

buildings for the

NEXT BILLION

By Dennis Creech and Nancy Musselwhite, CEcD

economic developers love new buildings – especially build-to-suit or preleased with the promise of job creation and a rise in property values. Atlanta has seen innumerable new buildings, job creation that places our city consistently in the top ten, and stable or rising property values in a time of national property value dilution. We have a built environment to be envied. We are also living with the effects of a significant drought and air quality that places us in the ranks of marginal non-attainment under the new ozone standard.

Traditional environmental foci of economic developers (soil erosion, endangered plant/animal life, burial grounds, protection of waterways, brown-field remediation) by themselves are not sufficient to create a prosperous economy with high quality of life factors for the next billion people. Economic developers concerned with livable and sustainable solutions for their communities must consider *green buildings*, facilities designed to lessen the deleterious impact of the built environment, as we explore ways to increase capacity to prepare for the next billion. Now is the time for a 360-degree view of enlightened stewardship: a marriage of sustainable and innovative design, materials, and methods spanning public, private, and nonprofit facilities. The development and architecture community pushed boldly into the sustainable design arena but the public sector has been slower to move. One city in California stepped into the gap in late 2007 with a bold proposal.



Management Building, Technology Square, Georgia Institute of Technology, Atlanta, LEED-NC, v.2/v.2.1 – Level: Silver

AN AGGRESSIVE WEST COAST PROPOSAL

In December 2007, San Francisco Mayor Gavin Newsom delivered the broadest green building proposal in the US. In comments made on the steps of Tishman Speyer's planned LEED™ (Leadership in Energy and Environmental Design) Silver office building, Newsom laid out a proposed ordinance that would require newly constructed commercial buildings over 5,000 sft, residential buildings over 75 feet in height, and renovations on buildings over 25,000 sft be subject to an unprecedented level of LEED and green building certifications.

“We’ve got to stop playing within the margins and get serious about addressing our reliance on fossil fuels,” said Newsom. “A lot of people don’t realize that their homes and businesses also create a

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EXAMINING HIGH PERFORMANCE GREEN BUILDINGS TO SUPPORT SUSTAINABLE GROWTH AND HIGH QUALITY OF LIFE MEASURES

The bottom line for economic developers has always been economic prosperity and social well-being. However, as we approach a billion people and recognize the impact of built structures on our limited resources, it becomes imperative for economic development practitioners to embrace sustainable solutions that strengthen a healthy and dynamic balance between environmental, social and economic prosperity. Economic developers must consider green buildings, facilities designed to lessen the deleterious impact of the built environment, as we explore ways to increase capacity to prepare for the next billion. Green building techniques will have a dramatic economic, health, and environmental impact on our region, our state, and our country.

The key to the development of Atlanta's green cluster lies in a policy commitment of the state's largest municipality combined with an enlightened development community, a strong network of exceptional nonprofit and institutional players, and a development community and network of corporate owners and tenants that have embraced enlightened stewardship through sustainable initiatives.

major carbon footprint, so today, by proposing these strict green building standards for our city, we're saying enough is enough. It's time to tackle global warming and climate change on all fronts.”¹

According to the U.S. Green Building Council, buildings have significant impact on the economy, productivity, and urban air quality. In the U.S., buildings account for:

- 65 percent of electricity consumption,
- 36 percent of energy use,
- 30 percent of greenhouse gas emissions,
- 30 percent of raw materials use,
- 30 percent of waste output (136 million tons annually), and
- 12 percent of potable water consumption.²

According to the US Energy Information Administration, the impact of buildings on US greenhouse emissions actually approaches 48 percent when the energy to extract, process, and transport building materials is considered. Of particular importance to the parched Southeast is the strong connection between energy and water. The production of electricity is the largest industrial user of water. According to the National Renewable Energy Laboratory and others, each kilowatt-hour of electricity produced by central power plants takes roughly two gallons of water. Saving energy preserves water.

The sustainable building effort is spearheaded by the U.S. Green Building Council (USGBC), a nonprofit organization created to transform the way buildings and communities are designed, built, and operated. The DC-based entity created the rating standard called LEED that has become the defining standard across all building types when it comes to sustainable site development, water savings, energy efficiency, materials and resources selection, and indoor environmental quality. Since 2000, 1100 projects have been certified for LEED ratings by the USGBC using a menu of 69 points toward certification in five progressive levels: Certified, Bronze, Silver, Gold, and Platinum.

The impact of the USGBC's work is being felt in communities across the US and in a number of foreign countries. Their 13,000 member companies and organizations and 72 local chapters and affiliates unite around a common cause: a sustainable built environment within one generation.

As the market accepts the value proposition of sustainable development, the role of the USGBC and local nonprofit partners like Atlanta-based Southface Energy Institute will be to strengthen bridges among developers, building owners and managers, architects and engineers, contractors and subcontractors, product and building system manufacturers, nonprofits, and public sector players.

The role of the economic development (ED) community will mirror educational and bridge-building efforts of such entities. ED practitioners can prepare for the next billion by:

- educating elected officials, local developers, and end users on the advantages of green buildings from an operating cost, asset value, and life cycle optimization perspective;
- suggesting targeted incentives to encourage development of sustainable structures and neighborhoods; and
- uniting analyses with policy and practice at the local and state level.

Why are economic developers discussing sustainable building practices? The simple answer is that green buildings deliver benefits on a number of levels. Green development reduces the operating costs of facilities (*economic benefits*), improves live-work-play environments (*social benefits*), uses existing resources effectively (*environmental benefits*), and supports the positioning of a community as an enlightened fiscally-conservative destination focused on developing a built environment for tomorrow's inhabitants and visitors (*branding benefits*).

Atlanta is one of the fastest-growing cities in the US. Atlanta also contains a concentration of LEED-certified buildings, as well as 4000 single-family and 1500 multi-family residences certified to local EarthCraft House guidelines. EarthCraft is a local program that reduces utility bills for the homeowner and protects the environment by building green. The key to the development of Atlanta's green cluster lies in a policy commitment of the state's largest municipality combined with an enlightened development community, a strong network of exceptional nonprofit and institutional players, and a development community and network of corporate owners and tenants that have embraced enlightened stewardship through sustainable initiatives.

AN EARLY PROPONENT: SOUTHFACE ENERGY INSTITUTE

Founded in 1978, nonprofit Southface Energy Institute provides environmental education and outreach programs to the nonprofit, foundation, corporate, and government sectors. Recognized for excellence by the U.S. Department of Energy; U.S. Environmental Protection Agency; American Institute of Architects; American Society of Heating, Refrigeration and Air Conditioning Engineers; National Association of Home Builders; Earth Share of Georgia and numerous others, Southface began as a grassroots organization and today sponsors programs and services across the South which reach 40,000 people annually.

Perhaps what sets Southface apart from traditional environmental organizations is its understanding that the marketplace is the greatest force for advancing environmental change. Southface has forged partnerships to advance green buildings and sustainable development with diverse business interests including the Greater Atlanta Home Builders Association, Georgia Power, the Metro Atlanta Chamber of Commerce, and The Home Depot.

Southface is active in the policy arena and was a force behind Georgia and Virginia adopting some of the nation's most aggressive tax incentive programs for greening affordable housing. The result has been the commitment of private developers to construct over 1,000 green affordable housing units in just the first year of the programs. Southface is also active with local governments in their efforts to craft sustainable development policies that are market-based.

A LANDMARK DECISION BY AN EDUCATIONAL INSTITUTION

Emory University, a world-class private university nestled just outside Atlanta's city boundaries, has spent 20 years thinking about green buildings. Facilities management, faculty, and staff which met regularly with the university's Committee on the Environment to evaluate new building projects, sent a small group to a Second Nature workshop in 1999 in which LEED was outlined. The participants shared their passion for the idea with colleagues on campus and secured buy-in from trustees to try a LEED building. About the same time, the campus developed an environmental mission statement and LEED certification of campus facilities supported the initiative.

The concept of *doing the right thing* from an environmental perspective blended well with the finan-

cial case of lowering energy consumption of campus facilities. "We've been tracking the energy consumption of our buildings and the LEED buildings have been performing much better than others," states Laura Case, project manager/facilities at Emory and a LEED accredited professional. "Looking at the energy calculations you're required to do for LEED... some of the newer buildings are



Whitehead Biomedical Research Building, Emory University, LEED-NC v2.0, Level: Silver



Winship Cancer Institute, Emory University, LEED-NC v2.0 Certification

tracking close to 30 percent lower."

With five LEED-certified buildings and three more with documentation in and awaiting certification, Emory hopes to have over 2 million sft of LEED-certified space on

campus within the next couple of years.

The Department of Defense, Ames Laboratory, Department of Agriculture Laboratories, and numerous colleges and universities have visited Emory to see its green build policies in practice. Guests on Emory's green buildings tour are exposed to ideas they can adopt immediately. "We capture condensate water off air conditioning coils. We send it to a cooling tower in one project and to a cistern for irrigation in another project," states Case. "It's free water." In one of the driest years in Georgia's memory, who can argue with free water?

A TIMELY STAND BY THE CITY OF ATLANTA

The city of Atlanta passed Ordinance #03-0-1693 in December 2003 stating "the City of Atlanta shall integrate green and/or sustainable building principles and practices into the design, construction, and operations of all city facilities, and city-funded projects to the fullest extent possible and at minimum to the extent described in section 75-19."³

The Atlanta Development Authority, the city's lead economic development entity, is a key propo-

ment in providing leadership and guidance on sustainable building principles and practices. As a result, ADA has partnered with municipal agencies across service areas to promote the benefits of green buildings to the city's triple bottom line – fiscal, social, and environmental.

Throughout Mayor Shirley Franklin's two terms as mayor of Atlanta, the issues of sound fiscal management, efficient service delivery, water resource management, economic development, community revitalization, and environmental sustainability have remained top priorities. Encouraging green buildings within the city is a natural policy progression for an administration focused on fiscal responsibility, positive social outcomes, and sustainability.

Mayor Franklin's New Century Economic Development Plan, the city's first comprehensive economic development plan, set ambitious five-year goals for job creation, commercial and residential development, affordable workforce housing, crime, high school graduation rates, and sustainability by targeting increased greenspace and parks. The plan called for coordinating ten broad initiatives with over 50 economic development partners and executing on a range of action items linked to each initiative. These initiatives are intended to help the city reach its goals of increasing greenspace by 1,900 acres, producing 10,000 workforce affordable housing units, beginning the Atlanta BeltLine project (a ring of greenspace, trails, transit, and new development over 22 miles of historic rail segments that encircle the urban core), and the revitalization of six underdeveloped areas.

While the city of Atlanta's green ordinance sets the example, Charles Whatley, director of commerce and entrepreneurship for the Atlanta Development Authority (ADA), points out that, "private investment drives real estate development and value creation. We are making the business case for green buildings and providing incentives where possible. Our next step is to develop green building policies and an incentive toolkit that will allow us to increase the production of green build-

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ings, both commercial and residential, throughout the city."

Green and Affordable. The Bureaus of Housing, Planning, Buildings, and ADA have teamed with Southface to develop green building policies and to ensure that plan reviewers and inspectors understand green building principles. The Bureau of Housing is working with the Enterprise Community and Southface to train the staff of Community Development Corporations that receive funding from the city of Atlanta in the ways of Enterprise's Green Community program. Terri Lee, director, Bureau of Housing for the city of Atlanta, is working toward having all affordable and market housing produced by Atlanta's Community Development Corporations use green building standards.

The ABCs of LEED

Site-plan for sustainability

- Control erosion/sedimentation
- Evaluate solar access
- Mitigate storm water on-site
- Preserve/restore vegetation
- Evaluate pedestrian/transit/vehicle accessibility
- Design for longevity

Improve energy efficiency

- Design, install, and calibrate building systems for maximally efficient operations at minimal levels of energy consumption
- Design to exploit natural light

Conserve materials

- Use recycled building materials
- Reduce construction/demolition waste
- Reduce occupant waste through comprehensive recycling plans/waste management

Improve air quality

- Reduce CFCs in HVAC-R equipment
- Improve air quality inside the built environment by establishing standards for indoor air quality
- Improve air quality outside the built environment by venting cleaner air and controlling environmental tobacco smoke

Safeguard water

- Control/prevent run-off
- Capture rainwater and condensate
- Reuse gray water
- Reduce use (low-flow toilets, etc.)

Incentives for Green. ADA, Planning, Housing and Law are exploring ways to use incentives to stimulate the production of green buildings. ADA manages 10 tax increment financing districts and over 100 urban enterprise zones. The most successful project to date is Atlantic Station, a 128-acre brownfield reclamation project that integrates a number of green/sustainable practices into the project. The BeltLine tax increment financing legislation includes language to provide financial incentives to projects that incorporate green building principles.

Finding Green Solutions. ADA and Sustainable Atlanta, led by Lynnette Young, former COO for the city, have begun work to create an Environmental Economic Development Roundtable with the Consulates and Bi-lateral Chambers of Commerce in Atlanta. One purpose is to identify sustainable technologies, including green building products and techniques. The Roundtable plans to hold a Sustainability Expo to showcase firms and their green technologies. Another aim of the group is to identify policy best practices for Atlanta to consider as it develops green policies and target metrics.

Putting the ECO in Industrial. Under the leadership of Luz Borrero, deputy chief operating officer and David Scott, commissioner, Department of Public Works, ADA and Planning are working with the



New World of Coca-Cola building, Atlanta, LEED–Level: Gold

Operational Sub Cabinet to create an industrial policy that promotes and protects land use for industrial job centers, encourages green industrial buildings, and identifies locations for eco-industrial parks where city operating departments and private industry can co-locate. The operating departments recognize the link between green building practices and reduced construction waste, greater energy efficiency, and lower water consumption.

As with many of Atlanta's successes, public-private partnerships were leveraged to achieve the stated

goal. Similarly, ADA and the city are using the same strategy to develop a practical and effective green building program. "The City and ADA recognize," says Charles Whatley, "that getting green right is essential to the sustainability of our growth. Just as Mayor Franklin tackled the city's aging sewer infrastructure challenge by bringing stakeholders together to study the problem and develop a workable plan, we are engaging the domestic and international private sector, communities, policy-makers, and academia to make green building an integral part of Atlanta's built environment."

LEADERSHIP BY THE PRIVATE SECTOR

Atlanta is a headquarters city: home to the third-largest concentration of Fortune 500 company headquarters. Corporations like Interface Inc., The Coca-Cola Company, Toto USA, Kimberly-Clark, and Acuity Specialty Brands stand out in metro Atlanta as sustainable market leaders. Interface's "Mission Zero" prom-



ises elimination of any negative impact the company could have on the environment by 2020. Founder Ray Anderson's vision for the company whose core business is modular soft-surfaced floor coverings is to champion a worldwide effort to pioneer the processes of sustainable development. The world may be finally catching up to Anderson.

Atlanta's development community plays a singular role in supporting sustainable initiatives embraced by corporations like Interface. Architectural firms like Lord, Aeck & Sargent, TVS, Perkins+Will, and Gerding Collaborative develop timeless designs that balance the needs of tenants/owners and the environment.

Holder Construction, an Atlanta-based company, incorporates sustainable design and construction practices into projects by evaluating every project for its *green potential*. "Making changes to the built environment is a significant factor for reducing greenhouse gas emissions and preserving natural resources. As a contractor, it is our responsibility to educate building owners with responsible decisions that improve the quality of their facilities while reducing the negative impacts to the environment. The LEED program is a great tool to implement sustainable strategies and measure results," states Beth

Studley, vice president at Holder Construction and chair of the U.S. Green Building Council Atlanta Regional Chapter.

Holder has completed eight LEED certified buildings and has 16 more registered with the USGBC for certification, including the renovation of their corporate headquarters in Atlanta. Over 20 percent of Holder's associates are LEED accredited professionals.

"Our industry is changing its behavior, becoming more sustainable with our designs and construction means and methods. In 2007 we experienced over 250 percent growth from 2006 in the number of our projects pursuing a LEED certification," states Studley. "Every effort makes a difference, the key is doing *something*. At a minimum, contractors should maximize the amount of waste recycled on jobsites and evaluate feasible strategies for conserving water and energy. Most well-designed buildings easily qualify for the basic LEED certification with minimal impact to the bottom line."

BALANCING ENVIRONMENTAL AND FINANCIAL NEEDS

Case studies done by the National Resources Defense Council highlight buildings completed between 2003 and 2006 showing electricity, water, and natural gas savings of 25-60 percent, and reduction in emissions of CO₂, NO_x, and SO_x of 12-38 percent.⁴ One of the core challenges to achieving widespread adoption of high-performance buildings is disagreement over which performance metrics are most important and best ways to measure and report those metrics.⁵

In December 2007, the Environmental Protection Agency announced that its list of "Energy Star Leaders" has grown to 50 organizations: educational, healthcare, retail, commercial, and hospital-ity entities that perform in the top 25 percent of energy efficiency nationwide based on the average of buildings in the portfolio. This group has reduced its greenhouse gas emissions by an amount equivalent to 30,000 American homes.⁶

Atlanta's challenges in air quality are well-known, especially during ozone season from May 1 to October 31. When Atlanta's air pollution challenges rose to national prominence in the mid-1990's, state and regional government agencies and the Atlanta business community cemented a public-



Southface Eco Office is a 10,000-square-foot commercial demonstration center that will help architects, builders, and developers learn easy ways to save energy, conserve water, and preserve the environment. Currently it's under construction, and tracking for LEED-Platinum certification. Architect: Lord, Aeck & Sargent.

private partnership in the creation of the Clean Air Campaign. A nonprofit organization with a staff of 28, the Clean Air Campaign works with employers, property managers, commuters, and schools to take voluntary action to improve air quality.

While the Clean Air Campaign focuses much of its work on the transportation side of air pollution, Executive Director Kevin Green recognizes that, "a clean commute is even more valuable when considered in concert with building practices and land use decisions that support clean air." This range of green decision-making represents a new business model that suggests that economic and environmental decisions are not mutually exclusive. "In fact," states Green, "between rising energy costs and more stringent federal clean air standards, going green has never been as financially viable as it is right now."

Is there a tradeoff in cost to building green? According to construction cost management firm Davis Langdon, "there is no significant difference in average costs for green buildings as compared to non-green buildings. Many project teams are building green buildings with little or no added cost and with budgets well within the cost range of non-green buildings with similar programs."⁷ While the NRDC places the green build premium at 0-5 percent, everyone emphasizes that cost per square foot is not the critical measure. Life cycle cost analysis is a better way to measure the cost of a sustainable building. In other words, think beyond delivered cost per square foot and learn to evaluate design options using a system that measures environmental and cost performance over the life of a facility -- from design to decommissioning/demolition.

GEORGIA: EARLY MOVES IN THE RIGHT DIRECTION

The state moved its primary economic development agency, the Georgia Department of Economic Development, into Centergy/Technology Square, which is a campus that includes one LEED Silver building, the Georgia Institute of Technology's Dupree College of Management. Numerous statewide economic development agencies co-located in the same building: Georgia Quick Start, Georgia Power Economic Development, the Advanced Technology Development Center, Georgia Electric Membership Corporation, Georgia Tech's Enterprise Innovation Institute, etc. The state's Department of Community Affairs has been a leader in providing incentives for green affordable housing, and the Georgia Department of Natural Resources is focused on green buildings for state parks with a half dozen LEED certified Silver, Gold, and Platinum commercial facilities as well as a commitment that future cabins meet the EarthCraft House standard.

The federal government, 15 states, and 46 cities require new public buildings to meet the U.S. Green Building Council's LEED standards. Four states and 17 cities offer incentives for LEED-rated private buildings. What can the state of Georgia do at this point to gain a leadership position in the Southeast in green built environment?

Photo by Brian Gassel/TVS




Interface Showroom, LEED-CI Pilot-Level: Platinum;
Holder Construction.

- Exempt sales tax on building materials used in the construction of LEED-certified structures, an incentive which would:
 - lead to substantial improvements in life-cycle performance and reduced life-cycle costs of building stock in Georgia;
 - encourage companies that stake their reputation on sustainability to take a second look at Georgia when building new structures; and
 - increase dramatically the number of LEED-certified structures in Georgia: a state that has fallen behind Florida and North Carolina in the number of green buildings proposed, planned, delivered, and certified.
- Require state-funded buildings to integrate sustainable building principles and practices in the design, construction, and ongoing operations with the aim of a minimum LEED Silver certification. States that have adopted mandatory sustainable building principles and practices today lead the way in construction and renovation of public buildings to LEED standards.
- Follow the lead of over 25 other states in providing financial incentives for energy efficient, green homes.

Georgia could lead the Southeast in preserving water, reducing greenhouse gases, and decreasing the amount of construction waste in state landfills by adopting these standards. The proposed ordinance in San Francisco through 2012 expects to achieve a reduction of CO₂ emissions by 60,000 tons, waste and storm water by 90 million gallons, and construction and demolition waste by 700 million pounds. San Francisco also expects to save 100 million gallons of drinking water and increase green power generation by 37,000 megawatt hours, if approved. Savings on that scale would have a significant impact on any metro region and state.

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FOOTNOTES

1. "Mayor Newsom Proposes Ground-breaking Green Building Ordinance To Reduce Greenhouse Gas Emissions," *Los Angeles Chronicle*, California Political Desk, December 12, 2007
2. U.S. Green Building Council, Green Building Research 2007. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1718>
3. City of Atlanta Ordinance #03-0-1693, December 2003
4. National Resources Defense Council, 2007 <http://www.nrdc.org/buildinggreen/>
5. "Performance Metrics Research Project – Final Report," M. Deru and P. Torcellini, NREL, October 2005
6. "School Districts Top EPA's List of Energy Star Leaders," Press release, U.S. Environmental Protection Agency 12/12/2007
7. "The Cost of Green Revisited" Sustainability Research by Lisa Fay Matthiessen / Peter Morris, Davis Langdon, 2007

RESOURCES

Architecture 2030
<http://www.architecture2030.org/home.html>

Clean Air Campaign <http://www.cleanaircampaign.com/>

Environmental Protection Agency
<http://www.epa.gov/greenbuilding/>

Global Green <http://www.globalgreen.org/>

National Institute of Building Sciences
<http://www.nibs.org/>

National Resources Defense Council
<http://www.nrdc.org/>

Playbook for Green Buildings
<http://www.greenplaybook.org/>

Smart Communities Network
<http://www.smartcommunities.ncat.org/>

Southface Energy Institute <http://www.southface.org/>

Sustainable Buildings Industry Council
<http://www.sbicouncil.org/>

U.S. Department of Energy
<http://www.eere.energy.gov/buildings/highperformance/>

U.S. Green Building Council
<http://www.usgbc.org/Default.aspx>

Whole Building Design Guide <http://www.wbdg.org/>

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