

NGBS 2020 vs EarthCraft Multifamily New Construction (ver. 2015.3.30)



OVERVIEW

Both the NGBS and EarthCraft rating systems offer a framework for assessing the health, performance, and sustainability of new and renovated buildings.

Southface and the Greater Atlanta Home Builders Association developed the EarthCraft high-performance home certification program in 1999. The EarthCraft rating systems are developed and revised directly by Southface staff. EarthCraft is designed for the specific energy and climate needs of the Southeast. Originally intended for use in Atlanta area, EarthCraft is now used throughout the entire Southeast, including Alabama, Georgia, North Carolina, South Carolina, Tennessee, and Virginia. The EarthCraft family of programs has grown from single-family homes to include multifamily buildings, light commercial spaces, historical single-family home preservation, and land development certification. The **EarthCraft Multifamily** program is available for low-rise and mid-rise multifamily buildings, both new and renovated.

The **ICC-700 National Green Building Standard® (NGBS)** was developed through an open consensus development process and became the first residential-specific rating system to be approved as an ANSI standard. Since 2009, every NGBS version has been ANSI-approved. The NGBS includes green building practices relevant to all construction styles and climate zones. NGBS Green Certification is the leading residential green building program in the U.S. and has been pursued by builders and developers in nearly every state. The NGBS was designed to address all residential construction, including single-family homes, multifamily and mixed-use buildings, land developments, and remodeling programs. The NGBS offers one complete rating system to address all building types, rather than bifurcating buildings based on height or configuration.

CATEGORIES OF GREEN PRACTICES

The NGBS and EarthCraft addresses many of the same categories of green practices. In two areas, EarthCraft Multifamily addresses the same concepts as the NGBS across multiple categories. EarthCraft Multifamily includes a dedicated category for Innovation, whereas each NGBS category includes an innovative practice section.

NGBS	EarthCraft Multifamily
<ul style="list-style-type: none">• Lot Design, Preparation, and Development• Resource Efficiency• Energy Efficiency• Water Efficiency• Indoor Environmental Quality• Operations, Maintenance, and Homeowner Education	<ul style="list-style-type: none">• Site Planning• Construction Waste Management• Resource Efficiency• Durability and Moisture Management• Indoor Air Quality• High Performance Building Envelope• Energy Efficient Systems• Water Efficiency• Education and Operations• Innovation

EQUIVALENCY SUMMARY

Both NGBS and EarthCraft are comprehensive and rigorous green building rating systems. The rating systems cover many of the same concepts; although, in several sections, the NGBS includes innovative concepts not covered by EarthCraft.

Overall, the NGBS is more rigorous due to its point structure and its more recent baseline code. The NGBS also offers more flexibility, both in terms of certification process and compliance options.

PHILOSOPHY

The NGBS is written in straightforward code language. As it is part of the ICC suite of I-codes, there are also numerous references to relevant sections of the IRC and IECC. This approach accommodates various construction styles and climate zones. In comparison, EarthCraft is much more prescriptive in nature. The Multifamily Technical Guidelines are specific, and architectural drawings are included for many items.

COMPLIANCE

EarthCraft

For EarthCraft certification, there are three certification levels: Certified; Gold; and Platinum.

Compliance is based on total point achievement and compliance with ENERGY STAR and IECC requirements.

EARTHCRAFT COMPLIANCE			
	CERTIFIED	GOLD	PLATINUM
Point Thresholds	100	150	200
ENERGY STAR	Comply with EarthCraft Prescriptive Path requirements or reach ENERGY STAR v3 Target HERS Index without size adjustment factor. Full ENERGY STAR certification is not required.	Comply with all ENERGY STAR v3 Performance Path or HERS Index Target requirements. ENERGY STAR certification must be achieved. High rise projects must comply with the latest ENERGY STAR standards.	
Baseline Code	Meet 2015 IECC and applicable state amendments		
HVAC Design	Manual J and fresh air ventilation designs that meet current program standards		

ICC-700 National Green Building Standard (NGBS)

The NGBS has four certification levels: Bronze, Silver, Gold, and Emerald.

Within the NGBS, no one category of green practices is weighted as more important than another. All projects must achieve a minimum point threshold in every category of green building practice to be certified at any level. The NGBS is the only national program with this level of cross-category stringency, making it the most rigorous and comprehensive green building rating system.

Table 303
Threshold Point Ratings for Green Buildings

Green Building Categories			Rating Level Points ^{(a) (b)}			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	50	64	93	121
2.	Chapter 6	Resource Efficiency	43	59	89	119
3.	Chapter 7	Energy Efficiency	30	45	60	70
4.	Chapter 8	Water Efficiency	25	39	67	92
5.	Chapter 9	Indoor Environmental Quality	25	42	69	97
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
7.		Additional Points from Any Category	50	75	100	100
Total Points:			231	334	489	611

(a) In addition to the threshold number of points in each category, all mandatory provisions of each category shall be implemented.

(b) For dwelling units greater than 4,000 sq. ft. (372 m²), the number of points in Category 7 (Additional Points from Any Category) shall be increased in accordance with Section 601.1. The "Total Points" shall be increased by the same number of points.

Source: 2020 National Green Building Standard®

The NGBS offers multiple pathways for energy efficiency compliance. ENERGY STAR compliance is an option but not required.

As an ANSI standard, the NGBS is regularly updated to reflect the latest building practices and innovative technologies. Each version references the latest ICC codes as its baseline. The latest version (2020 NGBS) references the 2018 IECC, IRC, and IBC as the baseline code.

Like EarthCraft, the NGBS includes mandatory requirements for HVAC and ventilation design.

PROCESS & COSTS

Both certification programs require third-party testing and inspection by a qualified green building professional. EarthCraft Technical Advisors provide guidance and verification services for EarthCraft projects. NGBS Green Verifiers do the same for buildings pursuing NGBS Green certification. Both programs qualify, train, and test professionals with existing industry experience and maintain continuing education requirements. A key difference is that EarthCraft requires all Technical Advisors to be accredited RESNET Rater while NGBS Green accepts a wider range of qualifying professional credentials to demonstrate energy efficiency knowledge.

EarthCraft Multifamily requires that each project must follow the process outlined in the EarthCraft Multifamily Manual to be eligible for certification. The following steps must be addressed:

Pre-Construction	Pre-Drywall	Project Closeout
1 Project Registration	7 Kick-Off Meeting	13 Final Inspection(s)
2 Project Information Submittal	8 Kick-Off Meeting Report Submittal	14 Confirmed Energy Model(s)
3 Preliminary Energy Model(s) or Analysis of Prescriptive Compliance	9 Air Sealing Inspection(s)	15 Final Inspection Submittal
4 Preliminary Energy Model(s) Report Submittal(s) or Specifications reaching Prescriptive Compliance	10 HVAC Initial Diagnostics/Inspection(s)	16 Certification Submittal
5 EarthCraft Design Review	11 Insulation Inspection(s)	17 Certification
6 EarthCraft Design Review Report Submittal	12 Pre-drywall Inspection Submittal	

Source: EarthCraft Multifamily Manual

The NGBS Green process offers more flexibility, especially in the design and planning phases. NGBS Green requires two mandatory inspections: rough (pre-drywall) and final. Both EarthCraft and NGBS Green required independent third-party field verification and performance testing.

EarthCraft Multifamily requires five submittals of project documentation through the certification process.

NGBS Green Verifiers will likely have multiple reviews and meetings with a project team throughout the certification. However, NGBS Green requires only two submissions to Home Innovation—once after the rough inspection and other after the final inspection.

EarthCraft assesses a registration fee that must be paid at the start of the certification process. In comparison, the registration step for NGBS Green is free but mandatory. Certification fees are invoiced around rough inspection.

The EarthCraft and NGBS fees are structured differently. EarthCraft assesses a per-unit fee for buildings under a unit threshold and a flat-rate building-level fee above that unit threshold. The NGBS Green fee schedule is much easier to understand. Home Innovation assesses both flat rate and per-unit fees for multifamily.

EarthCraft registration fees:

- 1-3 stories with < 106 units: \$75/unit
- 1-3 stories with > 106 units: \$8,000
- ≥4 stories & ≤106 units: \$85/unit
- ≥4 stories & > 106 units: \$9,000

NGBS Green certification fees:

- Up to 3 stories: \$300/building + \$30/unit
- 4 stories to 8 stories: \$700/building + \$30/unit
- 9 stories and above: \$1,000/building + \$30/unit
- Volume pricing available for projects with 10+ bldgs

A 3-story, 100-unit building would pay nearly twice as much in registration fees as they would in NGBS Green certification fees. The project would be expected to pay \$7,500 under EarthCraft but only \$3,300 under NGBS Green.

COMPARISON OF GREEN CRITERIA

2020 NGBS vs. EarthCraft Multifamily	
Lot Design, Preparation, and Development // Site Planning; Construction Waste Management	
SIMILARITIES	DIFFERENCES
<p>The NGBS and EarthCraft address similar site selection and construction concepts.</p> <p>Both rating systems promote:</p> <ul style="list-style-type: none"> • Selection of Brownfield or infill lots • Density, access to public transit and green spaces, and pedestrian and bike access • Environmentally-friendly lot construction with criteria for site assessment, erosion and sediment control, tree protection, waste diversion, and more • Design features that support efficient resource use for the long-term, including heat island mitigation, stormwater control, and parking capacity • Innovation practices that support a sustainable lifestyle, including community gardens, bike racks and storage, and electric vehicle charging 	<p>The NGBS and EarthCraft both include additional practices to limit impact on natural resources.</p> <p>The NGBS includes practices for assessment and preservation of natural resources that are holistic in nature, including: landscape planning; low-impact development; wildlife habitat; and permeable materials.</p> <p>EarthCraft includes various items specific to trees that are not addressed in the NGBS, including: mill cleared logs; street trees; tree planting; and stump grinding. EarthCraft also includes practices for road/vehicle cleaning, water quality testing, and improved vehicular access, which are not addressed within the NGBS.</p> <p>The NGBS also includes additional innovative practices, including CNG vehicle fueling, smoking prohibitions, and exercise and recreational space. EarthCraft includes items related to tenant business center access and covered bus stops that are not included in the NGBS.</p>

2020 NGBS vs. EarthCraft Multifamily	
Resource Efficiency // Resource Efficiency; Durability and Moisture Management	
SIMILARITIES	DIFFERENCES
<p>The NGBS and EarthCraft both include practices that minimize the use of resources and ensure durable construction, including:</p> <ul style="list-style-type: none"> • Conditioned floor area • Advanced framing / material use • Local, recycled, and natural content materials • Moisture control • Pest treatment 	<p>The NGBS Resource Efficiency chapter is much more robust than the EarthCraft Resource Efficiency. It includes many more practices that support efficient material use and sustainable product selection. The NGBS also includes universal design and resilient construction categories, which are not addressed by EarthCraft.</p> <p>EarthCraft includes a section on product warranties, which is not addressed by the NGBS.</p>

2020 NGBS vs. EarthCraft Multifamily

Energy Efficiency // High Performance Building Envelope; Energy Efficient Systems

SIMILARITIES

EarthCraft and NGBS address many similar energy efficient concepts, including but not limited to:

- Air sealing
- Insulation performance and installation
- Fenestration
- Solar shading
- Passive solar design
- Alternative refrigerants
- HVAC sizing, efficiency, and installation
- Ventilation
- Duct installation and testing
- High efficacy lighting
- ENERGY STAR lighting and appliance

DIFFERENCES

Overall Performance

Compared to EarthCraft, the NGBS requires significantly higher levels of energy performance for both baseline and higher levels of certification.

The 2020 NGBS requires 2018 IECC compliance at the Bronze level. This is approximately 3.4% higher than the 2015 IECC compliance, which is the energy performance required by EarthCraft at its Certified level.

The NGBS requires 7.5% higher energy performance with each higher certification levels. At EarthCraft's higher certification levels, ENERGY STAR v3 or ENERGY STAR MFHR compliance is required. Those same ENERGY STAR achievements would only earn Bronze level Energy Efficiency under the NGBS.

The NGBS also includes more stringent performance testing requirements. Depending on the climate zone, the NGBS requires air infiltration at or below 3ACH or 5ACH 50. EarthCraft accepts up to 7ACH50 at the Certified level and 5ACH50 for the Gold and Platinum levels. Additional points are available for air leakage at or below 3ACH50.

Compliance Options

The NGBS offer multiple pathways to demonstrate energy efficiency compliance:

- Performance Path
- Prescriptive Path
- Energy Rating Index (ERI) Target Path
- ENERGY STAR v3
- ENERGY STAR MFHR
- IECC or IRC compliance
- Alternative compliance for Tropical Zone

EarthCraft does not offer the same degree of flexibility. If ENERGY STAR compliance/certification is not pursued, the only option is a Prescriptive Path.

2020 NGBS vs. EarthCraft Multifamily

Energy Efficiency // High Performance Building Envelope; Energy Efficient Systems

SIMILARITIES	DIFFERENCES
	<p>Innovative Practices</p> <p>The NGBS covers many Energy Efficiency concepts not addressed by EarthCraft, including:</p> <ul style="list-style-type: none">• Tropical Climate Zone compliance• Energy consumption controls• Renewable energy systems• Smart appliances and system• Parking garage efficiency• Grid-interactive thermal storage systems• Electric and CNG vehicle fueling stations• Smart ventilation• Third-party benchmarking services <p>EarthCraft addresses radon resistant construction and green roofs in its Energy Efficiency chapter. Those same concepts are addressed in NGBS' Resource Efficiency and Indoor Environmental Quality sections.</p>

2020 NGBS vs. EarthCraft Multifamily

Water Efficiency

SIMILARITIES	DIFFERENCES
<p>Both the NGBS and EarthCraft include prescriptive measures to conserve water use both indoors and outdoors. Both rating systems address:</p> <ul style="list-style-type: none"> • Low-flow standards for all fixtures • Waterless urinals • ENERGY STAR clothes washers • Water softeners • Drinking water treatment systems • Hot water distribution and recirculation • Greywater, rainwater • Irrigation systems • Landscape design • Low slope sites 	<p>The NGBS offers more flexibility, as it includes both prescriptive and performance compliance paths for water efficiency. The Water Rating Index (WRI) is a flexible performance path for demonstrating water efficiency.</p> <p>The NGBS includes a wider breadth of prescriptive practices for water efficiency; many represent innovative technologies. The following concepts are addressed by the NGBS, but not EarthCraft.</p> <ul style="list-style-type: none"> • Water usage metering • Dedicated metering for pools and spas • Automated motorized covers for pools and spas • Automatic leak detection and control devices • Recirculating humidifier • Reclaimed, greywater, or rainwater pre-piping • Engineered biological system or intensive bioremediation systems <p>EarthCraft includes several concepts not addressed by the NGBS, many are specific to outdoor landscaping and irrigation.</p> <ul style="list-style-type: none"> • Unit water pressure • Leak detection verification • Cover all exposed soil with mulch layer • Ornamental water features • Install plants to maintain $\geq 2'$ distances from home at maturity • Test and amend soil • Timer on exterior water spigots

2020 NGBS vs. EarthCraft Multifamily

Indoor Environmental Quality // Indoor Air Quality

SIMILARITIES	DIFFERENCES
<p>The NGBS and EarthCraft rating systems address many of the same concepts in their indoor environmental quality sections, including:</p> <ul style="list-style-type: none"> • Combustion appliances • Carbon monoxide alarms • Building entrance pollutant control • Duct protection • Low-emission materials • Filters <p>NGBS also addresses ventilation within its indoor environmental quality section, while EarthCraft addresses it under Energy Efficient Systems.</p>	<p>The NGBS also includes a practice related to tobacco smoking prohibitions. This is not addressed within the EarthCraft rating system.</p> <p>EarthCraft includes items for carpet minimization and pre-occupancy flush which are not addressed in the NGBS.</p>

2020 NGBS vs. EarthCraft Multifamily

Operations, Maintenance, and Homeowner Education // Education & Operations

SIMILARITIES	DIFFERENCES
<p>Both the NGBS and EarthCraft include a chapter that covers operations. Both chapters address the creation of owners' and maintenance guides and marketing of the green certification.</p> <p>EarthCraft includes the following concepts that the NGBS addresses elsewhere:</p> <ul style="list-style-type: none"> • HVAC installation (addressed in NGBS Energy Efficiency chapter) • Centrally located community recycling center (addressed in NGBS Resource Efficiency chapter) • ENERGY STAR (addressed in NGBS Energy Efficiency chapter) • Community certification (addressed in NGBS Lot Design chapter) • Commercial space (addressed in NGBS Commercial Spaces chapter) 	<p>The NGBS is much more robust, as it requires the creation of a building construction manual and training for building owners and multifamily occupants. It also includes optional practices for post-occupancy performance verification and green appraisals.</p> <p>EarthCraft includes items related to storm drain labeling and use of an EarthCraft real estate professional. Neither of these concepts are addressed in the NGBS.</p> <p>EarthCraft awards projects that meet the federal residential labeling programs, specifically Indoor airPLUS, WaterSense Labeled Homes, and Building America Builder's Challenge. While these outside programs have a lot of synergy with NGBS requirements, the standard does not include specific practices for achievement of these labels/certifications.</p>

Innovation

The EarthCraft Multifamily Guidelines address the following concepts within the Innovation chapter:

- On-site fuel cell or cogeneration system
- Solar-ready design
- Solar electric system
- Common areas use solar electric system
- Housing affordability
- Project-specific innovation points

Solar electric systems are covered in the NGBS Energy Efficiency chapter, as that has a broader practice that addresses all on-site renewable energy options. None of the other concepts are addressed within the NGBS standard.