



Home Innovation
RESEARCH LABS™

**NATIONAL
GREEN BUILDING
STANDARD (NGBS)
AND LEED ND
COMPARISON**

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Summary

This analysis was performed by Home Innovation Research Labs, which serves as Adopting Entity for and provides national certification services to the NGBS. Home Innovation Labs is a 50-year old, internationally-recognized, accredited product testing and certification laboratory located in Maryland. Our work is solely focused on the residential construction industry and our mission is to improve the affordability, quality, performance, and durability of housing by helping overcome barriers to innovation. Our core competency is as an independent, third-party product testing and certification lab, making us uniquely suited to administer a green certification program for residential buildings.

First, it is worth noting that LEED ND is a proprietary program that cannot be duplicated by another program. There can never be an identical rating system. However, the vast majority of the green development practices within the NGBS Chapter 4 Site Design and Development and LEED ND overlap, making the two rating systems equivalent in scope and intent. Further, based on this equivalency as detailed below, NGBS Green Certification is equivalent to LEED ND certification.

Evaluating certification equivalency requires a comparison of four elements of the programs: 1) the rating system's goals; 2) the process for the development and maintenance of the rating system; 3) the rating system's substantive requirements; and 4) the rigor of the verification and certification process and procedures.

Both the NGBS and LEED ND seek to promote and recognize high-performing, sustainable communities that offer a variety of uses and unique places for residents to live, work, and play. Both the NGBS and LEED ND followed a consensus-based process for their development, although only the NGBS has won approval as an ANSI-approved American National Standard. This means the NGBS development process was reviewed and approved by ANSI, an independent third-party, to ensure all stakeholders' due process rights were met through stringent requirements for a collaborative, publicly-open, balanced, and consensus-based review and approval process. There is no higher validation of a standard's development process or the resultant standard than approval by a standards developing organization such as ANSI.

Although there are differences in structure and certification requirements, LEED ND and the NGBS Chapter 4 Site Design and Development are functional equivalents. Since it was developed, the NGBS has been consistently considered as on par, or more stringent, than LEED as a green building rating system for residential projects at the federal, state, and local level. For example:

- **On the federal level, HUD recognizes the NGBS as on par with LEED.** In its 2013 funding notice, *Allocations, Common Application, Waivers, and Alternative Requirements for Grantees Receiving Community Development Block Grant (CDBG) Disaster Recovery Funds in Response to Hurricane Sandy*, HUD cited the NGBS as an acceptable green standard for reconstruction efforts along with LEED. [Docket No. FR-5696-N-01]
- **Congress declared NGBS or LEED as equally suitable for military housing construction and renovation.** [Public Law No: 113-291, Section 2807]
- **Eighteen states recognize, mandate, or incentivize NGBS or LEED certification as equivalents through their state Qualified Allocation Plans for the federal Low Income Housing Tax Credit Program.**

- **States such as Delaware and New York, as well as a number of local jurisdictions, provide financial incentives for residential buildings certified to either the NGBS or LEED.**
- **Local jurisdictions – e.g., Dallas, Texas; Washington, D.C.; Baltimore, Md.; and Anne Arundel and Howard Counties in Maryland – have deemed the NGBS as equivalent to LEED for their local incentives or mandates.**

To date, not a single jurisdiction has refused to recognize the NGBS as an alternative compliance path for any regulatory or incentive program where we have asked them to make an equivalency decision. For a more complete listing of where the NGBS has been recognized, visit www.homeinnovation.com/NGBSGreenIncentives.

Because LEED was first to market, an accomplishment that we recognize and commend, Home Innovation is typically asked to answer the question, “Is the NGBS equivalent to LEED?” As noted above, jurisdictions when asked inevitably deem the NGBS and LEED as substantive equivalents with regard to requirements as green rating systems. However, the two should also be compared with regard to equivalency as certification programs. In this regard, we assert that NGBS Green is the most robust and rigorous certification program available on the market for green and sustainable residential construction and development precisely because the NGBS is an ANSI-approved consensus standard administered by an accredited third-party organization with over 50 years expertise in the residential construction industry.

Sustainability Goals

Both the NGBS and LEED ND are intended to promote sustainable communities and reduce the impacts of land development. Development projects that incorporate practices such as smart location strategies, green building and infrastructure techniques, and efficient neighborhood and building design have an opportunity to reduce their environmental footprint, and even potentially enhance the quality of life for those living in and around the new communities.

The NGBS is designed as a comprehensive green rating system for all residential construction, development, and renovation. The NGBS addresses land development requirements in Chapter 4 *Site Design and Development*; the remaining NGBS sections are applicable to building construction and renovations. In contrast, LEED ND is designed specifically for land development, requiring buildings seeking certification within a LEED ND development to use another green rating system, such as LEED for Homes or LEED for New Construction (NC).

Both NGBS’s Chapter 4 and LEED ND are structured around three major sections/themes:

1. Smart Location
2. Neighborhood Pattern & Design
3. Green Infrastructure & Buildings

Within each of these major sections, the rating systems recognize best practices for sustainable development. The vast majority of green practices overlap.

While the majority of content is shared, there are some differences in the approach taken by each rating system. However, this difference in approach does not change the outcome with respect to incorporating practices such as smart location strategies, green building and infrastructure techniques, and efficient neighborhood and building design into land development.

The NGBS's philosophy is to encourage implementation of the best environmental practices for land development that integrate, complement, and uplift local planning and zoning. The NGBS provides planners and developers with flexibility to recognize regional differences in development patterns, housing types, and preferences; allow innovative approaches and techniques; and consider the vast array of cultures, family living and housing styles, and business and retail needs that may need to be addressed within an individual community. The NGBS promotes flexibility *and* sustainability.

Conversely, where the NGBS is focused on the *intent* of the green practices, LEED ND works more like a design and zoning standard. Consider, for example, the concept of walkable streets. In LEED ND, the rating system takes 1.5 pages to describe what is meant by a "walkable street" and includes very specific requirements with regard to building frontage, height-to-street-width ratio, and detailed sidewalk requirements. While LEED ND states that it is not intended to replace zoning codes or comprehensive plans, such prescriptive design requirements are more traditionally the purview of local jurisdictions who have a better understanding of the form of local development that they wish to promote through local regulations. In contrast, the NGBS provides points toward certification for "walkways, bikeways, street crossings, and entrances designed to promote pedestrian activity." The NGBS is focused on developers ensuring that residents can walk and bike within and without the neighborhood to areas where they live, work, and play without prescribing specifically how that is accomplished. Some NGBS Green neighborhoods attain points toward certification using bike trails and pedestrian walkways. Other NGBS Green neighborhoods earn points by more traditional sidewalks and bike lanes on streets. A few NGBS Green neighborhoods provide all of these amenities as choices for the residents. The NGBS's goal isn't the specific design of the street; rather, it is getting people out of their cars whenever possible. The NGBS language is clear, straightforward, and performance-oriented. Because its specific design details are flexible, the NGBS is structured to better support and uplift local zoning requirements.

Another difference between the NGBS Site Selection Chapter and LEED ND is applicability of the rating systems to a diversity of land developments. The NGBS is more flexible than LEED ND because while it promotes a variety of sustainable land development practices, it does not set mandates that favor one specific development form, i.e., neo-traditional urbanism, over others. This is particularly important in areas with unique landscapes and natural habitats such as those in and around San Diego. LEED ND singularly defines sustainable development as high-density grid development. This non-negotiable prerequisite makes LEED ND inappropriate and impractical for many communities in the United States. By contrast, the NGBS takes into consideration the variety of communities that could benefit from incorporating green and sustainable development practices into land use decisions, without being located within a dense urban setting. The NGBS promotes connectivity, density, a variety of land uses, multi-modal transportation, and environmentally-sensitive design and construction practices through its extensive point-based system. It was the belief of the NGBS Consensus Committee, which was confirmed through the NGBS's extensive public comment process, that there is value to having a green development rating system that could help improve the sustainability of all residential developments – big and small; rural, suburban, and urban; neo-traditional developments à la Andres Duany, or those in the style of Ian McHarg who used ecology as a basis for design and planning. LEED ND limits its applicability largely to developments with relatively high densities that are extensions of existing neighborhoods, rendering it irrelevant or inappropriate for use in other types of neighborhoods.

Process for the Development and Maintenance of the Rating System

The NGBS is the first and only residential green rating system to undergo the full consensus process and receive approval from the American National Standards Institute (ANSI) as an American National Standard. ANSI approval is important because it is a third-party confirmation of balance, representation, openness, consensus, and due process in the standard’s development process. The Consensus Committee that developed the first version of the NGBS (2008) was comprised of 42 individuals representing a variety of government agencies, municipalities, home building industry stakeholders, and non-profit organizations, including the US Green Building Council (USGBC), which administers LEED. The 2012 NGBS followed a similarly rigorous and inclusive development process. The 2015 NGBS is currently under development and is expected to be submitted for ANSI review within this calendar year.

USGBC’s rating system development process suggests a consensus-based approach to development of its LEED rating system; however, it is not a true consensus standard. In order to participate in the LEED development process, one must be a USGBC member. This factor would disqualify LEED from being accepted as a true consensus standard, as the development process is not open. Since 2006, USGBC has been an approved ANSI-accredited Standards Development Organization (SDO) with an approved ANSI Process that allows for a broad, consensus-oriented development process that requires formal responses to all comments submitted. However, despite being accredited and using the power of the ANSI brand to gain credibility, USGBC has not followed the ANSI process in its LEED development.

Verification and Certification Process and Procedures

Both the NGBS and LEED have mandatory practices that must be completed to attain certification at any level. LEED ND has a total of 12 prerequisites; the NGBS has 3 mandatory practices.

The NGBS requires far more points to attain certification at any level (95 points compared to LEED’s requirement for 40), but also provides a far greater selection of green development practices so that developers can select the practices that make the most sense for the location, scale, and type of development. [See Table below.] NGBS land developments can attain one of four certification levels: One-Star; Two-Star; Three-Star; or Four-Star.

NGBS Threshold Point Ratings for Site Design and Development

Site Design and Development	Certification Level Points			
	One Star	Two Stars	Three Stars	Four Stars
	95	122	149	176

LEED ND land developments can attain one of four certification levels: Certified; Silver; Gold; and Platinum.

LEED ND

Land Developments	Certification Level Points			
	Certified	Silver	Gold	Emerald
	40-49	50-59	60-79	80+

Certification Criteria: Smart Location & Linkages

The NGBS and LEED ND include many identical practices or practices that are similar in intent. Both rating systems include practices related to: (1) Avoiding environmentally sensitive areas; (2) Developing near existing infrastructure and transportation options; and (3) Designing for natural resources and wildlife protection.

The NGBS includes several practices related to project management and team formation; there are no corresponding LEED equivalents. These practices serve to help developers manage and execute the environmental practices outlined in their design documents. The inclusion of these unique practices further highlights the fact that the NGBS is performance-based, not a design standard.

Certification Criteria: Neighborhood Pattern & Design

Both rating systems recognize communities that are: (1) Walkable; (2) Connected to transit facilities; (3) Compact; and (4) Mixed-use. Both rating systems also recognize communities with shade trees and community gardens for local food production.

Most of the LEED ND practices for this section have corresponding practices in the NGBS, with three exceptions – the NGBS does not have practices specifically related to mixed-income communities; visitability and universal design; and neighborhood schools.

Certification Criteria: Green Infrastructure & Buildings

The purpose of this section to reduce the environmental impact of a community's built infrastructure through established criteria for buildings, landscaping, stormwater management, and driveways/parking. Over half of the LEED ND credits in this section have an NGBS equivalent.

Although LEED ND is a land development rating system, many practices are focused on buildings that will be eventually constructed on the development. In contrast, Chapter 4 of the NGBS specifically covers only the land development activities planned for the site. The NGBS land development green practices and certification are completely separate from the NGBS building certification.

Certification Criteria: Innovation and Design Process

LEED ND's Innovation credit is wide open for applicants to submit what they believe will meet the credit's intent. The NGBS is more specific in what are considered innovative practices with regard to green development. The NGBS allows the Adopting Entity to permit alternative compliance methods should a green practice meet the intent of the NGBS, however, to date Home Innovation has not approved any alternative compliance methods or practices that are not found in the 2012 NGBS.

While NGBS includes practices related to project management within the Site Design and Development chapter, LEED ND has a dedicated section for Design Process. LEED ND awards one point if a LEED Accredited Professional is on the project design team. Our understanding is that USGBC added this practice to help reduce the amount of time necessary for its staff to review and process LEED ND applications, not for any specific sustainability benefit related to a project's design.

Certification Criteria: Regional Priority

LEED ND offers credits for green development practices that are a regional priority for a given location. The NGBS does not allow credits for practices that have a regional priority. However, as explained above, NGBS provides for greater flexibility to account for the diversity found within local jurisdictions. We find that

developments incorporate those green development practices from the NGBS’s broad array of practices that make the most sense for the project’s geographic location.

LEED ND includes a section for Regional Priority. While the NGBS does not contain a similar category or practice, it provides greater flexibility for architects and developers to recognize regional priorities through an expansive, flexible point system.

Verification Requirements

NGBS Green certification requires independent, third-party verification. To be NGBS Green Certified, every green project is subject to independent in-field verification. Developers must hire an accredited NGBS Green Verifier who is responsible for visual inspection of the green practices in the development.

Home Innovation Labs qualifies, trains, and accredits building professionals to provide independent verification services for builders and developers participating in our NGBS Green certification program. Verifiers must first demonstrate they possess experience in residential construction and green building before they are eligible to take the verifier training. Potential verifiers must complete thorough training on exactly how to verify NGBS practices, then pass a written exam before receiving Home Innovation accreditation. Verifiers renew their accreditation annually.

Home Innovation Labs reviews every inspection report to ensure national consistency and accuracy in the verification reports. Further, we regularly audit our verifiers and the verifications they perform as part of our internal quality assurance program.

LEED ND has a documentation-based verification program that does not require any on-site, independent verification that green practices were implemented as designed.

VERIFICATION REQUIREMENTS COMPARISON

NGBS Site Development	LEED ND
Every NGBS project is <u>required to be inspected</u> by a third-party, accredited NGBS Green Verifier. Self-certification is not permitted. Practices must be visually inspected by an independent verifier to receive points after the land development activities are complete.	LEED ND certification is a documentation-based verification program. Each LEED rating system and version thereof has unique documentation requirements to complete a LEED certification application. Within the LEED certification application, a series of required documents, attestations, data, or other information must be indicated in order to demonstrate the satisfaction of each minimum program requirements (MPR), prerequisite, and attempted credit.

Conclusion

As demonstrated above, the National Green Building Standard (NGBS) Chapter 4 Site Design and Development is clearly equivalent with LEED 2009 for Neighborhood Development (LEED ND). While the rating systems are structured very differently, the vast majority of the green development practices overlap. The NGBS offers a flexible, performance-based rating system that is suitable for communities of all sizes and density thresholds.

APPENDIX A: Point Comparison Charts

SMART LOCATION AND LINKAGES

LEED ND		Possible Points: 27	NGBS Site Design and Development		Possible Points: 149
Pre-requisite 1	Smart Location	<i>Required</i>	401.1	Infill Site is Selected	7
			401.2	Greyfield Site is Selected	7
			401.3	Brownfield Site	8
Pre-requisite 2	Imperiled Species and Ecological Communities Conservation	<i>Required</i>	403.1	Natural resources inventory and plan to protect	Mandatory 10
			403.11 (1)	Environmentally sensitive areas are avoided ¹	2-7
			403.11(2)	Compromised environmentally sensitive areas are mitigated or restored	4
Pre-requisite 3	Wetland and Waterbody Conservation	<i>Required</i>	403.11 (1)	Environmentally sensitive areas are avoided	2-7
Pre-requisite 4	Agricultural Land Conservation	<i>Required</i>	403.11 (1)	Environmentally sensitive areas are avoided	2-7
Pre-requisite 5	Floodplain Avoidance	<i>Required</i>		<i>No corresponding NGBS practice</i>	
Credit 1	Preferred Locations	1	401.1	Infill Site is Selected	7
			401.2	Greyfield Site is Selected	7
Credit 2	Brownfields Redevelopment	5	401.3	Brownfield Site	8
Credit 3	Locations with Reduced Automobile Dependence	1	405.6	Multi-modal transportation	4-31
Credit 4	Bicycle Network and Storage	6	405.6 (3)(4)(5)	Bikeways, Bicycle Parking, and Bike Sharing	4-14
Credit 5	Housing and Jobs Proximity	1		<i>No corresponding NGBS practice</i>	
Credit 6	Steep Slope Protection	1	401.4	Low-slope site	5
			403.11 (1)	Environmentally sensitive areas are avoided	2-7
			403.3	Slope disturbance is minimized	1-12
Credit 7	Site Design for Habitat or Wetland or Water Body Conservation	1	403.1	Natural resources inventory and plan to protect	Mandatory
			403.11 (1)	Environmentally sensitive areas are avoided	2-7
			403.11(2)	Compromised environmentally sensitive areas are mitigated or restored	4
			405.5	Constructed Wetlands	8
Credit 8	Restoration of Habitat or Wetlands or Water Bodies	1	403.11	Environmentally sensitive areas are mitigated or restored	4

LEED ND		Possible Points: 27	NGBS Site Design and Development		Possible Points: 149
Credit 9	Long-term Conservation Management of Habitat or Wetlands and Water Bodies	1	404.5	Wildlife Habitat	5-21
	<i>No corresponding LEED practice</i>		402.1	Knowledgeable team is established	4
	<i>No corresponding LEED practice</i>		402.2	Training is provided to on-site supervisors	3
	<i>No corresponding LEED practice</i>		402.3	Project Checklist	Mandatory 4

NEIGHBORHOOD PATTERN AND DESIGN (NPD)

LEED ND		Possible Points: 44	NGBS Site Design and Development		Possible Points: 104
Pre-requisite 1	Walkable Streets	<i>Required</i>	405.6 (1)(2)(3)	Multimodal transportation (pedestrian access)	5-17
Pre-requisite 2	Compact Development	<i>Required</i>	405.3	Cluster Development	10
			405.7	Density averages	5-10
Pre-requisite 3	Connected and Open Community	<i>Required</i>	405.6(3)	Multimodal Transportation (street and sidewalk connections)	5
Credit 1	Walkable Streets	12	405.6 (1)(2)(3)	Multimodal transportation (pedestrian access)	5-17
Credit 2	Compact Development	6	405.3	Cluster Development	10
			405.7	Density Averages	5-10
Credit 3	Mixed-use Neighborhood Centers	4	405.8	Mixed-use Development	9
Credit 4	Mixed Income Diverse Communities	7		<i>No corresponding NGBS practice</i>	
Credit 5	Reduced Parking Footprint	1	405.1	Minimized driveways and parking areas	3-18
Credit 6	Street Network	2	405.6(3)	Multimodal Transportation (street and sidewalk connections)	5
Credit 7	Transit Facilities	1	405.6 (1)(2)	Multimodal transportation	5-12
Credit 8	Transportation Demand Management	2	405.6 (6)	Car sharing	5
Credit 9	Access to Civic and Public Spaces	1	405.9	Open Space	5
Credit 10	Access to Recreational Facilities	1	405.9	Open Space	5
Credit 11	Visitability and Universal Design	1		<i>No corresponding NGBS practice</i>	
Credit 12	Community Outreach and Involvement	2		<i>No corresponding NGBS practice</i>	
Credit 13	Local Food Production	1	405.10	Community Gardens	3
Credit 14	Tree-lined and Shaded Streets	2	403.6(6)	Landscape plan for summer shading	5
Credit 15	Neighborhood Schools	1		<i>No corresponding NGBS practice</i>	

GREEN INFRASTRUCTURE AND BUILDINGS

LEED ND		Possible Points: 29	NGBS		Possible Points: 186
Pre-requisite 1	Certified Green Building		402.4	Development agreements for certified green buildings	6
Pre-requisite 2	Minimum Building Energy Efficiency			<i>No corresponding NGBS practice</i>	
Pre-requisite 3	Minimum Building Water Efficiency			<i>No corresponding NGBS practice</i>	
Pre-requisite 4	Construction Activity Pollution Prevention		403.4	Stormwater Pollution Prevention Plan	5-13
Credit 1	Certified Green Buildings	5	402.4	Development agreements for certified green buildings	6
Credit 2	Building Energy Efficiency	2		<i>No corresponding NGBS practice</i>	
Credit 3	Building Water Efficiency	1		<i>No corresponding NGBS practice</i>	
Credit 4	Water Efficient Landscaping	1	403.6	Landscape plan to limit energy and water use	2-36
Credit 5	Existing Building Reuse	1	403.9	Existing buildings are reused	8
Credit 6	Historic Resource Preservation and Adaptive Use		403.9	Existing buildings are reused	8
Credit 7	Minimized Site Disturbance in Design and Construction	1	403.4	Soil Disturbance	5-13
Credit 8	Stormwater Management	4	403.5	Stormwater Management	2-42
Credit 9	Heat Island Reduction	1	403.6 (6)	Landscape plan for shading	5
			405.1	Reduced driveways and parking	3-18
			405.2	Minimized street widths	6-14
Credit 10	Solar Orientation	1	403.2	Building Orientation	6
Credit 11	On-site Renewable Energy Sources	3		<i>No corresponding NGBS practice</i>	
Credit 12	District Heating and Cooling	2		<i>No corresponding NGBS practice</i>	
Credit 13	Infrastructure Energy Efficiency	1		<i>No corresponding NGBS practice</i>	
Credit 14	Wastewater Management	2	403.6 (12)(13)	Greywater irrigation systems, etc.	6-13
Credit 15	Recycled Content in Infrastructure	1	403.10	Existing and recycled materials	3
Credit 16	Solid Waste Management Infrastructure	1		<i>No corresponding NGBS practice</i>	
Credit 17	Light Pollution Reduction	1		<i>No corresponding NGBS practice</i>	
	<i>No corresponding LEED practice</i>		404.1	Onsite supervision and coordination	5
	<i>No corresponding LEED practice</i>		403.8	Operation and Maintenance Plan	6

INNOVATION AND DESIGN PROCESS

LEED ND		Possible Points: 6		NGBS	Possible Points: 22
Credit 1	Innovation and Exemplary Performance	1-5	405.4	Innovative Zoning	8-22
Credit 2	LEED Accredited Professional	1		<i>No corresponding NGBS practice</i>	

REGIONAL PRIORITY

LEED ND		Possible Points: 4		NGBS	Possible Points: 0
Credit 1	Regional Priority			<i>No corresponding NGBS practice</i>	



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