

COMPARISON:

NGBS Green vs. Earth Advantage

Overview

The National Green Building Standard (NGBS) and Earth Advantage are both recognized rating systems for high-performance, sustainable buildings. This report examines the differences and advantages of 2020 NGBS Green Certification as compared to Earth Advantage Multifamily v1.6/2012 Rating System.

About NGBS Green

The **ICC-700 National Green Building Standard (NGBS)** was first developed in 2008 through an open consensus development process and became the first residential-specific rating system to be approved as an ANSI standard. Since 2008, every NGBS version has been ANSI-approved. A copy of the ICC-700 National Green Building Standard is available on the ICC website [here](#).

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 new and existing single-family homes, multifamily and mixed-use buildings, and land developments. The NGBS includes green building practices relevant to all construction styles and climate zones.

Home Innovation Research Labs serves as the standard development organization for the NGBS, as well as the certifying agency for the NGBS Green Program. It requires that a qualified, independent third-party inspect the project and verify that all green design or

construction practices claimed are incorporated correctly into the project. All projects undergo at least two inspections, a rough inspection before drywall is installed, and a final inspection once the project is completed. After final inspection, the accredited verifier will submit the final inspection report to Home Innovation, where it will be reviewed and issued a certificate provided all documentation is complete and accurate.

About Earth Advantage

In 1994, Portland General Electric (PGE) began to develop “Earth Smart,” a residential certification division of the utility company; in 2002, the program’s name was changed to **Earth Advantage**. When PGE began participating in the Energy Trust of Oregon in 2005, they separated Earth Advantage into its own nonprofit organization.

Earth Advantage certifies new single-family, multifamily, and mixed-use buildings only in the Northwest region of the US. They currently have homes certified across Oregon and in

the Southwest area of Washington. They also certify substantial rehabilitation for multifamily buildings and mixed-use buildings, if more than 50% of the conditioned space is for residential use.

The Earth Advantage rating system is revised and updated by their staff; however, they do not have a formal or public process for updating their rating system, nor do they update it on a regular schedule. The current version of the Earth Advantage program is the 2021 version; however the rating system is [not available to the public](#). The prior version is 2012, which is available for public download. A PDF of the 2012 Earth Advantage Residential Measures Resource

Guide is available for download on the [Building America Solution Center](#) (resource of the U.S. Department of Energy’s Building Technologies Office).

For homes and buildings seeking certification, Earth Advantage staff conducts field inspections to determine compliance, reviews architectural drawings, and completes the project’s energy modeling. Earth Advantage specifically prohibits third-party verifiers to conduct inspections, except in certain circumstances. Additionally, builders and architects are often allowed to conduct field inspections for their own projects.

Categories of Green Practices

The 2020 NGBS Chapters 5-10 are applicable for new construction and are divided into six categories: Lot Design (Ch 5); Resource Efficiency (Ch 6); Energy Efficiency (Ch 7); Water Efficiency (Ch 8); Indoor Environmental Quality (Ch 9); and Operations & Maintenance (Ch 10).

Earth Advantage Multifamily Certification addresses five “Pillars” of Sustainability: Energy; Health; Land; Materials; and Water. These pillars are incorporated into 11 different categories within the standard.

The NGBS and Earth Advantage have practices in four similar categories. Earth Advantage includes a category for Waste Management, which is not a stand-alone category in the NGBS, but rather integrated into Chapter 6- Resource Efficiency. Furthermore, NGBS has one chapter for all Energy Efficiency practices, whereas Earth Advantage has energy efficiency practices integrated throughout many different sections.

Comparison: Green Practices	
2020 NGBS	Earth Advantage Multifamily v1.6/2012 Rating System ¹
<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 • Waste Management • Building (Foundation, Envelope, Resource Efficiency) Systems • Heating and Cooling Systems • Air Sealing/ Thermal Envelope Ventilation • Lighting, Appliances, and Water Heating • Indoor Air Quality • Resource Efficient Building Materials • Water Efficiency and Landscaping • Solar Thermal and Photovoltaic • Earth Advantage Bonus and Innovative New Measures

¹ [2012 Earth Advantage Residential Measures Resource Guide](#)

Certification Requirements

Earth Advantage has three levels of certification: Silver; Gold; and Platinum. To earn an Earth Advantage certification for any level, projects must meet minimum points in the following categories: 10 points for Energy; 15 points for Health; 20 points for Materials; and 10 points for Water. The threshold for Silver, Gold, and Platinum are 70, 90, and 120 points, respectively.

NGBS has four levels of certification: Bronze; Silver; Gold; and Emerald. The corresponding minimum overall point thresholds are 231, 334, 489, and 611. Additionally, there is a point threshold requirement for each green building category (Chapter 5-10) to earn certification at each level. In addition to the point thresholds, both overall and for each category, there are mandatory practices for most categories. The chart below shows the point threshold for each category and rating level.

Green Building Categories		Comparison: Green Practices			
		Bronze	Silver	Gold	Emerald
Chapter 5	Lot Design, Preparation, and Development	50	64	93	121
Chapter 6	Resource Efficiency	43	59	89	119
Chapter 7	Energy Efficiency	30	45	60	70
Chapter 8	Water Efficiency	25	39	67	92
Chapter 9	Indoor Environmental Quality	25	42	69	97
Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
	Additional Points from Any Category	50	75	100	100
Total Points		231	334	489	611

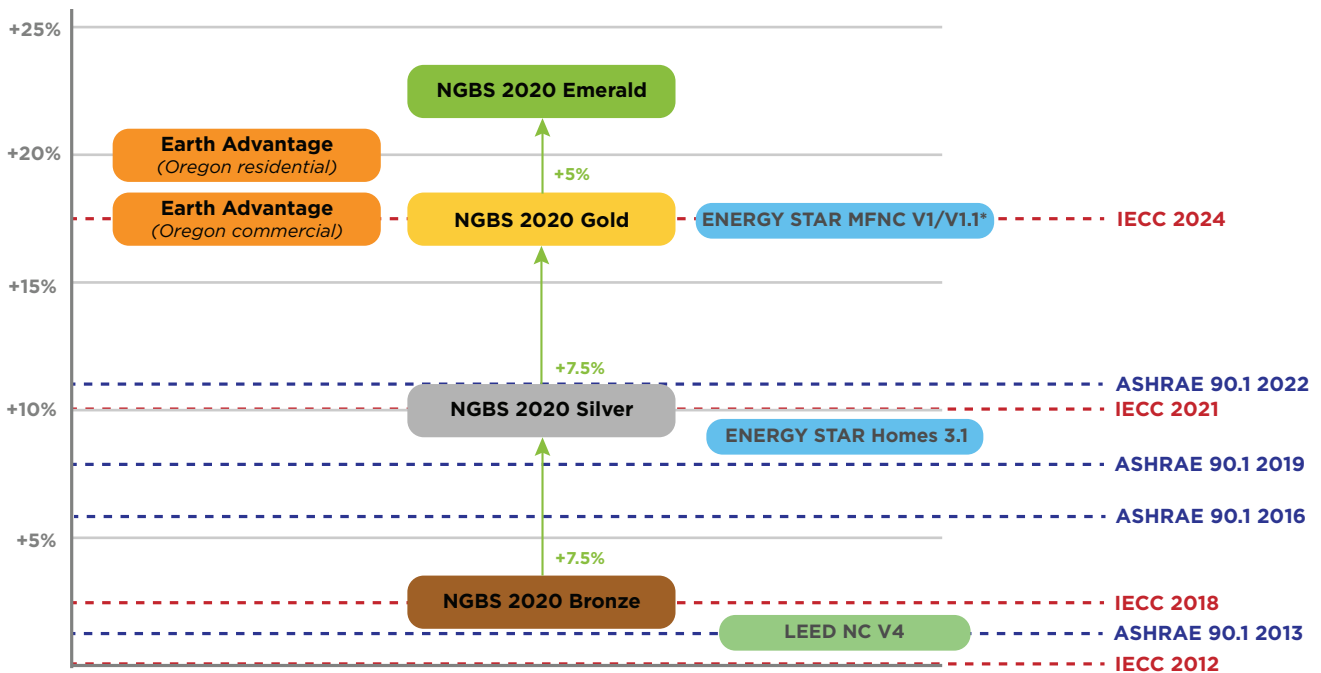
Overview: Energy Efficiency Requirements

The NGBS offers four pathways to meet Energy Efficiency requirement: Prescriptive, Performance, ERI (Energy Rating Index), and alternative compliance options (ENERGY STAR; IRC or IBC compliance). With the exception of the alternative compliance paths, all pathways require minimum energy efficiency compliance per Section 701.

Earth Advantage only has one pathway to meet the minimum energy requirements. To earn certification, buildings must be at least 10% more efficient than the current baseline energy code. Earth Advantage staff uses the as-designed and as-built building for energy modeling, against the baseline code equivalents.

For Earth Advantage projects located in Oregon, the current residential energy code is based on an amended version of the 2021 IECC, effective April 2024. The commercial energy code follows the ASHRAE Standard 90.1- 2019, effective April 2021. The baseline energy performance level for the 2020 NGBS is the 2018 IECC. Therefore, projects earning Bronze level certification are equivalent to the 2018 IECC. Projects earning 2020 NGBS Silver level certification are equivalent to the 2021 IECC (see in the Energy Efficiency Comparison Chart² below).

Since Earth Advantage requires that projects are 10% more efficient than the baseline code, projects following the residential energy code are 10% more efficient than a NGBS Silver-level building, or 17.5% more efficient than the 2020 NGBS baseline, the 2018 IECC and a Bronze Certified Building. For Earth Advantage projects following the commercial energy code, a building 10% more efficient than ASHRAE 90.1-2019 would be on par with a Gold-level certification for the 2020 NGBS.



² [NGBS Energy Efficiency Comparison](#)

Comparison: Energy Efficiency Requirements

The 2020 NGBS and 2012 Earth Advantage Rating System both have required Energy Efficiency practices for all projects earning certification. The chart below compares the mandatory Energy Efficiency practices for each program.

Energy Efficiency Requirements	
2020 NGBS Mandatory Practices	Earth Advantage Multifamily v1.6/2012 Rating System Mandatory Practices
<p>Energy Efficiency</p> <ul style="list-style-type: none"> Minimum energy performance through either 702 Performance Path, 703 Prescriptive Path, 704 ERI Target Path or 701.1.4 Alternative Bronze, Silver or Gold compliance for tropical zones or ENERGY STAR Certified homes HVAC system sizing per ACCA Manual J or S Radiant and hydronic space heating is designed and installed per industry standards Proper duct air sealing, testing and system sizing Building thermal envelope air sealing is durably sealed at all locations listed in standard Air barrier, air sealing, building envelope testing is in accordance with 701.4.3.2 and 701.4.3.2.1 Grade I insulation installation for all projects and energy pathways Air infiltration rate is no more than 0.3 cfm for windows, skylights and sliding glass doors, and is no more than 0.5 cfm for swinging doors Fenestration air leakage is in accordance with NFRC400 or equivalent and labeled Luminaires in the building thermal envelope are properly sealed, IC-rated and labeled High-efficacy lighting for a minimum of 75% of hard-wired fixtures Insulated boiler piping in unconditioned space 	<p>Site Planning</p> <ul style="list-style-type: none"> Cert. based whole bldg. energy modeling (as-designed & as-built) min. 10% req. <p>Heating and Cooling Systems</p> <ul style="list-style-type: none"> Design heating/cooling loads to industry guidelines Design duct system using appropriate industry guidelines Duct leakage test: Required when ducts are outside the building envelope Zonal pressure relief <p>Air Sealing/Thermal Envelope Ventilation</p> <ul style="list-style-type: none"> Unitized res. space(s) surface area leakage: 0.30 CFM50 per SF of the enclosure Thermal envelope checklist: ENERGY STAR Checklist (6-sided box requirements) <p>Lighting, Appliances, and Water Heating</p> <ul style="list-style-type: none"> ENERGY STAR and/or DLC in-unit lighting package: min. 75% of fixtures ENERGY STAR rated dishwashers, clothes washers, and refrigerators Sealed combustion water heater: If located in a conditioned space <p>Building (Foundation, Envelope, Resource Efficiency) System</p> <ul style="list-style-type: none"> Window Efficiency: NFRC or equivalent (whole window) SHGC/U-Values

Comparison: Resource Efficiency and Indoor Environmental Quality Requirements

Both NGBS and Earth Advantage have sections in their rating system related to resource efficiency, health, and wellness. In the NGBS, Chapter 6: Resource Efficiency, covers many topics related to construction materials, moisture management, resiliency, waste, lifecycle assessment, and sustainable products. Earth Advantage has a similar section, “Resource Efficient Building Materials”, but this section is not as comprehensive as the NGBS Chapter 6 Resource Efficiency chapter. Other practices related to moisture management, waste and construction materials are integrated into the “Waste Management” and “Building (Foundation, Envelope, Resource Efficiency) System” sections.

NGBS Chapter 9 Indoor Environmental Quality includes practices related to ventilation, air quality and pollution control. Similar Earth Advantage practices are split into three different sections: Indoor Air Quality; Heating and Cooling Systems; and Air Sealing/Thermal Envelope Ventilation.

Energy Efficiency Requirements	
2020 NGBS Mandatory Practices	Earth Advantage Multifamily v1.6/2012 Rating System Mandatory Practices
<p>Resource Efficiency</p> <ul style="list-style-type: none"> • Capillary break and vapor retarder installed at concrete slabs and crawlspaces • Exterior drain tile installed for below grade spaces • Dampproof walls required below finished grade • Crawl space sealed when built as conditioned area • Dry Insulation within cavities when enclosed by drywall • Water-resistive barrier installed behind siding • Flashing is used to minimize water entry • Finished grade is sloped to facilitate drainage away from the building • Tile backing materials installed in wet areas • Ice barrier installed at roof eaves • Horizontal ledgers are sloped away for drainage • Hazardous waste is properly disposed and included in waste management plan 	<p>Site Planning</p> <ul style="list-style-type: none"> • No Tropical Woods used on bldg. or project site unless FSC Certified or Reclaimed • Project Wide Recycling Center: Recycling System <p>Heating and Cooling Systems</p> <ul style="list-style-type: none"> • Develop and Implement Construction Waste Management Reduction Plan • Recycle Wood & Cardboard (Target 95% or greater) <p>Air Sealing/Thermal Envelope Ventilation</p> <ul style="list-style-type: none"> • Integrated Weather Barrier, Window & Door Flashing System: Installed properly • Wall Below Grade: Thermal Insulation Min. R-19 or better for occupied spaces • Intermediate Framing Techniques • Rainscreen Wall System: under masonry cladding
<p>Indoor Environmental Quality</p> <ul style="list-style-type: none"> • Gas-fired fireplaces, direct heating equipment and solid fuel-burning appliances are code compliant and vented to the outdoors • Structural plywood and OSB are made of moisture-resistant adhesives and are DOC PS 1 or DOC PS 2 compliant • Wall-to-wall carpeting is not adjacent to water closets • Carbon monoxide alarms installed • Whole-building ventilation for dwelling units when the maximum air infiltration rate is less than 5.0 ACH50 • Kitchen and bathroom exhaust combustion venting • Garage pollutant protection • Passive radon system for buildings in Radon Zone 1 • Sealed living space • Inspection and remediation of microbial growth and moisture 	<p>Indoor Air Quality</p> <ul style="list-style-type: none"> • Framing Lumber Moisture Test Results • Low VOC Wall & Ceiling Latex Paint: 150gpl or less <p>Heating and Cooling Systems</p> <ul style="list-style-type: none"> • Gas Fireplace/Heater: Sealed Combustion, Direct Vent w/ electronic ignition • Protect Intake and Exhaust Ductwork during construction from dirt, dust, debris <p>Air Sealing/Thermal Envelope Ventilation</p> <ul style="list-style-type: none"> • Bath Fans: Fans in full baths meet ENERGY STAR, efficacy, and Sone Ratings • Kitchen Exhaust Fan: Design/Performance (ENERGY STAR Rangehood, efficacy)

Comparison: Other Mandatory Requirements

Other Mandatory Requirements	
2020 NGBS Mandatory Practices	Earth Advantage Multifamily v1.6/2012 Rating System Mandatory Practices
Lot Design, Preparation, and Development <ul style="list-style-type: none"> None 	Site Planning <ul style="list-style-type: none"> Develop, Post, and Implement Erosion Control Site Plan Green Team Meetings: Preliminary Rating and EA Site Foreman Kick-Off
Water Efficiency <ul style="list-style-type: none"> Water Rating Index (WRI) score of 70, or 25 points from Chapter 8 (roughly equivalent to a 30% reduction in water use) A dedicated water meter for pools and spas For irrigation systems, a plan is created and implemented by qualified professional 	Water Efficiency and Landscaping <ul style="list-style-type: none"> Hydro Zoning: Grouping of ground covers (incl. lawns), shrubs & trees for watering Non-Invasive Plants
Operations, Maintenance, and Homeowner Education <i>Single-family:</i> <ul style="list-style-type: none"> Homeowner's manual Training of initial homeowners <i>Multifamily:</i> <ul style="list-style-type: none"> Building construction manual Operations manual Maintenance manual Training of building owners Multifamily occupant manual 	Earth Advantage Bonus and Innovative New Measures <ul style="list-style-type: none"> No mandatory practices
	Site Planning <ul style="list-style-type: none"> EAMF program standards to be incorporated in Construction Documents

Conclusion

Both NGBS and Earth Advantage are comprehensive and rigorous green building rating systems. The rating systems cover similar concepts with some of the same mandatory practices. Earth Advantage's practices are divided into 11 sections, whereas the practices for NGBS are divided into six more concise chapters. The NGBS also offers more flexibility, through the four different pathways offered for energy compliance.

When comparing the two programs minimum energy efficiency requirements, Earth Advantage projects are 17.5% more efficient than the 2020 NGBS baseline. For Earth Advantage projects following the commercial energy code, they are 10% more efficient than ASHRAE 90.1-2019, which is on par with a Gold-level certification for the 2020 NGBS. For the other green building categories, NGBS and Earth Advantage have many similar mandatory practices. The NGBS section for Resource Efficiency and Indoor Environmental Quality have more mandatory practices and stringent requirements than the comparable Earth Advantage sections.

The Earth Advantage Program and NGBS Green Program differ in terms of being a true third-party and credible green building certification program. The Earth Advantage Standard is revised and updated by staff; whereas the NGBS undergoes a full ANSI consensus process for each version of the standard and is open to the public for comment periods. The NGBS is updated on roughly the same cycle as the ICC building codes while the Earth Advantage rating system is not on a consistent nor publicly-visible revision schedule. Additionally, all NGBS Green Certified projects are inspected by third-party, accredited verifiers before being reviewed and certified by Home Innovation staff. Earth Advantage certified projects are inspected, reviewed, and certified all by Earth Advantage staff.

About Home Innovation Research Labs & NGBS

Home Innovation Research Labs is a full-service research, testing, and consulting firm focused removing barriers to innovation in the building industry. We help our clients to improve the quality, durability, affordability, and performance of building products as well as single and multifamily homes. Home Innovation provides an integrated, multidisciplinary team – including professionals in market research, building science analysis, laboratory testing, and standards development – to solve our clients’ most difficult product and technology issues. All of these skills manifest in our NGBS Green program – the largest residential green certification program in the nation. From product development and launch through improvement and certification, we help to find a home for innovation in the construction industry.

The ICC 700 National Green Building Standard® (NGBS) was developed based on decades of research and experience in residential building. It was the first point-based rating system focused on green residential construction, remodeling, and land development to be approved by the American National Standards Institute (ANSI). As an ANSI-approved standard, the NGBS was developed by a consensus committee and is subject to periodic review and public comment. Home Innovation serves as the administrator of this process and as the training and certification organization for the NGBS.

Learn more about Home Innovation and the NGBS at www.HomeInnovation.com