in to the existing traditional campus. Recently completed in the fall of 2007, no actual performance data is available at this time. A fiscal analysis conducted in March 2007 states a total green design and construction premium of 1.6%. The green features will yield 30% energy reduction and 40% water reduction, resulting in \$65,000 a year in savings to the College. Further, the facility utilizes healthier and more sustainable building materials, recycled 80% of construction waste, and 75% of its materials are recycled.



Goodpaster Hall
St. Mary's College Silver Rating

- 52,000 gsf Academic Facility
- Estimated Green Premium: 1.6%
- 30% Energy Savings
- 40% Water Reduction=
\$65,000 Annual Savings
- Healthy, Sustainable Materials
- Recycled 80% of Construction Waste
- 75% from Recyclable Materials



Hammerman Beach Services Building, Gunpowder Falls State Park

The second green building pilot project is the LEED™ Silver Hammerman Area Service Building, located in Gunpowder Falls State Park. The new 7,400 gsf complex completed in fall 2007 replaces an outdated building and provides shower and bathing facilities, a park office, and a concession space in two buildings connected by a deck. The green premium for design for this project was 1.1% of the final



construction cost. A preconstruction cost estimate identified the green construction premium to be approximately 2.4% of the total estimated construction cost, however, the contractor, when asked, was unable to identify this level of cost directly associated to green features. Using this figure still gives a total green premium of only 3.5% which is well within the accepted range of green costs at the time. It is clear though that the economies of scale for larger buildings reduce the apparent premium cost of green building. This is part of the reason that the 7,500 gsf low threshold was chosen. Still, engineers estimate the State Parks System will enjoy reduced operating expenditures from the Hammerman facility via its 20% reduction in energy use and 50% reduction in water consumption (final dollar savings have not yet been calculated). Further, 91% of the construction waste was recycled or reused, contractors used healthier materials, and much of the materials were manufactured and harvested locally, thereby boosting the regional economy.

University System of Maryland, Shady Grove Center

The most recent fiscal analysis of a State-owned certified green building is the newly constructed Camille Kendall Academic Center, Shady Grove III LEED™-Gold Certified project. The 192,000 gsf building, opened November 2007, adds classrooms, computer labs, faculty offices, a library, and other amenities to the University. Though the anticipated operational savings are engineers' estimates, the project managers completed a point-by-point benefit/cost analysis on October 31, 2007. The analysis concluded that the green design premium was 2.4%, though a LEED™ Silver Rating could have been achieved with a 2% allowance. Engineers calculate that because of the green investment, the facility will yield about \$80,000 per year in savings of energy and water/sewer costs. Further, these estimates do not include all of the intangibles and qualitative improvements in the lives and health of students and employees in the building; including, less toxic cleaning products (at no additional cost), healthier indoor materials, and aesthetically pleasing living roofs.



Camille Kendall Academic Center, Shady Grove III
LEED-Gold



Cambria Office Building, Pennsylvania

A challenge with the studies mentioned above is that estimates are based on energy models. For actual energy savings over time, an excellent case study is the Pennsylvania Department of Environmental Protection's Cambria Office Building. The 34,000 gsf LEED™ Gold Certified facility used as State office space was completed in September 2000. Total design and construction cost of the building was approximately \$93 sq/ft, with the regional market rate of similar commercial facilities between \$85-\$100 sq/ft. This finding strongly supports the premise that green does not cost more, but when it is interwoven in the design



and construction, costs are comparable to those of non- LEED™ seeking projects. In 2005, the National Renewable Energy Laboratory conducted a detailed energy performance analysis of the Cambria building. Its findings show a 43% (from \$1.80 sq/ft baseline to \$1.02 sq/ft as built) savings in energy costs and a 40% reduction in energy use. As energy costs continue to rise, the savings will continue to grow. Further, apart from these savings, it is important to note that Cambria project managers used salvaged materials for construction, ensured 74% of all materials were recycled products, utilized healthier materials, and secured natural daylight and views for 88% of its occupants.

Recommendations

During the State's initial green building efforts in 2002, research indicated that cost premiums ranged from 5% - 8%. Studies based on actual green building construction, however, indicate that while high performance green buildings generally cost more than conventional buildings, the cost premium is very modest and lower than is commonly perceived. Based on the studies cited above, the Council recommends the inclusion of a 2% allowance in the estimated cost of each project to assist project teams achieve a LEED™ Silver certification, yet project managers should make all efforts to achieve LEED™ Gold Certification.

Council Recommends the Inclusion of 2% Allowance in the Estimated Cost of Projects, Yet Managers Should Make All Efforts to Achieve Gold



APPENDICES

Appendix I: Proposed “Maryland’s High Performance Green Building Program”

Appendix II: House Bill 942 – MD Green Building Council enabling legislation

Appendix III: LEED Score Sheet – Goodpaster Hall, St. Mary’s College

Appendix IV: LEED Score Sheet – Hammerman Beach Services Building

Appendix V: LEED Score Sheet – University System of Maryland, Shady Grove Center



MARYLAND GREEN BUILDING COUNCIL

HIGH PERFORMANCE GREEN BUILDING PROGRAM

January 9, 2008

The mission and purpose of the Maryland Green Building Council (and this High Performance Green Building Program) is to facilitate the following goals:

- Improving the quality of life in Maryland by mandating high performance buildings with technology and concepts that have been proven to save energy and resources, improve student test scores, reduce employee absenteeism, and reduce health maintenance costs due to unhealthy buildings.
- Promoting the State of Maryland as an innovator in cutting edge technology; attracting the best and brightest work force and businesses vital to a thriving economy.
- Generating local and regional business growth as the economy responds to new opportunities created by emerging markets and technologies.
- Preserving the Chesapeake Bay for recreation, business, commerce, and community life essential to the State's ecological and economic welfare.
- Securing the well being of Maryland citizens in times of crisis by mandating buildings less dependent upon conventional infrastructure and power grids.
- Reducing power demand 15% by the year 2015.
- Assuring fiscal responsibility by mandating high performance green building technology and innovation in all new and renovated fully State funded and owned projects.

A. INTRODUCTION

A.1 Brief overview of the Maryland Green Building Council as established in 2007

On April 24, 2007, Governor Martin O'Malley approved House Bill 942 – Section 4-809 of the State Finance and Procurement Article – entitled “Maryland Green Building Council.” This law re-established the Maryland Green Building Council (the Council) in the Department of General Services (DGS), providing for private sector membership, State agency membership and assistance and staffing by the DGS.

One of the primary tasks of the Council was to report to the Governor and the General Assembly recommendations for the implementation of a State Higher Performance Building Program. This Program shows how these recommendations will be put into practice.



A.2 Building “Green”

“Green Building” is a philosophy of high performance building design, construction, and operation that incorporates the following concepts: using natural resources efficiently; considering the impact of buildings on the local, regional, and global environment; reducing building footprint size; allowing ecosystems to function naturally; conserving and reusing water; treating storm water on site; maximizing the use of local materials; optimizing and quantifying energy performance by installing energy efficient equipment and systems and measurement and verification devices; optimizing climatic conditions through site orientation and design; integrating natural day lighting and ventilation; minimizing the use of mined rare metals and persistent synthetic compounds; and minimizing construction waste by reducing, reusing and recycling materials during all phases of construction and deconstruction. “Green Building” design is an integrated, collaborative, team-oriented process technically and philosophically superior to conventional building design, construction and operation. Additional benefits of this practice include: promoting economic opportunities for the region; providing fiscally responsible buildings through operational savings; promoting the productivity of building users; and reducing the cost of health insurance by improving the quality of the indoor environment for State employees, school students and children, and university employees.

A.3 The Program

The High Performance Green Building Program (Program) was written for the use of all State of Maryland agencies that design and build facilities or prepare programs and budgets for the design and construction of their facilities. It is intended specifically for the use of project managers, capital planners, and the professionals who will design and operate State-owned facilities. Section B describes compliance requirements for all State-owned facilities and provides additional information, which should be considered by State agencies in the planning, design and operations of their proposed facilities. Attachment B-I describes the requirements for design professionals engaged in the design of these State facilities. These will be also included in the Department of General Services (DGS) Procedure Manual for Professional Services. Other agencies engaged in the design and construction of State facilities should provide this Program to their design professionals. Attachment B-II provides suggested additions to Requests for Proposals (RFP) for state projects.

The Program will be reviewed on a yearly basis by the Maryland Green Building Council (Council) and revised as needed to address issues which may occur as this new way of constructing State facilities evolves. The LEED™ rating system is revised every three years by the U.S. Green Building Council (USGBC). Projects shall comply with the latest version in use at the time of the start of design. For all questions concerning this program or for information on registering your project with LEED™, contact:



Maryland Green Building Council
c/o Department of General Services
Office of the Secretary
301 West Preston Street - Room 1401
Baltimore, Maryland 21201
(410) 767-4960

B. GREEN DESIGN AND CONSTRUCTION CRITERIA

The following criteria shall be applied to all State-owned projects funded for design in FY 2009 and beyond that have not yet initiated the Request for Proposal for the selection of an Architectural and Engineering consultant. All projects currently in design with prior funding shall not be required to meet these criteria; however, these projects shall be reviewed by their project teams and reasonable efforts shall be made to incorporate high performance green building principles where practical.

B.1 Criteria and Standards

1. All new buildings designed and constructed by State agencies which are fully funded and owned by the State shall meet or exceed the current version of the U.S. Green Building Council's LEED-NC™ Green Building Rating System Silver rating. Wherever possible, projects shall strive for the LEED-NC™ Gold rating. These projects shall be certified through the LEED™ certification process. Projects which will be required to be LEED-NC™ Silver certified include all new construction projects larger than 7,500 gross square feet, with the exception of building types listed in Item 4 below.
2. All major renovations of existing buildings designed and constructed by State agencies which are fully funded and owned by the State shall meet or exceed the current version of the U.S. Green Building Council's LEED™ Green Building Rating System Silver rating. Wherever possible, projects shall strive for the LEED™ Gold rating. These projects shall be certified through the LEED™ certification process. Projects which are required to be LEED™ Silver certified include all projects larger than 7,500 gross square feet with the exception of building types listed in Item 4 below. A major renovation is defined as a renovation in which the building shell (exterior walls, floors and roof) will be reused for the new construction. In total renovation projects, existing HVAC, electrical, and plumbing systems shall be replaced.
3. All new projects of the types described above which are less than the required square footage shall employ Green Building principles and practices wherever possible. However, projects in this category are not required to be LEED™ Silver certified. The project design professional shall submit a final report describing the building's "Green" features. See Attachment B-i Directions for Design Consultants for further guidance.



4. All projects smaller than those described in Items A through F below, and of the building types listed below, or similar building types (which are essentially unoccupied), are not required to be LEED™ Silver certified. However, the design of such facilities shall employ applicable Green Building principles wherever practical in their design and construction using the LEED™ Silver rating as a goal. The project design professional shall submit a final report describing the building's "Green" features. See Attachment B-I Directions for Design Consultants for further guidance.
 - A. Warehouse /Storage Facilities
 - B. Garages
 - C. Maintenance Facilities
 - D. Transmitter Buildings
 - E. Pumping Stations
 - F. Similar Approved Building Types

5. The following is a list of LEED™ System credits which are mandatory for all projects which are required to be LEED™ Silver certified. Requirements for some of these and other non-listed credits may be mandatory under other State programs.
 - Sustainable Sites
 - Light Pollution Reduction – 1 point
 - Water Efficiency
 - Water Use Reduction – 2 points
 - Energy and Atmosphere
 - Optimize Energy Performance – 4 points
 - Materials and Resources
 - Construction Waste Management – 2 points
 - Indoor Environmental Quality
 - Low Volatile Organic Compounds (VOC) Emitting Materials – 2 points

B.2 Directives to State Agencies

1. Sites for eligible projects shall be selected in accordance with LEED™ criteria and Smart Growth initiatives (as defined by the Maryland Department of Planning). Sites shall be reviewed by the Department of General Services (DGS) Office of Real Estate and the Department of Planning's Property Clearinghouse prior to final selection.
2. All projects which are required to be LEED™ Silver certified shall be registered and certified using the Department of General Services' or the University of Maryland's U.S. Green Building Council membership.
3. Provide space allocation for recycling activities in all new building programs.



4. State agencies may apply for a waiver in the event of undue hardship. The using Agency shall provide a brief (no more than two pages) letter of request for a waiver to the Council explaining why a proposed project should not meet Program requirements. The waiver request should be provided in MS Word or pdf format to DGS for distribution and review and consideration by the Council three months prior to the submission of the Part I building program to the Department of Budget and Management. Submit the waiver request to:

Maryland Green Building Council
c/o Department of General Services
Office of the Secretary
301 West Preston Street - Room 1401
Baltimore, Maryland 21201
(410) 767-4960

B.3 Attachments

Attachment B-I : Directions for Design Consultants

Attachment B-II: Request for Proposals -- Suggested Additions



Attachment B-I: Directions for Design Consultants

1. The primary design consultant shall designate an individual to serve as the Green Building Coordinator (GBC) for the project. The GBC may be a member of the primary firm, a consulting individual, or a firm licensed to practice architecture or engineering in the State of Maryland. The GBC shall be responsible for facilitating and coordinating all related high performance green building activities and shall have either performed previous LEED™ System certifications or shall adequately demonstrate the knowledge necessary to perform the work necessary to obtain a LEED™ Certification. The GBC must be approved by the State during the Architectural and Engineering (A/E) services selection process.
2. The design of all projects required to be LEED™ Silver certified shall employ an integrated design approach. Prior to the start of design, the design consultant's GBC shall conduct a green building pre-design meeting with all consultant team members, the State project manager, and members of the using Agency team to establish the direction and scope of green building principles, including construction and maintenance procedures, to be employed in this project to attain the LEED™ Silver rating. These principles shall be recorded in writing as the "Green Building Plan" (GBP). The GBP shall be updated and submitted for review at each design phase to track any changes, modifications, or additions. The A/E shall provide three copies of the GBP at the conclusion of the project. Provide one copy for the project file, one copy to the building user, and one copy to the Maryland Green Building Council. The GBP shall follow the format of the LEED™ Green Building Rating System and the plan may be used as the framework for the official submission to the USGBC for certification. All official LEED™ interpretations shall be included in this section.
3. The A/E shall develop and provide a "Green Building Operations and Maintenance Manual" outlining operation and maintenance procedures and schedules for all materials and systems that contribute to the LEED™ Silver rating. This manual shall be provided in addition to the usual submission of operating and maintenance manuals and shall focus on system maintenance required to keep green features operating as intended. The intent is to provide system maintenance guidelines as opposed to procedures for maintaining individual pieces of equipment as provided in the equipment operating and maintenance manuals. The manual shall be submitted at the 50% Construction Documents (CD) phase for review, at the 100% CD submission, and after project completion. Refer to Item 8 below for more information on this manual.
4. The design consultant shall identify and provide the State project manager with a written account of any conflicts between Program requirements and other requirements of the State or the project program.
5. The design consultant's GBC shall develop and submit all documentation necessary to the U.S. Green Building Council's LEED™ Program for certification of the project for the LEED™ Silver or higher rating. Typically, the project shall be registered with LEED™ at the start of design. The final LEED™ certification shall be submitted after



completion of construction. The cost of registering the project with LEED™ as well as a reasonable cost for LEED™ interpretations and consultation shall be included in the consultant's price proposal. All projects shall be registered under the Department of General Services' or the University of Maryland's U.S. Green Building Council membership. A copy of the complete LEED™ submission package shall be submitted to the Maryland Green Building Council.

6. The design consultant shall provide a separate specification section, which calls attention to special construction issues related to high performance green buildings and the LEED™ rating such as construction materials, construction recycling, special demolition considerations, and potential special construction sequencing issues. This section is in addition to the standard specification sections and is intended to clearly call these special issues to the attention of the contractor during the bidding phase.
7. Reporting
 - A. For projects that are required to be LEED™ Silver certified, the A/E shall submit one final copy of the LEED™ Certification Submission, stamped and signed with A/E's license stamp, the official LEED™ Certificate, the final Green Building Plan and three copies of the Green Building Operations and Maintenance Manual to:

Maryland Green Building Council
c/o Department of General Services
Office of the Secretary
301 West Preston Street, Room 1401
Baltimore, Maryland 21201
 - B. For projects that are not required to be LEED™ Silver certified, the A/E shall submit a narrative report describing the high performance green elements of the projects. Using the LEED™ score sheet, the A/E shall provide a brief description for each available credit describing how that credit was addressed or an explanation of why it was not addressed. The narrative shall be submitted to the project manager and one copy shall be sent to the address listed above.
8. The Green Building Coordinator shall review the project and develop the Green Building Operation and Maintenance Manual based on the green features and operations of each particular building. The manual shall be submitted in addition to the usual Operations and Maintenance Manuals (O&M) typically provided. It should not include maintenance of equipment (pumps for example), which are a part of a "Green Building" system. That information should be provided in the typical O&M manual. In other words, a comprehensive manual of any and all recommendations for maintenance and operations with the specific goal of maintaining high performance green building and energy efficient building operations for the life of the building is required. Examples of the types of information to be provided include, but are not limited to, the following:
 - A. Recommendations on periodic duct inspection or cleaning as well as HVAC filter changes to maintain indoor air quality (IAQ).



- B. Recommended “green” cleaning products and materials and cleaning schedules for finishes (especially for “green materials”) considering IAQ and extending the life of the material (if the material lasts longer, it does not have to be replaced or put in a landfill).
- C. Information on minimum paint reflectance for repainting interior areas using reflected day lighting.
- D. A list of the low VOC paint, sealant and other products and the colors used (provide specific manufacturer’s name and product description).
- E. Schedule recommendations for cleaning of glass and light shelves to maintain reflectance and light transmission for day lighting systems.
- F. Operation recommendations for HVAC systems (these should be available from the commissioning report).
- G. A schedule for inspecting and cleaning walk-off mat recesses to maintain IAQ.
- H. Recommendations for eco-friendly pest control.
- I. Maintenance recommendations for “living roof” plantings.
- J. Provide a list of local sources for recycling used material such as carpet, ceiling panels and drywall.
- K. Provide a list of the recyclable materials used in the building.
- L. Provide a list of the manufacturers and suppliers of all “green” materials used in the building.
- M. Provide a list of proper lamps (high efficiency/ long life light bulbs) for replacement.
- N. Provide a list of sources of recycled paper products (toilet paper and paper towels) and eco-friendly cleaning products.
- O. Provide a simple list of instructions for building occupants emphasizing the use of the building’s green features such as the purpose of walk-off mats and how to use composting toilets as well as simple instructions for turning out lights, locations of recycling stations, use of individual HVAC controls, water use reduction methods and other green practices.

Schedule items shall be organized in a one-year calendar format. This information can be collected as the project progresses with the hope of simplifying the effort at the end of the project. The manual shall be prepared in a three-ring binder format to allow for convenient reproduction.



Attachment B-II: Request for Proposals – Suggested Additions

The following items are suggested as additions to Requests for Proposals for Architectural and Engineering (A/E) Services for high performance green building projects and for projects that are not required to be LEED™ Silver certified. Items should be edited as needed for each specific project.

1. Green Building Projects required to be LEED™ Silver certified.
 - A. The Maryland Green Building Council has established the High Performance Green Building Program (Program). The Program requires that eligible buildings constructed by the State shall meet minimum standards of performance based on the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED™) Green Building Rating System.
 - B. The project shall be required to be LEED™ Silver (or higher, if desired by using Agency) certified.
 - C. Refer to Attachment B-I of this Program document for requirements.
 - D. Submitters shall provide, with their proposal, the name of the Green Building Coordinator (GBC) as required by the Program. The GBC may be a member of the A/E firm or a consulting individual or a firm licensed to practice architecture or engineering in the State of Maryland. The submission shall include a complete GBC resume describing specific experience and qualifications that will demonstrate the ability to perform the work specified; providing descriptions of recent and relevant experience in directing environmentally-responsible design and construction. The submission shall also include a list of projects for which this individual has performed a similar role and state whether the prime A/E firm has worked with this consultant previously.
 - E. Provide descriptions of recent and relevant experience by the primary A/E firm as well as the mechanical, electrical and site design consultants in providing design services for environmentally-responsible building projects. Provide a list of built and unbuilt projects for which these firms have special related experience.
 - F. The qualified firm shall include with their Price Proposal an itemized listing of all costs associated with the design and certification of this project as a LEED™ Silver Green Building. These costs shall include, but shall not be limited to, professional fees of the Green Building Coordinator, additional design costs (provide justification) which may be attributed to designing a green building, LEED™ Certification Registration and Documentation, and reimbursable expenses for reproduction of related materials and reports.



2. Projects Which Are Not Required to be LEED™ Silver Certified.

- A. The Maryland Green Building Council established the High Performance Green Building Program. The Program requires that eligible buildings constructed by the State shall meet minimum standards of performance based on the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED™) Green Building Rating System
- B. This project, in accordance with the Program, is not required to be Silver certified by the LEED™ system. However, all State projects are encouraged to use high performance green building principles in their design with the Silver rating as a goal. The Program does require project teams for all projects which are not required to be LEED™ Silver certified to report their efforts to the Maryland Green Building Council as follows:

For projects which are not required to be LEED™ Silver certified, the A/E shall submit a narrative report describing the “green” elements of the projects. Using the LEED™ score sheet, the A/E shall provide a brief description for each available credit describing how that credit was addressed or an explanation of why it was not addressed. The narrative shall be submitted to the project manager and one copy shall be sent to the Maryland Green Building Council at the following address:

Maryland Green Building Council
c/o Department of General Services
Office of the Secretary
301 West Preston Street, Room 1401
Baltimore, MD 21201

- C. Proposers are encouraged to submit a brief description in their proposal of their firm's previous experience in the design of high performance green buildings, as well as their intentions for pursuing the stated goal for this project for consideration by the qualification committee.
- D. The qualified proposer shall provide a breakdown of the costs associated with this report in the Price Proposal.



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CHAPTER 116

(House Bill 942)

AN ACT concerning

High Performance Buildings Act **Maryland Green Building Council**

FOR the purpose of ~~requiring certain buildings to be high performance buildings; requiring certain buildings that are renovated to be high performance buildings under certain circumstances; exempting certain building types from certain high performance building standards; providing for the applicability of this Act; defining a term; and generally relating to high performance buildings~~ establishing the Maryland Green Building Council in the Department of General Services; providing for the membership and terms of the Council; prohibiting certain members of the Council from receiving compensation for serving on the Council; authorizing certain members of the Council to receive reimbursement for certain expenses; requiring the Governor to appoint the chair; providing that the Council may act with an affirmative vote of a certain number of members; requiring the Department of General Services to provide certain staff support to the Council; requiring certain other agencies and units of State government to furnish assistance to the Council under certain circumstances; providing for duties of the Council to be accomplished on or before a certain date; requiring a certain report by the Council; and generally relating to the Maryland Green Building Council.

~~BY repealing and reenacting, with amendments,~~
~~Article – State Finance and Procurement~~
~~Section 3-602(d)~~
~~Annotated Code of Maryland~~
~~(2006 Replacement Volume and 2006 Supplement)~~

BY adding to
Article – State Finance and Procurement
Section ~~3-602.1~~ 4-809
Annotated Code of Maryland
(2006 Replacement Volume and 2006 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:



Article – State Finance and Procurement

~~§ 602.~~

~~(d) (1) (i) In this paragraph, “high performance building” means a building that:~~

~~1. achieves at least a silver rating according to the U.S. Green Building Council’s LEED (Leadership in Energy and Environmental Design) Green Building Rating System as adopted in 2001 or subsequently by the Maryland Green Building Council;~~

~~2. achieves at least a two globe rating according to the Green Globes Program as adopted by the Green Building Initiative;~~

~~3. achieves at least a comparable numeric rating according to a nationally recognized, accepted, and appropriate numeric sustainable development rating system, guideline, or standard; or~~

~~4. meets nationally recognized, consensus based, and accepted green building guidelines, standards, or systems approved by the State.~~

~~(ii) 1. [A] Except as provided in § 3-602.1 of this SUBTITLE, A unit of State government requesting an appropriation for preliminary planning of a proposed capital project may include in its request a justification for proposing that a building in the project is appropriate for design as a high performance building.~~

~~2. [If] EXCEPT AS PROVIDED IN § 3-602.1 OF THIS SUBTITLE, IF justification is submitted under subparagraph 1 of this subparagraph concerning a building in a proposed capital project, the Department shall review whether it is practicable and fiscally prudent to incorporate in the capital project the use of a comprehensive process of design and construction that would result in the building being a high performance building.~~

~~(2) Before an appropriation may be authorized for preliminary planning of a proposed capital project:~~

~~(i) the unit of the State government requesting the appropriation shall submit to the Department a program describing, in detail, the scope and purpose of the project; and~~



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~~(ii) the Secretary of Budget and Management must approve the program.~~

~~(3) Before an appropriation may be authorized for construction of a proposed capital project:~~

~~(i) the unit of State government requesting the appropriation shall submit to the Departments of Budget and Management and General Services a detailed design program, which shall include all information required by the Departments; and~~

~~(ii) both the Secretary of Budget and Management and the Secretary of General Services must approve the detailed design program.~~

~~3-602.1.~~

~~(A) EXCEPT AS PROVIDED IN SUBSECTION (C) OF THIS SECTION, IF A CAPITAL PROJECT INCLUDES THE CONSTRUCTION OF A BUILDING THAT IS 5,000 SQUARE FEET OR GREATER, THE BUILDING SHALL BE CONSTRUCTED TO BE A HIGH PERFORMANCE BUILDING, AS DEFINED IN § 3-602(D) OF THIS SUBTITLE.~~

~~(B) (1) FOR THE PURPOSES OF THIS SUBSECTION, "MAJOR RENOVATION" MEANS THE RENOVATION OF A BUILDING WHERE:~~

~~(i) THE COST OF THE RENOVATION IS GREATER THAN 50% OF THE BUILDING'S ASSESSED VALUE; AND~~

~~(ii) THE SCOPE OF THE RENOVATION IS 5,000 SQUARE FEET OR GREATER.~~

~~(2) EXCEPT AS PROVIDED IN SUBSECTION (C) OF THIS SECTION, IF A CAPITAL PROJECT INCLUDES THE MAJOR RENOVATION OF A BUILDING, THE BUILDING SHALL BE RENOVATED TO BE A HIGH PERFORMANCE BUILDING, AS DEFINED IN § 3-602(D) OF THIS SUBTITLE.~~

~~(C) THE FOLLOWING TYPES OF UNOCCUPIED BUILDINGS ARE NOT REQUIRED TO BE CONSTRUCTED OR RENOVATED TO BE HIGH PERFORMANCE BUILDINGS:~~

~~(1) WAREHOUSE AND STORAGE FACILITIES;~~



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- ~~(2) GARAGES;~~
- ~~(3) MAINTENANCE FACILITIES;~~
- ~~(4) TRANSMITTER BUILDINGS;~~
- ~~(5) PUMPING STATIONS; AND~~
- ~~(6) OTHER SIMILAR TYPES OF BUILDINGS, AS DETERMINED BY THE DEPARTMENT.~~

4-809.

- (A) THERE IS A MARYLAND GREEN BUILDING COUNCIL.
- (B) THE COUNCIL SHALL INCLUDE:
 - (1) THE SECRETARY OF GENERAL SERVICES, OR THE SECRETARY'S DESIGNEE;
 - (2) THE SECRETARY OF BUDGET AND MANAGEMENT, OR THE SECRETARY'S DESIGNEE;
 - (3) THE SECRETARY OF THE ENVIRONMENT, OR THE SECRETARY'S DESIGNEE;
 - (4) THE SECRETARY OF HOUSING AND COMMUNITY DEVELOPMENT, OR THE SECRETARY'S DESIGNEE;
 - (5) THE SECRETARY OF NATURAL RESOURCES, OR THE SECRETARY'S DESIGNEE;
 - (6) THE SECRETARY OF PLANNING, OR THE SECRETARY'S DESIGNEE;
 - (7) THE SECRETARY OF TRANSPORTATION, OR THE SECRETARY'S DESIGNEE;
 - (8) THE DIRECTOR OF THE MARYLAND ENERGY ADMINISTRATION, OR THE DIRECTOR'S DESIGNEE;



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(9) THE DIRECTOR OF THE INTERAGENCY COMMITTEE ON PUBLIC SCHOOL CONSTRUCTION, OR THE DIRECTOR'S DESIGNEE;

(10) THE CHANCELLOR OF THE UNIVERSITY SYSTEM OF MARYLAND, OR THE CHANCELLOR'S DESIGNEE; AND

(11) SIX MEMBERS APPOINTED BY THE GOVERNOR TO REPRESENT ENVIRONMENTAL, BUSINESS, AND CITIZEN INTERESTS, ONE OF WHOM HAS EXPERTISE IN ENERGY CONSERVATION OR GREEN BUILDING DESIGN STANDARDS.

(C) (1) THE TERM OF A MEMBER APPOINTED BY THE GOVERNOR IS 2 YEARS.

(2) THE TERMS OF APPOINTED MEMBERS ARE STAGGERED.

(3) AT THE END OF A TERM, A MEMBER CONTINUES TO SERVE UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(4) A MEMBER WHO IS APPOINTED AFTER A TERM HAS BEGUN SERVES ONLY FOR THE REMAINDER OF THAT TERM AND UNTIL A SUCCESSOR IS APPOINTED AND QUALIFIES.

(5) THE GOVERNOR MAY REMOVE AN APPOINTED MEMBER FOR INCOMPETENCE, MISCONDUCT, OR FAILURE TO PERFORM THE DUTIES OF THE POSITION.

(6) A MEMBER APPOINTED BY THE GOVERNOR MAY NOT RECEIVE COMPENSATION, BUT IS ENTITLED TO REIMBURSEMENT FOR EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN THE STATE BUDGET.

(D) (1) THE GOVERNOR SHALL APPOINT A CHAIR FROM AMONG THE COUNCIL MEMBERS.

(2) THE COUNCIL MAY ACT WITH AN AFFIRMATIVE VOTE OF NINE MEMBERS.



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(E) STAFF SUPPORT TO THE COUNCIL SHALL BE PROVIDED BY THE DEPARTMENT OF GENERAL SERVICES, WITH ASSISTANCE AS NECESSARY TO BE FURNISHED BY OTHER INVOLVED AGENCIES AND UNITS OF STATE GOVERNMENT.

(F) ON OR BEFORE SEPTEMBER 30, 2007, THE MARYLAND GREEN BUILDING COUNCIL SHALL:

(1) EVALUATE CURRENT HIGH PERFORMANCE BUILDING TECHNOLOGIES;

(2) PROVIDE RECOMMENDATIONS CONCERNING THE MOST COST-EFFECTIVE GREEN BUILDING TECHNOLOGIES THAT THE STATE MIGHT CONSIDER REQUIRING IN THE CONSTRUCTION OF STATE FACILITIES, INCLUDING CONSIDERATION OF THE ADDITIONAL COST ASSOCIATED WITH THE VARIOUS TECHNOLOGIES; AND

(3) DEVELOP A LIST OF BUILDING TYPES FOR WHICH GREEN BUILDING TECHNOLOGIES SHOULD NOT BE APPLIED, TAKING INTO CONSIDERATION THE OPERATIONAL ASPECTS OF FACILITIES EVALUATED, AND THE UTILITY OF A WAIVER PROCESS WHERE APPROPRIATE; AND.

(G) ON OR BEFORE NOVEMBER 1, 2007, AND EVERY YEAR THEREAFTER, THE COUNCIL SHALL REPORT TO THE GOVERNOR AND THE GENERAL ASSEMBLY, IN ACCORDANCE WITH § 2-1246 OF THE STATE GOVERNMENT ARTICLE, AS TO RECOMMENDATIONS FOR THE IMPLEMENTATION PLAN FOR A STATE HIGHER PERFORMANCE BUILDING PROGRAM AND ANY PROGRESS THAT HAS BEEN MADE DURING THE PRECEDING YEAR.

~~SECTION 2. AND BE IT FURTHER ENACTED, That Section 1 of this Act shall apply to capital projects that have not initiated a Request For Proposal for the selection of an architectural and engineering consultant on or before the effective date of this Act.~~

~~SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect October June 1, 2007.~~

Approved by the Governor, April 24, 2007.



USM Shady Grove Educational Center III

LEED™ Credit Scorecard

LEED™ Green Building Rating System, version 2.1, final version w/ revisions

September 28, 2007

41		28		Total Project Score		Certified 26 to 32 points Silver 33 to 38 points Gold 39 to 51 points Platinum 52 or more points		Possible Points 69	
8	6	6	6	Sustainable Sites		Possible Points 14		Possible Points 13	
Y	?	N							
1	1	1	1	1	1	1	1	1	1
8 Sustainable Sites									
Preq 1 Erosion & Sedimentation Control Credit 1 Site Selection Credit 2 Development Density Credit 3 Brownfield Redevelopment Credit 4.1 Alternative Transportation, Public Transportation Access Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Ro Credit 4.3 Alternative Transportation, Alternative Fuel Refueling Stat Credit 4.4 Alternative Transportation, Parking Capacity and Carpooli Credit 5.1 Reduced Site Disturbance, Protect or Restore Open Space Credit 5.2 Reduced Site Disturbance, Development Footprint Credit 6.1 Stormwater Management, Rate and Quantity Credit 6.2 Stormwater Management, Treatment Credit 7.1 Landscape & Exterior Design to Reduce Heat Islands, Non- Credit 7.2 Landscape & Exterior Design to Reduce Heat Islands, Roof Credit 8 Light Pollution Reduction									
3	2	2	2	Water Efficiency		Possible Points 5		Possible Points 15	
Y	?	N							
1	1	1	1	1	1	1	1	1	1
3 Water Efficiency									
Credit 1.1 Water Efficient Landscaping, Reduce by 50% Credit 1.2 Water Efficient Landscaping, No Potable Use or No Irrigatio Credit 2 Innovative Wastewater Technologies Credit 3.1 Water Use Reduction, 20% Reduction Credit 3.2 Water Use Reduction, 30% Reduction									
7	10	10	10	Energy & Atmosphere		Possible Points 17		Possible Points 5	
Y	?	N							
2	2	2	2	2	2	2	2	2	2
7 Energy & Atmosphere									
Preq 1 Fundamental Building Systems Commissioning Preq 2 Minimum Energy Performance Preq 3 CFC Reduction in HVAC&R Equipment Credit 1.1 Optimize Energy Performance, 20% New / 10% Existing Credit 1.2 Optimize Energy Performance, 30% New / 20% Existing Credit 1.3 Optimize Energy Performance, 40% New / 30% Existing Credit 1.4 Optimize Energy Performance, 50% New / 40% Existing Credit 1.5 Optimize Energy Performance, 60% New / 50% Existing Credit 2.1 Renewable Energy, 5% Credit 2.2 Renewable Energy, 10% Credit 2.3 Renewable Energy, 20% Credit 3 Additional Commissioning Credit 4 Elimination of HCFC's and Halons Credit 5 Measurement & Verification									
7	4	4	4	Indoor Environmental Quality		Possible Points 15		Possible Points 5	
Y	?	N							
1	1	1	1	1	1	1	1	1	1
7 Indoor Environmental Quality									
Preq 1 Minimum IAQ Performance Preq 2 Environmental Tobacco Smoke (ETS) Control Credit 1 Carbon Dioxide (CO2) Monitoring Credit 2 Ventilation Effectiveness Credit 3.1 Construction IAQ Management Plan, During Construction Credit 3.2 Construction IAQ Management Plan, Before Occupancy Credit 4.1 Low-Emitting Materials, Adhesives & Sealants Credit 4.2 Low-Emitting Materials, Paints Credit 4.3 Low-Emitting Materials, Carpet Credit 4.4 Low-Emitting Materials, Composite Wood Credit 5 Indoor Chemical & Pollutant Source Control Credit 5.1 Controllability of Systems, Perimeter Credit 5.2 Controllability of Systems, Non-Perimeter Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992 Credit 7.2 Thermal Comfort, Permanent Monitoring System Credit 8.1 Daylight & Views, Daylight 75% of Spaces Credit 8.2 Daylight & Views, Views for 90% of Spaces									
5	5	5	5	Innovation & Design Process		Possible Points 5		Possible Points 1	
Y	?	N							
1	1	1	1	1	1	1	1	1	1
5 Innovation & Design Process									
Credit 1.1 Innovation in Design: 40% Locally Manufactured Materials Credit 1.2 Innovation in Design: Green User Education Program Credit 1.3 Innovation in Design: Green Housekeeping Plan									



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