# MEMO

**Date:** June 21, 2006
**To:** Interested Parties
**cc:**
**From:** Stockton Williams and Dana Bourland
**Re:** National Green Residential Programs

## Summary

This memorandum reviews three national frameworks for defining, rating and/or certifying sustainability, or "greenness," in the residential building sector: the LEED® for Homes pilot program, the National Association of Home Builders Model Green Home Building Guidelines and the Green Communities™ Criteria. This memorandum also discusses some key issues inherent in green building frameworks as they apply to affordable housing.

We do not purport to provide a complete description or comparative analysis of the programs included, but rather a general overview. We encourage you to refer to the Web sites listed at the end of the memorandum for more information.

In addition, this memorandum does not review any of the more than 50 regional, state and local green residential programs. Most of these programs target market rate for-sale homes. Several of them do have an affordable housing focus, however. Among these, Southface's Earthcraft House™ Guidelines, Advanced Energy's SystemVision™ program, the city of Seattle SeaGreen initiative, Portland, Ore.'s Office of Sustainability Design and Construction Guidelines for Affordable Housing and the New Jersey Department of Community Affairs' Affordable Green program are noteworthy. Links to these programs are also included.

## LEED for Homes

The LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ is a voluntary building certification program that defines high-performance green buildings. LEED is a product of the U.S. Green Building Council (USGBC). Founded in 1993, USGBC's membership consists of 6,300 companies and organizations, including building owners and end-users, real estate developers, facility managers, architects, designers, engineers, general contractors, subcontractors, product and building system manufacturers, government agencies and nonprofits.

LEED "serves as a design guideline for green building and offers third party validation of a building's green features," according to USGBC. More than half-a-billion square feet of building space participate in the LEED Rating System. Various LEED initiatives – including legislation, executive orders, resolutions, ordinances, policies and incentives – are found in 49 U.S. cities and 15 states. LEED initiatives are also underway in a number of federal agencies.

LEED addresses a variety of buildings and building project types through individualized systems, including new construction, existing buildings, commercial interiors, core and shell (in pilot), homes (in pilot) and neighborhood development (in development). LEED generally evaluates buildings in the following "credit areas": Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; and Indoor Environmental Quality. Within these credit areas, points are available. There are four progressive levels of certification based on the overall number of points: Certified, Silver, Gold and Platinum.

LEED for Homes (LEED H) is currently in a pilot phase, which is expected to last into 2007. LEED H is designed to "recognize and reward the 25 percent of new homes that are the top performers in terms of resource efficiency and environmental stewardship," according to USGBC.

LEED H has the following credit areas, with a maximum number of points under each area: Location and Linkages; Sustainable Sites; Water Efficiency; Indoor Environmental Quality; Materials and Resources; Energy and Atmosphere, Homeowners Awareness; and Innovation and Design Process. The highest possible overall score is 108. Performance tiers are as follows: Certified (30-49 points), Silver (50-69 points), Gold (70-89 points) and Platinum (90-108 points).

Third-party entities are responsible for inspecting and performance testing completed projects to determine compliance levels. USGBC estimates that this process takes two-to-three days and costs $500-$2,000 per home.

Responding to what the council calls "the unique needs of affordable housing," it has established a special working group to help ensure the final LEED H standard is appropriate for that market segment. Note that multifamily buildings with more than three stories are also eligible to participate in the LEED for New Construction (NC) program. A handful of affordable housing developments have been certified under LEED NC. Neither LEED H nor LEED NC explicitly addresses housing rehabilitation at present.

## National Association of Home Builders' Model Green Home Building Guidelines

In 2004, the National Association of Home Builders (NAHB) and the NAHB Research Center developed the NAHB Model Green Home Building Guidelines to "provide a practical nationally recognized baseline for determining minimum thresholds for resource-efficient, cost-effective home building," according to NAHB. Consistent with the needs of the majority of NAHB members, the association developed the Guidelines primarily for "mainstream" market rate homebuilders. More broadly, the Guidelines aim to help local Home Builders associations develop their own green building programs. At least 13 cities and one state either have developed or are developing such programs, according to NAHB.

The Guidelines provide three levels of recognition: Bronze (237 points), Silver (311 points) and Gold (395 points). Each level requires developments to achieve a minimum number of points in each of seven "guiding principles". The principles are: Lot Design, Preparation and Development; Resource Efficiency; Energy Efficiency; Water Efficiency; Indoor Environmental Quality; Operation, Maintenance and Homeowner Education; and Global Impact. After reaching the thresholds, builders must achieve an additional 100 points by implementing any of the remaining line items in any credit category.

To determine point values for each guiding principle, a builder simply adds the points for each line item applied to the home for each guiding principle. Comparing the project's points for the individual guiding principles determines whether the project is deemed a Bronze, Silver or Gold level green home.

## Green Communities Criteria

The Green Communities Criteria, developed in 2004, are the basis of the $555 million Green Communities initiative by Enterprise and a number of partners to create at least 8,500 green affordable homes. Developments that commit to meet the Green Communities Criteria are eligible for grants, loans, equity investments and project-based technical assistance from Enterprise. There are 100 Green Communities developments with more than 5,000 total units in 23 states in various stages of development. In addition, several state and local housing agencies have used the Green Communities Criteria as the basis for modifications to their affordable housing programs.

Green Communities is targeted to community-based and for-profit developers of newly constructed and substantially rehabilitated single family and multifamily homes for low-income people. The Green Communities Criteria are the first national framework for green building developed specifically for "affordable housing."

For the purposes of the program, that term is defined as for-sale homes reasonably affordable to owners whose incomes do not exceed 80 percent of area median income, and rental apartments reasonably affordable to residents whose incomes do not exceed 60 percent of median income.

"The Green Communities Criteria raise the bar for affordable housing providers in sustainable development through proven, cost-effective building strategies, without burdening developers with undue complexity or infeasible costs," according to Enterprise.

The Green Communities Criteria are based on LEED and leading local green building programs specifically designed for affordable housing, especially the city of Seattle's SeaGreen program. The Green Communities Criteria consist of seven categories: Integrated Design Process; Location and Neighborhood Fabric; Site Improvements; Water Conservation; Energy Efficiency; Materials Beneficial to the Environment; Healthy Living Environment; and Operations and Maintenance. There are mandatory elements in each category worth a total of 75 points. Developers must achieve an additional 25 points out of a possible 75 from a range of optional criteria in each category, which recognize the local marketplace and specific building constraints and opportunities.

## Discussion

As noted, it is beyond the scope of this memorandum to provide a complete comparison of the sustainable residential frameworks described here. Some broad-based points of comparison are possible, however.

*Target markets.* Each of the national frameworks reviewed – LEED for Homes, the NAHB Model Green Building Guidelines and the Green Communities Criteria – targets a slightly different market. For LEED, that market is new homes that are in the top 25 percent for environmental performance. For NAHB it is market rate single-family homes that achieve at least a minimum level of performance, with encouragement to go further. For Green Communities, it is newly constructed and substantially rehabilitated developments serving low-income people.

*Rating sustainability.* Each of the three national programs has different approaches for rating a development's "greenness." NAHB provides broad flexibility to achieve the necessary point totals, with minimum thresholds in each credit category. LEED H sets forward a mix of mandatory elements and a wide range of optional provisions from which applicants must select, with some mandatory elements. Green Communities consists mostly of mandatory criteria, with flexibility to choose among optional elements to achieve compliance.

*Overall environmental performance.* It is clear that Platinum and Gold certifications under LEED H generally would result in the highest and second highest overall levels of environmental performance, respectively. In general, developments that meet the Green Communities Criteria would achieve LEED Certification status and could achieve LEED Silver, depending on the selection of optional points. (As noted, actual certification under LEED would require verification and performance testing.) Given the very broad flexibility in the NAHB Guidelines, it is hard to plot precisely where a hypothetical project may fall in this analysis, but a high scoring development under the NAHB program would be in good position for LEED certification.

*Smart growth performance.* Green Communities and LEED H include criteria for "smart growth" aspects of siting and location, such as density, walkability and transit-access, which the NAHB Guidelines generally do not directly address.

*Health performance.* Green Communities outperformed LEED for Homes and the NAHB Guidelines in an analysis of green building programs' adherence to "healthy homes" principles.[1] (Both the American Lung Association Health House Builder Guidelines and the U.S. Environmental Protection Agency Energy Star with Indoor Air Package Pilot Specifications outperformed Green Communities in this analysis. Those programs are not included in this memorandum because they are not as comprehensive as the others.)

*Verification.* Also referred to as "commissioning," and/or "performance testing," verification is the only way to fully ensure that all green elements have been successfully incorporated into a building's construction or rehabilitation. Among the national programs, only LEED provides a third-party verification that the project met all chosen criteria at the end of the construction process. (Among the leading regional and local programs, Southface's Earthcraft House and Advanced Energy's SystemVision programs also provide third-party verification.) Green Communities requires documentation from the project sponsor or designee (typically, the project architect) that final construction drawings and specifications reflect all the mandatory and selected optional criteria. A sample of Green Communities developments receives third-party testing.

*Commitment to better buildings.* While the national green residential programs summarized in this memorandum differ in some respects it is important to note their similarities in intent. All three programs, as well as the regional and local frameworks referenced, reflect the sponsoring organizations' commitment to develop homes that use energy and natural resources more efficiently, provide healthier and more comfortable indoor environments and are more sensitive to the natural environment around the building.

[1] National Center for Healthy Housing, *Comparing Green Building Guidelines and Healthy Homes Principles: A Preliminary Investigation*, April, 2006.

**For More Information**

Advanced Energy's SystemVison: www.advancedenergy.org

City of Seattle SeaGreen initiative: www.ci.seattle.wa.us/housing/

Green Communities Criteria: www.greencommunitiesonline.org

LEED for Homes: www.usgbc.org

National Association of Home Builders Model Green Home Building Guidelines: www.nahbrc.org

New Jersey Department of Community Affairs New Jersey Affordable Green: www.state.nj.us/dca/dh/gho/njaffordablegreen.shtml

Portland's Office of Sustainability Design and Construction Guidelines for Affordable Housing: www.green-rated.org/publications_list.asp?cat=rr

Southface Earthcraft House Guidelines: www.southface.org