Net Zero Initiatives
3rd Party Rating Systems

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For more information on net zero and decarbonization definitions and strategies, see the SFTool's Building Decarbonization page.

Net Zero Energy rating systems available for use, and relevant to commercial building types (including Federal buildings) as of summer 2023, are:

- LEED Zero Energy
- ILFI Zero Energy Certification
- Architecture 2030's Zero Code

Net Zero Carbon rating systems available for use, and relevant to commercial building types (including Federal buildings) as of summer 2023, are:

- LEED Zero Carbon
- ILFI Living Building Challenge and Zero Carbon Certification

As detailed below, there are also certification systems for zero operational carbon, and zero energy homes (though strictly residential programs are not discussed here). Several other net zero certification systems are under development.

3rd Party Rating Systems

USGBC/LEED

LEED Zero**:** Since 2019, LEED has offered four types of net zero ratings that are available to buildings that already have an existing LEED Building Design and Construction (BD+C) or Operations and Maintenance (O+M) certification. The following are certification requirements:

1. Must be LEED certified (BD+C or O+M)
2. Candidates must provide twelve months of performance data through LEED Online
3. Initiate the Green Building Certification, Inc. (GBCI) review process once their use balance (carbon, water, energy, waste) is zero for a period of 12 months. Once achieved, each certification is valid for three years.

- **LEED Zero Carbon beta (2023):** Requires buildings to be highly energy efficiency with an ENERGY STAR score of 85 or greater; have no on-site combustion (with some exceptions); 100% clean energy including on and off site; report recharge of refrigerants for one year (tenants excluded) and leakage rate < 5%; policy for reduction of embodied carbon during renovations; and transportation requirements (EV charging or sustainable transportation performance options).
- **LEED Zero Carbon (original version - still available for use)**: Recognizes net zero carbon emissions from energy consumption through carbon emissions avoided or offset over a period of twelve months. Currently, this includes carbon avoided from energy use

and occupant transportation, but will later include all carbon associated from water, waste and embodied carbon in building materials.
    - Total Carbon = Carbon Emissions - Carbon Sequestration
- **LEED Zero Water**: Recognizes a potable water use balance of zero over a period of twelve months. A building has achieved zero water if its alternative water sources and water returned meets or exceeds its potable water consumed.
- **LEED Zero Energy**: Recognizes a source energy use balance of zero over a period of twelve months. A building has achieved zero energy if its non-renewable energy displaced (i.e. renewable energy used) meets or exceeds its energy delivered.
- **LEED Zero Waste**: Recognizes buildings that achieve GBCI's TRUE certification at the Platinum level. A building has achieved zero waste if it achieves an average of 90% or greater overall diversion from landfill, incineration, and the environment for solid, non-hazardous wastes for the most recent twelve months.

GBI/Green Globes

Green Globes Net Zero Programs: Beginning July 2023, GBI is offering two net zero certification programs that are available to new buildings, existing buildings, interior spaces, and portfolios. The programs have stand-alone minimum requirements and pre-certification with Green Globes Green Building certification is not required. New buildings may achieve a "Designed to Achieve" rating. Existing Buildings and Portfolios that meet all requirements achieve a Green Globes Net Zero Energy or Green Globes Net Zero Carbon certification. The programs are designed to support all building sizes and building types. The following are certification requirements:

- Demonstrate a minimum of 30% energy cost or EUI reduction from a baseline.
- Green Globes Net Zero Energy: Demonstrate 100% reduction in net site EUI.
- Offsite renewables and third-party certified RECs count after initial 30% energy cost improvement or reduction is met.
- Green Globes Net Zero Carbon: Demonstrate 100% reduction in net CO2e.
- Offsite renewables, third-party certified RECs, and third-party certified offsets count after initial 30% energy cost improvement or reduction is met.

Public input periods and pilot programs are being run simultaneously on GBI's Green Globes NZ programs through Dec. 31, 2023. Updated program requirements will be issued early in Q1 2024. GBI is also providing certificates of achievement for building owners that obtain GBI third-party assurance of direct emissions reductions of at least 50% or greater moving toward the goal of 100% onsite decarbonization / electrification."

Energy Star:

Energy Star NextGen for Commercial Buildings: ENERGY STAR NextGen is a proposed certification system for commercial buildings. It will recognize energy-efficient, low-carbon buildings, and will encourage U.S. building stock to move towards efficient electrification while contributing to the growth of renewable energy.

    - This certification is currently in the proposal stage and targets early 2024 release. Energy Star has released an informational webinar and the proposed standard.
    - The three main requirements are:
        - ENERGY STAR Certification - The building achieves an ENERGY STAR score of 75 or higher and meets all criteria associated with ENERGY STAR certification.
        - Use Renewable Energy - The building obtains at least 30% of the total energy it consumes from renewable sources.
        - Direct Emissions Target - The building's direct (i.e., onsite) greenhouse gas emissions intensity (GHGi) is at or below a specified level.

BREEAM

BREEAM (Building Research Establishment Environmental Assessment Method): BREEAM does not currently have a net zero carbon certification available for use, but states that its certifications play a role in guiding buildings "closer" to net zero.

- Carbon Risk Real Estate Monitor Project (CRREM) is currently being developed to publish trajectories that show a pathway to net zero carbon by 2050 to be in line with the 1.5°C and 2.0°C scenarios. CRREM will provide insight into the risk of "stranded assets" – properties that will not meet future energy efficiency standards and market expectations and may be increasingly exposed to the risk of early economic obsolescence.
- BREEAM is also currently working to establish the external standards and definitions that will be included in their Net Zero Carbon module, including any minimum requirements that may be required for inclusion (for example, caps on the proportion of emissions that are allowed to be offset).

BOMA

BOMA: In 2018 - 2020, BOMA Best offered the Net Zero Challenge to recognize organizations that pursue net zero carbon and net zero energy buildings. Here are reports on lessons learned from previous challenges.

International Living Future Institute

The International Living Future Institute (ILFI) offers three building certifications that require at least net zero operation as well as building decarbonization. Compliance for all three is determined through third-party audit.

Zero Energy (ZE) Certification: Launched in 2010

- Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception.

Zero Carbon (ZC) Certification: Launched in 2018

- Buildings must reduce their operational energy use by a set % relative to comparable buildings.
- Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new on/offsite renewable energy. Combustion is not allowed, with very limited exception
- Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions.

Living Building Certification (LBC): Launched in 2006 based on a theory of closed-loop systems, LBC certification requires net *positive* operational energy, along with compulsory performance in six other sustainability categories addressing waste management, water conservation, indoor environmental health, equity, and site ecology. The principal energy requirements are:

- Buildings must reduce their operational energy use by a set % relative to comparable buildings.
- Buildings must demonstrate over a continuous 12-month performance period that net 105% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception.
- Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions.

ASHRAE

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) provides standards for measuring and attaining net zero energy and carbon. ANSI/ASHRAE Standard 228-2023, Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance, sets requirements for evaluating whether a building or group of buildings meets a definition of “zero net energy” or a definition of “zero net carbon” during building operation. The standard draws from ASHRAE Standard 105, among others, to address energy and carbon flows across a site boundary, their measurement, and their balance. ANSI/ASHRAE/IES Standard 90.1, Energy Efficiency Standard for Sites and Buildings Except Low-Rise Residential Buildings is anticipated to include an “informative appendix” that is zero energy. This appendix has completed one advisory public review, and the committee is targeting October to have it available for adoption.

International Passive House Association

The International Passive House Association provides standards for buildings to require very little energy to achieve a comfortable temperature year round, often eliminating the need for conventional heating and air conditioning systems. While they do not currently offer a net zero certification, their buildings do have to meet the following standards:

- Buildings must not exceed certain space heating and cooling demands (with some allowance for dehumidification) and must limit the energy that can be used for domestic applications per square meter of usable living space.

- Requires that buildings meet an “air tightness” standard and maximum air changes per hour, as well as thermal comfort of not more than 10% of the hours in any given year exceeding 77º.
- Passive House buildings must be planned, optimized, and verified with the Passive House Planning Package and checklist.

Architecture 2030’s Zero Code

Zero Code Renewable Energy Procurement Framework: Provides framework to support the development of decarbonization policies with on- or off-site renewable energy requirements for meeting a building’s anticipated energy needs. It uses ASHRAE Standard 90.1-2019 as a base standard for energy efficiency.

- Zero Code 2.0: Applies to new commercial, institutional, and mid- to high-rise residential buildings. The proposed building zero energy performance (without considering renewable energy systems) must be less than or equal to the zero energy performance index target, as calculated in accordance with the performance rating method of ASHRAE Standard 90.1-2019.

World Green Building Council

World Green Building Council: The World Green Building Council (WorldGBC) is a global action network working with local green building councils to address whole life carbon emissions of existing and new buildings; enable resilient, healthy, equitable and inclusive places; and secure regenerative, resource efficient and waste-free infrastructure.

- Net Zero Carbon Buildings Commitment: As of May 2023, 140 global business organizations, 29 cities, and six states/regions have committed to the Net Zero Carbon Buildings Commitment, including the State of California. This commitment states that by 2030:
    - Existing buildings must reduce their energy consumption and eliminate emissions from energy and refrigerants removing fossil fuel use as fast as practicable (where applicable). Where necessary, compensate for residual emissions through offsets or sequestration.
    - New developments and major renovations are built to be highly efficient, powered by renewables, with a maximum reduction in embodied carbon and compensation of all residual upfront emissions.

New Buildings Institute

New Buildings Institute: As of 2023, New Buildings Institute does not offer any net zero standards. They offer a Getting to Zero forum, a zero buildings database, and decarbonization-related tools and guides.

Certification Systems that currently have net zero programs:

Certification System	Certification Requirements	Getting Started	Program Overview	Offsets Allowed?
Green Building Initiative's Green Globes Journey to Net Zero	1. ENERGY STAR Certification—the building must achi score of 75 or higher (80 or higher for multifamily pro 2. Minimum 30% site EUI improvement vs ASHRAE 20 baseline year (EB) 3. Further reduction with onsite/offsite renewables 4. Certified RECs and offsets allowed 5. Carbon reduction targets based on percentage reduction in net CO2e relative to baseline	To learn more and join the pilot: https://thegbi.org/net-zero-public-input	Two options, Net Zero Energy and Net Zero Carbon. Both programs offer certification at 100% reduction of either net site EUI, or net CO2e, as well as a pathway for recognition as buildings move toward certification	✓ Allows the purchase of some certified RECs and offset packages
USGBC/LEED Net Zero Carbon	**1.** Must be LEED certified (BD+C or O+M) **2.** Candidates must provide twelve months of performance data through LEED Online **3.** Initiate the Green Building Certification, Inc. (GBCI) review process when the project meets the requirements with performance data for a period of 12 months. Once achieved, each certification is valid for three years.	Utilize the steps on this page	Four types of net zero ratings in carbon, water, energy, and waste	✓ Allows the purchase of carbon offset packages
ILFI Zero Energy	1. Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception.	Utilize the steps on this page	This is one of three types of net zero certifications from LBC	✓ Allows the purchase of carbon offset packages only in special circumstances
ILFI Zero Carbon	**1.** Buildings must reduce their operational energy use by a set % relative to comparable buildings. **2.** Buildings must demonstrate over a continuous 12-month performance period that net 100% of the energy use associated with the building is supplied by new on/offsite renewable energy. Combustion is not allowed, with very limited exception.	Utilize the steps on this page	This is one of three types of net zero certifications from LBC	✓ Allows the purchase of carbon offset packages only in special circumstances

	3. Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions.			
ILFI Living Building Challenge	1. Buildings must reduce their operational energy use by a set % relative to comparable buildings. 2. Buildings must demonstrate over a continuous 12-month performance period that net 105% of the energy use associated with the building is supplied by new onsite renewable energy (offsite is permitted in some circumstances). Combustion is not allowed, with very limited exception 3. Buildings must reduce and disclose the embodied carbon emissions associated with life cycle assessment stages A1-5 of the project and offset 100% of the emissions.	Utilize the steps on this page	In addition to net positive energy, compliance with requirements related to water, waste, equity, resilience, IAQ and siting is compulsory	✓ Allows the purchase of carbon offset packages only in special circumstances
Architecture 2030's Zero Code	1. Applies to new commercial, institutional, and mid- to high-rise residential buildings. 2. The proposed building zero energy performance (without considering renewable energy systems) must be less than or equal to the zero energy performance index target, as calculated in accordance with the performance rating method of ASHRAE Standard 90.1-2019. 3. An online Energy Calculator is provided to estimate building energy consumption and off-site renewable energy requirements	Access to the code here	One option focused on net zero energy	✓ Can use offset packages only once all other options are exhausted
Energy Star's Next Gen ****(Pilot to be released in 2024)	1. ENERGY STAR Certification - The building achieves an ENERGY STAR score of 75 or higher and meets all criteria associated with ENERGY STAR certification. 2. Use Renewable Energy - The building obtains at least 30% of the total energy it consumes from renewable sources. 3. Direct Emissions Target - The building's direct (i.e., onsite) greenhouse gas emissions intensity (GHGi) is at or below a specified level.	Access to the plan here	One possible option focused on net zero energy	✓ Allows the purchase of carbon offset packages