



**Efficiency, Effectiveness
and Accountability for
Federal High Performance Buildings:**

**Green Globes® Certification and the
Guiding Principles Compliance® Assessment Program
Cost-Benefits**

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Executive Summary

The U.S. Federal Government has partnered with the Green Building Initiative (GBI) to evaluate, document and improve the efficiency of 495 federal buildings since 2009. Green Globes® certified buildings and buildings that completed GBI's Guiding Principles Compliance® (GPC) assessment program were included in a federal high efficiency buildings study of energy and water savings that demonstrated a return on investment (ROI) of more than 200 percent over the life of the sample buildings.

The Administration's mandate for government agency efficiency, effectiveness and accountability aligns directly with the use of GBI's use of third-party assessors for building certification. These assessors travel onsite to each building to assess its high performance features and offer a distinctive added value proposition among certification programs used by the federal government. By working directly with each facility team, third-party assessors contribute their added expertise and knowledge gained by experience assessing other similar buildings to identify best practices and opportunities that improve the building's energy and resource savings.

A sample of federal energy managers, project managers and engineers who have used GBI's programs report the added value of the third-party assessor:

- Learning from their technical expertise;
- Saving time on documentation collection, organization, and the certification process;
- Realizing increased energy and water savings; and
- Receiving recommendations that address immediate building mission needs and environmental management processes, and cost-effective recommendations for future improvements.

Green Globes certification and GBI's GPC assessment costs are based on building square footage, and the volume and type of building. A review of past Green Globes and GBI's GPC assessments for federal buildings finds certification costs averaging between \$7,500 and \$13,500 per building.

GBI's Green Globes certification and GPC assessment programs have provided the federal government with tangible and intangible benefits that increase the ROI of its assessed high performance buildings and improve their efficiencies to meet the government's current and future efficiency, effectiveness, and accountability goals.

Introduction

Since 2009, GBI's Green Globes certification program, and since 2013, the GBI's GPC assessment program have been used to evaluate a total of 495 federal buildings. Of those buildings, 408 federal buildings have completed GBI's Green Globes and/or GPC assessment, and 187 of the 408 buildings have been assessed under both systems. An additional 87 buildings are undergoing GBI's Green Globes and/or GPC assessment, as of September 2017.

The 495 buildings have completed 683 certifications/assessments, based on benchmarking, improvements and requirement needs of the facility. (Fig. 1) Eleven federal agencies have used/or are in the process of using Green Globes to certify their buildings' green building best practices. Of the buildings earning certifications, 286 buildings are certified under Green Globes EB, 43 buildings are certified under Green Globes NC and one building is certified under Green Globes SI. In addition, there are 40 projects in the process of earning certification under the Green Globes NC and one project under the Green Globes EB.

Six federal agencies have used or are in the process of using GBI's Guiding Principles Compliance program to assess 305 buildings. Of these buildings, seven new construction projects and 260 existing buildings have completed the assessment. In addition, there are 42 new construction projects and three existing buildings in the process of completing the compliance assessment process.

This paper provides support for the federal government's continued use of GBI's Green Globes and GPC programs, and demonstrates operational savings, the value-added outcomes of third-party certification, and opportunities for ongoing sustainable, continual improvement.

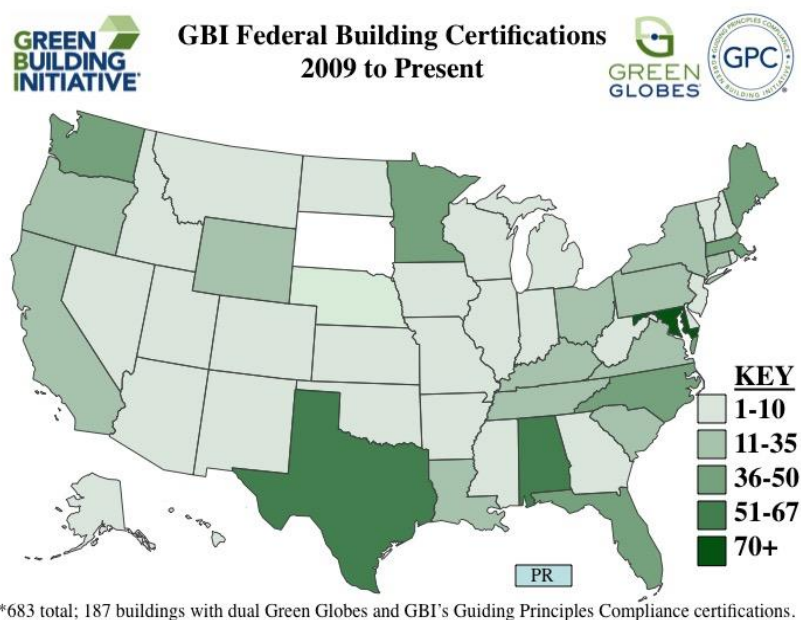


Fig. 1: GBI Federal Building Certifications, 2009 to Present

High Performance Buildings and Cost-Benefits

High performance buildings use green building best practices to increase energy efficiency; reduce water use, maintenance and life cycle costs; improve the building's indoor environment and reduce employee absenteeism; and provide the building's owner a greater overall ROI.

Return on Investment

Based on collected data from government buildings including Green Globes, GBI's GPC assessment program and/or the U.S. Green Building Council's LEED® certifications, the U.S. General Services Administration has reported \$12.7B in energy cost savings between 2007–2016, and has predicted that the original \$20.3B investment will be returned in energy cost savings before 2020.¹ By 2030, these high-performance buildings are expected to save cumulatively \$43.4B, a net ROI of more than \$23B.² With the typical 50-100 year service life of a building, the energy savings is expected to continue to grow at the same accelerated rate for the next 20–50 years.

Energy efficiency is only one of the benefits the federal government wants to leverage from its high performance buildings. Additional data from 2007–2016, when comparing energy and water costs to an earlier baseline, show that these high performance buildings including Green Globes, GBI's GPC and/or LEED certifications have avoided cumulative energy and water costs of \$49.3M.³

Management's Role in High Performance Buildings

The return provided by investment in federal high performance buildings is based not only on the installation of energy- and water-saving equipment and infrastructure, it is also based on green building operational and management best practices. Effective environmental management determines whether or not a high performance building lives up to its energy- and water-savings potential or could perform more efficiently with adjustments to building operations and minor capital investments.

High performance buildings can have significant reductions in energy and water use; however, these cost savings vary by geographic region, by climate zone, and by agency mission.⁴ Based on these factors and the objective of the building's purpose, superior environmental management occurs when green building best practices specific to the structure are prescribed to maximize efficiency opportunities. Facility managers must either invest significant time to stay current on high performance building management thinking and innovations, or rely on outsourced expertise to guide them.

Third-Party Certification as a Management Tool

Green Globes certification and GBI's GPC assessment are powerful benchmark and assessment tools. The third-party assessor's onsite evaluation reduces the need to collect documenting paperwork, saving the manager valuable time. The assessor is able to identify green building best practices and building features and use the Green Globes evaluation process to document best practices. The resulting certification provides a consolidated report for benchmarking and meeting Guiding Principles requirements, and a series of recommendations that facilities managers can implement in the future to further increase the efficiency of their high performance building.

Third-Party Certification Aligns With Government Goals

On April 12, 2017, OMB Director of Office of Management and Budget Mick Mulvaney released a memorandum titled "Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce."⁵ The document instructs:

The purpose of the Agency Reform Plan is for the head of each agency to identify how she/he proposes to improve the *efficiency*, *effectiveness*, and *accountability* of his/her respective agencies. As part of their planning efforts, agencies should focus on fundamental scoping questions (i.e. analyzing whether activities should or should not be performed by the agency.

This Administration directive aligns with the use of third-party assessors to ensure the *efficiency* of high performance federal buildings, the *effectiveness* of each facility team's green building practices and procedures, and an *accountability* to the Administration and American people to maximize the buildings' energy and resource savings.

A third-party assessor is more than an outside evaluator with a checklist. Each third-party assessor brings considerable expertise to a site for the benefit of the facilities team engaged in creating greater efficiencies for the building.

GBI's Value Proposition for the U.S. Government

GBI's Green Globes and GPC programs provide value-added benefits beyond ROI, which are unique to GBI. These tangible and intangible outcomes save time and money, and increase team productivity and building efficiency.

Here are 13 examples of the added value the U.S. government experiences:

- Each facility manager has direct, real-time assistance from trained GBI staff who answer their questions, troubleshoot, and save them time to keep the process on schedule. There are no gaps in communication to affect the completion schedule by weeks or months.

- First-time users, as well as facility managers who have used Green Globes and/or GBI's GPC assessment program before, experience only a short learning curve with GBI thanks to its real-time, live assistance. Managers do not waste time searching community forums or extensive resource libraries to find their own solutions.
- GBI's third-party assessors bring building facility teams years of their experience and knowledge and offer the team options they can use to best maximize the benefits of their high performance building.
- Assessors confirm which green building best practices are being used correctly at each facility, taking the guesswork out of the process and allowing facility teams to focus on meeting compliance requirements and improving their building's performance.
- The same assessor can be assigned to multiple buildings or campuses, which helps to break down silos and increase sharing of best practices through the assessor and the resulting report.
- For new construction projects, Green Globes makes it easy for architects, engineers, designers, project managers, and construction supervisors to achieve compliance with federal Guiding Principles; in 2013, Green Globes was identified as one of two high performance building certification systems "that best suit agency missions and portfolio needs."⁶ The assessor assigned to the project reviews project plans, makes early recommendations necessary to meet the Guiding Principles, documents the compliance, organizes the documentation, and provides interim recommendations as needed to help keep the project on track.
- The facilities team achieves greater collaboration thanks to the Integrated Design Process (IDP),⁷ which is reviewed by the third-party assessor for additional recommendations. This coordination of information between members of the facilities management team, architect, engineers, construction supervisors, energy engineers, building engineers, GEMS coordinator, and others helps ensure that the assessor fully understands the buildings objectives, its capabilities, and where it may be appropriate to make recommendations for improvements.
- As green building best practice experts, the assessors are capable of indicating which high performance building improvements are cost-effective when making their recommendations.

- Facility management personnel save significant time on monitoring high performance building trends in-depth; the assessors stay up-to-date on trends and recommend relevant efficiency opportunities to the team.
- Third-party assessor recommendations provide facility management with documented improvement recommendations that can be included in future capital budget plans.
- Using a third-party assessor supports the federal government’s commitment to transparency and accountability.
- Facility managers spend less time chasing documentation; the third- party assessors work with a variety of supporting information to document green building best practices and gain a great deal of information from personal interactions (i.e., it’s not just paper-shuffling, it’s an interactive, supportive process).
- Using a third-party assessor saves the federal government from some of the challenges that can arise with internal-only self-assessments: outdated or “one-size-fits-all” checklists that include line items that may not be applicable to each building; added training for team members performing the self-assessment and the independent internal assessor^{8,9} who reviews the self-assessment; lack of resources to make informed recommendations for efficiency improvements; and localized stress to ensure self-assessments maintain status quo.

Federal Agencies Using Green Globes and/or GBI’s Guiding Principles Compliance

The following federal agencies have certified buildings through Green Globes or have used GBI’s GPC assessment program to benchmark their compliance requirements and make improvements to their high performance buildings:

- National Aeronautics and Space Administration
- National Institutes of Health
- U.S. General Services Administration
- U.S. Department of Agriculture’s Forest Service
- U.S. Department of Agriculture’s Farm Services Agency
- U.S. Department of Defense¹⁰ – U.S. Air Force
- U.S. Department of Defense – U.S. Army
- U.S. Department of Defense – U.S. Naval Facilities Engineering Command

- U.S. Department of Defense – U.S. Navy
- U.S. Department of Energy
- U.S. Department of State
- U.S. Department of Veterans Affairs – Administration Division
- U.S. Department of Veterans Affairs – Hospital Division

Green Globes & GBI’s Guiding Principles Compliance Costs

Green Globes certification and GBI’s GPC assessment costs are based on building square footage, and the volume and type of buildings. A sample of federal agencies—labeled here for discretion—offered the following illustration on third-party certification costs through GBI:

Agency A

- Green Globes NC and GBI’s GPC NC, multiple buildings varying sizes all less than 50,000 square feet: \$11,500.00 per building.
- Green Globes and GBI’s GPC EB, existing buildings with 100,000–150,000 square feet costs \$9,500.00.

Agency B

- Green Globes NC, two buildings each approximately 149,000 square feet: \$13,500 per building.

Agency C

- GBI’s GPC NC, 24 buildings in-process with an average size of 45,141 square feet: \$11,500 per building.

Agency D

- Green Globes and GBI’s GPC dual certifications: seven new construction projects averaging 14,731 square feet with a cost of \$11,500 per building, and four existing buildings averaging 41,211 square feet with a cost of \$7,750 per building.

Testimonials

In August and September 2017, GBI surveyed a small population of federal energy managers, project managers and engineers on the tangible and intangible value they recognized and their experiences with using the Green Globes and/or GBI’s GPC assessment programs.

Building Certification

"When we first started green certification back in 2008 with Green Globes, it was an eye opener. The benefit of [Green Globes and GBI's Guiding Principles Compliance] is that we are able to show compliance with a process that makes meeting Guiding Principles easier. Given the choice, I would always go Green Globes."

-VISN Energy Manager for Federal Agency

"GBI helped us get certified. Our assessor was very, very helpful getting us through the process. We were also trying to go for existing building certification [with another certification program] at the same time, in parallel. The projects proved beyond any doubt that GBI and Green Globes is the way to go. [Green Globes and GBI is] straight-forward. It's simpler and much less costly."

- Energy Manager for Federal Agency

"[We have] a target of sustainability for square footage. Green Globes helped us meet that."

-Energy Manager for Federal Agency

The Value of GBI's Assessors

"Our assessor was outstanding; very knowledgeable. I learned a lot. I sat in all the staff interviews. She gave us a full evaluation. The assessment we went through identified recommendations as we went along. I have a CD with all the recommendations on it. You're able to see where you're short and where you're not."

- VISN Energy Manager for Federal Agency

"When the assessor was going through interviewing our staff, it was an approach to help find the documentation if you had it, help you identify what you're already doing, or if you're not doing it, identify how you can modify something to be given credit for what you're doing. That was extremely helpful."

- Energy Manager for Federal Agency

"It was a good idea to have an assessor on-site. They were able to help us and point out things we may not be doing and things we were doing that were good. We implemented recommendations later on with our waste and recycling program."

-VISN Energy Manager for Federal Agency

"Our Green Globes Assessor was terrific. I remember being impressed with her knowledge and understanding. You go through and you fill out all of these forms

with what you think you know. Then you get a pro out here to verify your results, and they can kind of tweak your thinking: 'This is not what that's asking. This is the direction you need to head in.' It clarifies things. It's a continual process where you have to have that third-party person come in and verify that you're on that true course of rectitude."

-Energy Manager for Federal Agency

"I think it helps that the assessors are third-party because those folks are from architecture and engineering firms, and they see it from my end as well, dealing with contractors, blueprints, specifications, and documentation."

-Government Contractor at Frederick National Laboratories

On switching from green building certification/third-party assessor to internal-only self-assessment: "I think that would be misguided because it's the fox guarding the hen house. You're not going to get any useful information."

-Energy Manager for Federal Agency

Energy and Water Savings Achieved

"[Since the Green Globes certification] back in 2009, we've probably increased our services by 40 percent, and our energy use has stayed flat. We probably have added 1,000 employees in that time."

-VISN 6 Energy Manager for Federal Agency

"We have a lot of energy and water savings data over time."

- Energy Manager for Federal Agency

"The [web-based] tool is very easy to use."

-VISN 6 Energy Manager for Federal Agency

"When we went through Green Globes, it was more of a collaborative effort. We got advice. 'Ok, you didn't get these points but if you do this you'll get those points.' And, it's awesome. It makes things much easier for us. [It] is a much more constructive approach."

-Energy Manager for Federal Agency

Specific Challenge Solved/Goal Achieved

"We brought daylight into three areas of the hospital that were not getting it through a daylight tracking system and a fixture."

-VISN 6 Energy Manager for Federal Agency

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Appendix

About the Green Building Initiative and Its Programs

The GBI is a nonprofit and American National Standards Institute (ANSI) Standards Developing Organization (SDO) dedicated to accelerating the adoption of green building best practices. Founded in 2004, it is the sole U.S. provider of Green Globes certifications and GBI's GPC assessment programs.

Green Globes Certification Program

Green Globes is a nationally recognized green building certification program for commercial buildings; multifamily unit dwellings; hospitality centers; hospitals, healthcare facilities and laboratories; university and school buildings. The certification program was launched in the U.S. in 2004, adapted from a Canadian web-based interactive learning tool and originating from a global rating system.

Green Globes NC, launched in 2013, contains content from ANSI/GBI 01-2010, which is the only American National Standard based on a commercial green building rating system. For technical development of its flagship rating system, ANSI-approved procedures are used to ensure consensus, transparency, balance and due process. It is a third-party audited process requiring hundreds of public meetings and comment periods spanning multiple years. The ANSI/GBI Standard is currently in the process of being updated, entering its third public comment process.

Green Globes Differentiators

There are two prime differentiators between Green Globes and other certifications:

(1) Green Globes is based on a 1,000-point system covering seven environmental assessment areas and their related green building best practices: Environmental Management; Energy; Water; Resources; Emissions, Effluents & Pollution Controls; and Indoor Environment. Certification levels are calculated as a percentage of applicable points, and there are no prerequisites that disqualify a building from participation.

(2) A third-party GGA travels to the building site to evaluate each building based on relevant practices specific to the building and its geography. For example, for a VA hospital building, the GGA has discussions with facility and energy managers, green environmental management systems (GEMS) coordinators, industrial hygienists, and all other related departments to ensure the specific needs for the building are understood during the assessment.

In addition, the GGA organizes information and documentation, searches for unidentified green practices for additional points, and provides recommendations

so that further performance improvements may be made. There is regular dialog throughout the process between the building team and the GGA for answers, solutions and improvement options.

GGAs are seasoned professionals with a minimum of 10 years experience working with green building best practices and have passed a Green Globes certification exam. They are independent contractors geographically spread throughout country. GBI assigns its assessors based on their experience and knowledge to ensure every facility team is working with an expert that can contribute to the building's or campus' success.

Green Globes for New Construction

The Green Globes NC program is a user-friendly web application that aids architects, construction professionals, and owners in their efforts to:

- Evaluate, quantify and improve the sustainability of a building,
- Obtain suggestions and options for making environmental improvements throughout the design and delivery process, and
- Consider and rate the benefits of various sustainable design scenarios.

Green Globes NC provides early feedback on the process before important decisions are made. This is a proven method for taking advantage of time- and cost-saving opportunities through integrated design and delivery, while benefiting from the added value of GBI's cost-effective third-party assessment process.

Green Globes for Existing Buildings

For existing buildings that want to document their green building best practices, benchmark the facility, and/or prepare for a green retrofit, GBI offers its Green Globes EB program. Using a user-friendly web survey, Green Globes generates a report to help evaluate opportunities to save energy, reduce environmental impacts, integrate corporate goals and practices, and lower maintenance costs. The third-party GGA works with the facility managers to offer recommendations to help the building meet its goals and document green building best practices.

Guiding Principles Compliance Program

The GPC assessment program, offered by the Green Building Initiative, is the first third-party assessment and rating program designed specifically for federal agencies to assess compliance with the federal Guiding Principles. To date, 254 federal agency buildings have completed GBI's GPC assessment program, verifying compliance for a wide variety of building types ranging from large hospitals and their associated campuses to simple warehouses. Because GBI was the first organization to provide third-party assessments for Guiding Principles compliance

issues, GBI's trained third-party assessors have gained years of technical experience in specifically assessing and verifying compliance for a multitude of federal buildings with unique requirements ranging in type from offices to hospitals to laboratories and dormitories. In addition, GBI staff members are in regular contact with individuals and departments tasked with developing sustainable federal criteria and interpretations of compliance to the Guiding Principles, contributing additional technical guidance for complex compliance-related questions.

The Guiding Principles were revised in early 2016 as part of Executive Order (EO) 13693, signed in 2015, which introduces new requirements and expands upon requirements established by EO 13514, EO 13423, EPAAct 2005, and EISA 2007. In response to the 2016 update, GBI developed a revised Guiding Principles Compliance assessment program customized for the Department of Defense, which can be quickly replicated based on an agency's specific needs and policies.

Guiding Principles Compliance Differentiators

There are three prime differences between GBI's GPC assessment programs and other green building certifications (including Green Globes):

- (1) GBI's GPC assessment program is an assessment and verification of federal building requirements, and thus does not provide a scoring or rating system. Requirements are essentially all pre-requisites, although there are allowances to identify whether requirements are applicable to individual building projects.
- (2) Similar to Green Globes, a third-party assessor travels to the building site to evaluate each building undergoing compliance verification. GPC assessors have been trained in the specifics of verifying compliance to the Guiding Principles, focusing entirely on federal requirements as they pertain to the building project. Assessors are seasoned professionals who begin as GGAs prior to undergoing additional training to assess compliance to the Guiding Principles.
- (3) For new construction, assessors begin the verification process in the design phase, providing a report with guidance and projections for compliance as early as pre-design. The earlier a GPC project begins the process, the higher the likelihood of constructing a Guiding Principles-compliant building.

GPC Process Overview

GBI's GPC assessment program is an offline process that includes a scoping checklist (for contracting officers and realty specialists prior to design), Excel-based survey, and technical manual that identifies required documentation, guidance, and external links, tools, and resources for designing or operating a Guiding Principles-compliant building. The survey is used throughout the design phase into construction for new construction and modernization projects, or as a checklist for facility managers of existing federal buildings.

For those agencies interested, it is easy and cost-effective to dual-certify federal buildings as both Guiding Principles compliant and Green Globes certified. GBI has dual-certified 177 federal buildings.