



GGP Training Manual

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WWW.THEGBI.ORG | 503.274.0448 | info@thegbi.org



Welcome Message

It is our pleasure to welcome you to the fourth edition of the Green Globes Professional (GGP) accreditation program. This training is intended to develop experienced sustainability professionals into expert users of the Green Globes building assessment and rating program. The Green Building Initiative (GBI) recognizes that your time is valuable and seeks to provide you with a detailed yet focused training program that is self-paced and can be completed efficiently. The GGP credential demonstrates that you are a leader in the green building movement and on the cutting edge of the latest green building trends and technologies.

Founded in 2004, the goal of the GBI is to ensure that all commercial buildings, regardless of size, type or budget, are built and managed in an environmentally friendly manner. We all know today's buildings use an inordinate amount of resources and are responsible for nearly half of all greenhouse gas emissions and total energy consumed in the U.S. The best way to fix this problem is to ensure that practical and affordable green building tools and technologies are available for mainstream use. As you will learn during your training, the user-friendly and interactive approach used by Green Globes shows how any commercial building—from a school to a hospital, office building, or grocery store—can be built and managed sustainably and achieve a credible green rating.

Thank you for your commitment to improving the built environment. Good luck!

Sincerely,

The Green Building Initiative



SECTION 1

Importance of Building Green

LEARNING OBJECTIVES

- Explain the importance of building sustainability

Built Environment Impacts

Buildings are one of the heaviest consumers of our natural resources and account for a significant amount of greenhouse gas emissions, as well as produce significant amounts of waste. In the U.S. buildings account for

- 73% of electricity consumption¹
- 38% of all CO₂ emissions²
- 13.6% of all potable water³
- 61% of building-related construction and demolition debris is non-residential⁴

The impact on our environment is becoming increasingly apparent. Our climate is changing as evidenced by the increased temperatures across the United States and globally.

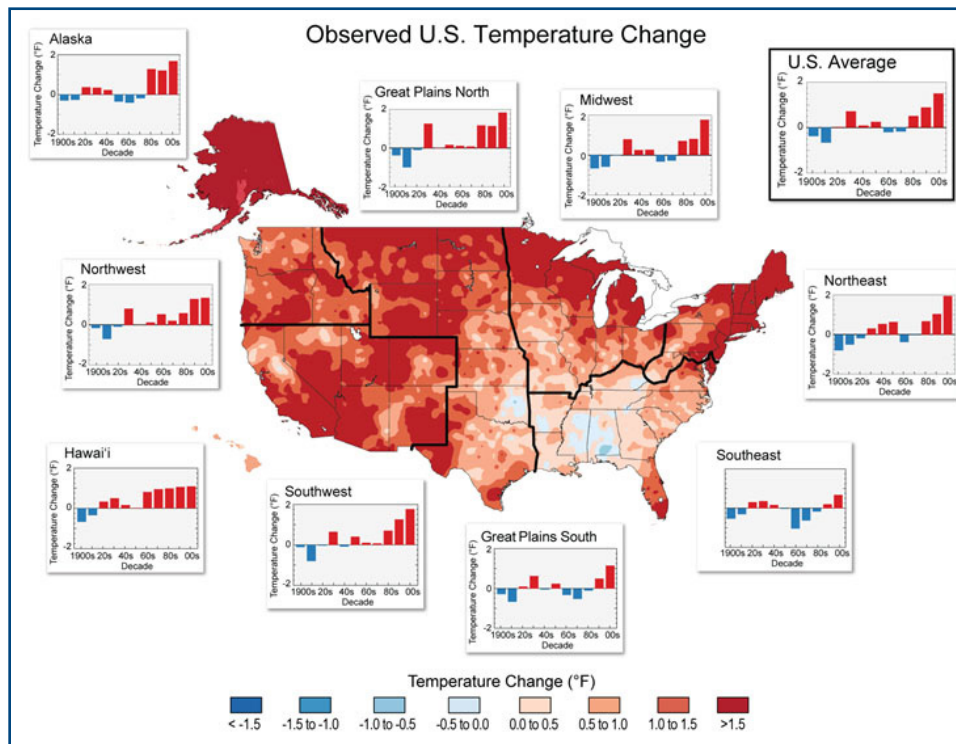


Figure Source: NOAA NCDC / CICS-NC, August 03, 2013

The colors on the map show temperature changes over the past 22 years (1991-2012) compared to the 1901-1960 average, and compared to the 1951-1980 average for Alaska and Hawai'i. The bars on the graphs show the average temperature changes by decade for 1901-2012 (relative to the 1901-1960 average) for each region. The far right bar in each graph (2000s decade) includes 2011 and 2012.

The period from 2001 to 2012 was warmer than any previous decade in every region.⁵

¹ Department of Energy (2011). Buildings Energy Data Book. Buildings Share of Electricity Consumption/Sales. Accessed October 26, 2011

² Energy Information Administration (2008). Assumptions to the Annual Energy Outlook.

³ Lenssen and Roodman (1995). Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction. Worldwatch Institute.

⁴ McGraw Hill Construction (2010). Smart Market Reports. Green BIM – How Building Information Modeling is Contributing to Green Design and Construction.

⁵ <http://www.globalchange.gov/browse/multimedia/observed-us-temperature-change>

The global annual average temperature (as measured over both land and oceans) has increased by more than 1.5°F (0.8°C) since 1880 (through 2012).

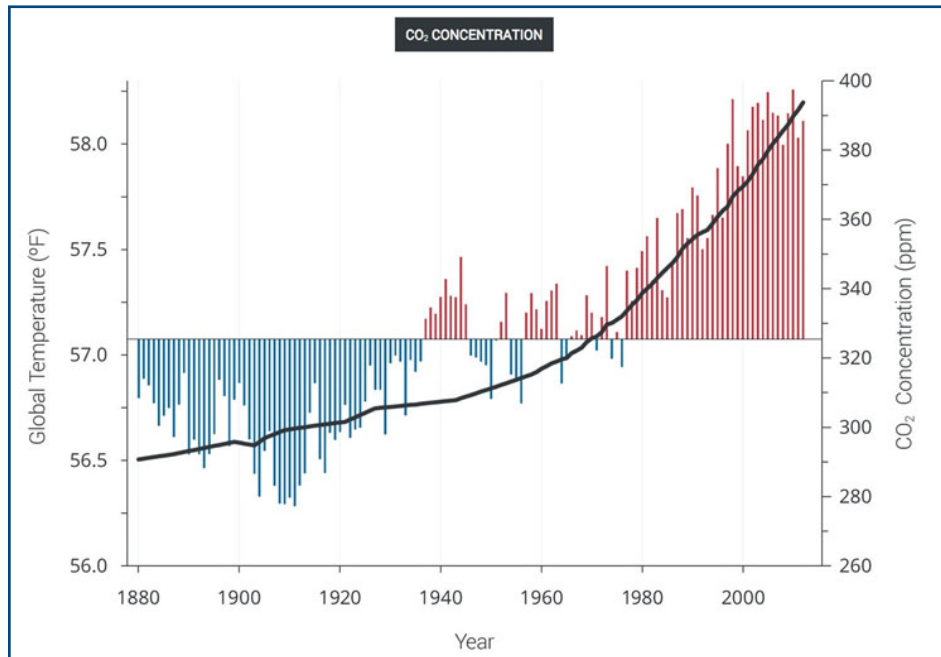


Figure Source: updated from Karl et al. 2009

Red bars in the chart above show temperatures above the long-term average, and blue bars indicate temperatures below the long-term average. The black line shows atmospheric carbon dioxide (CO₂) concentration in parts per million (ppm).

While there is a clear long-term global warming trend, some years do not show a temperature increase relative to the previous year, and some years show greater changes than others. These year-to-year fluctuations in temperature are due to natural processes, such as the effects of El Niños, La Niñas, and volcanic eruptions.⁶

According to the National Oceanic and Atmospheric Administration, the warming trend is expected to continue. Over the next 100 years temperatures could rise between 2 and 9.7 degrees Fahrenheit. The varying degrees of change are dependent upon what we do that will impact that future. The Obama Administration has consistently supported green building and energy efficiency.

Green building is about more than climate. It impacts the natural environment, our health, and the economy. Green buildings use less water and energy, create less waste, and provide healthier places for us to live, work, and play.

According to the U.S. Environmental Protection Agency, "Green construction methods can be integrated into buildings at any stage, from design and construction, to renovation and deconstruction. However, the most significant benefits can be obtained if the design and construction team takes an integrated approach from the earliest stages of a building project."⁷

⁶ <http://www.globalchange.gov/browse/multimedia/global-temperature-and-carbon-dioxide>

⁷ <http://www.epa.gov/greenbuilding/pubs/whybuild.htm>

Potential benefits of green building can include:

Environmental benefits

- Enhance and protect biodiversity and ecosystems
- Improve air and water quality
- Reduce waste streams
- Conserve and restore natural resources

Economic benefits

- Reduce operating costs
- Create, expand, and shape markets for green product and services
- Improve occupant productivity
- Optimize life-cycle economic performance

Social benefits

- Enhance occupant comfort and health
- Heighten aesthetic qualities
- Minimize strain on local infrastructure
- Improve overall quality of life

The green building movement needs to succeed. Less than one-half of one percent of the US non-residential buildings have been certified to any green building standard. While 80% of the U.S. commercial buildings are less than 100,000 square feet, they are less likely to certify due to the cost and complexity of some certification systems. However, there are choices when selecting a certification rating system.

One of those choices is Green Globes offered by the Green Building Initiative.



SECTION 2

Introduction

LEARNING OBJECTIVES

- Describe the history of the Green Building Initiative and Green Globes.



The Green Building Initiative (GBI)

The Green Building Initiative is a nonprofit organization and ANSI Standards Developer dedicated to accelerating the adoption of building practices that result in resource efficient, healthier and environmentally sustainable buildings. We advance this mission through credible and practical green building approaches for more sustainable communities.

Based in Portland, Oregon, GBI is the exclusive U.S. provider of the Green Globes rating and certification system. GBI also created the first third-party rating and certification system to measure compliance with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings.

GBI was founded in 2004 as a way to bring green building into the mainstream by helping local Home Builder Associations (HBAs) develop green building programs modeled after the National Association of Home Builders' (NAHB) Model Green Home Building Guidelines. After five years of work in the residential market, GBI gave more than 50 homebuilder associations nationwide access to partnerships and programs designed to help them build more sustainable homes.

Today, GBI serves the multi-residential and commercial markets with a membership that includes producers and users of green building products and services. The organization's funding sources include membership and affiliation dues, contributions, and the sale of building assessment and personnel certifications. GBI is governed by a board of directors that includes practitioners, manufacturers, and interested third parties such as universities, non-profits, and consumer groups. Each board member has one vote, ensuring GBI's governance is open, transparent, and balanced. Current members, supporters, and directors are listed on GBI's web site.

In 2005, GBI became the first green building organization accredited as a standards developer through the American National Standards Institute (ANSI). GBI developed the ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings, the first ANSI standard for green commercial buildings. The development process used a 30-member consensus committee broken into three equal parts of users, producers, and interested third parties. The ANSI committee controlled and determined the technical content of the standard following ANSI's internationally renowned consensus process to ensure that the content was not unduly influenced by any one individual, group, or organization. This public process included open meetings and four public comment periods. GBI used its ANSI standard as the basis for the 2013 enhancements to the Green Globes for New Construction protocol.

In 2014, GBI began ANSI's periodic maintenance process to update the standard. The revised Standard is designated BSR/GBI 01-201X according to ANSI protocol. GBI plans to maintain the Standard under continuous maintenance to allow for annual or biannual updates.



The History of Green Globes

The Green Globes environmental assessment and rating system represents years of research and refinement by a wide range of prominent international organizations and experts. Green Globes traces its origins to a system started in the United Kingdom called BREEAM (Building Research Establishment Environmental Assessment Method). BREEAM is a widely-used environmental assessment method for buildings and one of the first systems used globally to rate existing buildings. It helped set the standard for best practices in sustainable buildings and has become an important measure in describing a building's environmental performance. There are now more than 250,000 buildings certified under BREEAM.

In 1996, BREEAM was brought to Canada by the Canadian Standards Association in cooperation with ECD Energy and Environment. Pioneers of this project included Jiri Skopek, John Doggart, and Roger Baldwin, who were the principal authors of the BREEAM Canada document although more than 35 individuals participated in its development.

In 1999, ECD Energy and Environment worked with TerraChoice, the agency that administers the Government of Canada's Environmental Choice program, to develop a more streamlined, questionnaire-based tool, which was introduced as the BREEAM Green Leaf eco-rating program. This program led to the development of Green Leaf for Municipal Buildings with the Federation of Canadian Municipalities later that year.

In 2000, BREEAM Green Leaf took another leap forward in its evolution, becoming an online assessment and rating tool under the name Green Globes for Existing Buildings. Also in that year, BREEAM Green Leaf for the Design of New Buildings was developed for the Department of National Defense & Public Works and Government Services Canada.

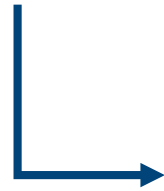
In 2002, Green Globes for Existing Buildings was introduced online in the United Kingdom as the Global Environmental Method (GEM). Work also began to adapt BREEAM Green Leaf for the Design of New Buildings into the online Green Globes for New Buildings. Participants in this process included representatives from Arizona State University, the Building Owners and Manufacturers Association of Canada (BOMA Canada), TerraChoice, and The Athena Institute.

In 2004, Green Globes for Existing Buildings was adopted by BOMA Canada under the name Go Green Comprehensive (now known as Go Green Plus). Also in 2004, the Green Building Initiative acquired the rights to distribute Green Globes in the United States. GBI has committed to continually refining the system to ensure that it reflects changing opinions and ongoing advances in research and technology and, in so doing, to involve multiple stakeholders in an open and transparent process.

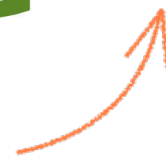
breeam UK



breeam CANADA



4,000 buildings certified



Use of Green Globes in the United States

Green Globes has been used to certify a wide variety of sustainable buildings in both the public and private sectors. As of June 2016, over 800 buildings have been certified in the United States. Private sector users of Green Globes include Whole Foods Market, Fidelity Investments, Internap, and Drexel University. Public sector clients include federal government agencies such as Veterans Affairs, GSA, NASA, NIH, and the Forest Service as well as various state, county, and city governments. A [certified building directory](#) is available on GBI's website.

Green Globes has achieved recognition by the U.S. federal government. In 2012, a report commissioned every five years by the GSA found that GBI's ANSI Standard version of Green Globes for New Construction met more of the requirements of the federal government than any other program. In 2013, recognition came in an [October letter to the Secretary of Energy](#) in which the GSA recommended that agencies use the Green Globes and LEED as the third party certification systems that the federal government can use to gauge performance in its construction and renovation projects. In 2014, The Department of Energy adopted a [new rule](#) stating that all Federal agencies wanting to use a green building rating system for new construction must use Green Globes or LEED.

