

GREEN GLOBES FOR EXISTING BUILDINGS 2007

LEARNING OBJECTIVES

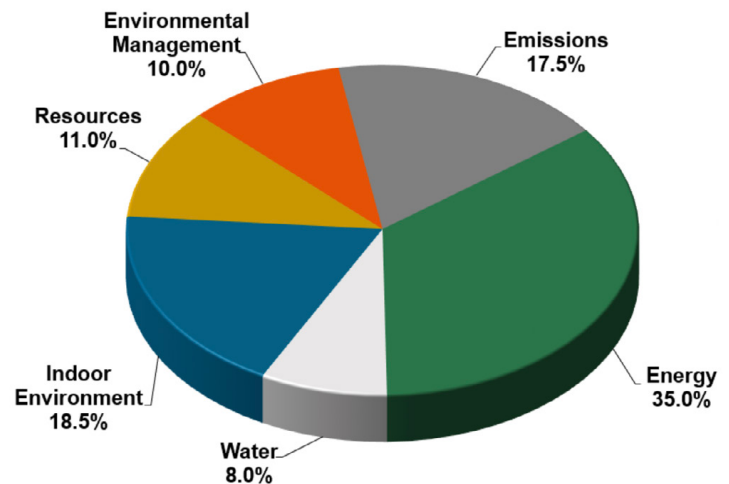
- Understand the Environmental Assessment Areas and point allocations for Green Globes for Existing Buildings 2007
- Review case studies from projects certified under Green Globes for Existing Buildings 2007



ENVIRONMENTAL ASSESSMENT AREAS

SI	NC (CS)	EB
Project Management	Project Management	N/A
N/A	Site	N/A (Included with Resources)
Energy	Energy	Energy
Water	Water	Water
Materials & Resources	Materials & Resources	Resources
Emissions	Emissions	Emissions, Effluents, & Pollution Controls
Indoor Environment	Indoor Environment	Indoor Environment
N/A	N/A	Environmental Management

The maximum points possible within Green Globes for Existing Buildings are distributed among six assessment areas. Just as in NC and SI, Energy has the largest percentage of points in the EB program. Indoor Environment and Emissions are the next two most heavily weighted areas.



ENERGY

The prominence of energy performance and conservation related criteria is also demonstrated in Green Globes EB, with 35% of all available credit allocated to energy topics. This area includes an energy performance criterion as well as prescriptive energy criteria.

Energy performance measurement relies primarily on ENERGY STAR – Portfolio Manager®, for the occupancy types eligible within the ENERGY STAR award and labeling program. For those building types not eligible for the ENERGY STAR award program, GBI has adopted an alternative measurement protocol; energy consumption performance percentage improvement over a minimum four-year consumption review period. This award points based upon a scale for percentage improvement. The client must have verifiable energy consumption data available for the required time period, aggregated as necessary to perform the specified benchmarks and comparisons. This method requires manual analysis and calculations in contrast to utilizing Portfolio Manager®. The client would need to hire an energy professional to perform the calculations.

- Path A - ENERGY STAR Portfolio Manager® program uses 12 consecutive months of utility data to determine the calculation of energy consumption for all energy sources used for the specified 12 month period to award an ENERGY STAR® award level. The Green Globes point scale matches the ENERGY STAR® baseline for the ENERGY STAR® label; points are awarded for a minimum score of 75.

A significant inherent limitation exists with the ENERGY STAR® approach, in that only 21 building occupancy types can be benchmarked in the Portfolio Manager program. Examples of buildings not included are cafes/restaurants, assembly, museum, higher education classrooms, laboratories.

As a result, GBI has adopted an alternative measurement protocols for those building types not eligible for the ENERGY STAR® award program. It is based upon a scale for percentage improvement.

- Path B - Energy consumption performance percentage improvement over a minimum of four year consumption review period. If available, it is preferred to use 10 years of data to normalize the data for weather patterns.

The client would most likely hire an energy professional to perform the calculations that compares the building's site energy data for the previous 12 months with complete energy consumption data of the previous 3-9 contiguous years, demonstrating a minimum improvement to earn points.

Normalization of previous years' energy consumption data is permitted for climate and other pertinent factors, and all assumptions and metrics utilized must be clearly described in the documentation and acceptable to the third-party assessor.

The prescriptive energy criteria comprehensively cover the building envelope, building equipment and systems, and other aspects of the building that relate to energy. Renewable energy options include Geothermal, and the transportation subsection includes alternative refueling facilities. In addition, approximately half of the section dwells on energy management topics, including policies, procedures, training and best practices, recognizing the critical importance of management in the continuous improvement of building energy performance.

ENERGY		MAXIMUM POINTS: 350
1.1	Energy Consumption	80
1.2	Lightning	25
1.3	Boilers	16
1.4	Controls	14
1.5	Hot Water	12
1.6	Other Energy Efficient Features	16
1.7	Green Energy	12
1.8	Envelope	35
1.9	Energy Policy	5
1.10	Energy Audit	2
1.11	Energy Management, Monitoring, and Targeting	16

ENERGY		MAXIMUM POINTS: 350
1.12	Energy Training	5
1.13	Financial Resources	5
1.14	Sub-metering	10
1.15	Operating Manual	15
1.16	Maintenance Schedules	22
1.17	Public Transportation	45
1.18	Cycling Facilities	10
1.19	Other Measures	5

Suggested Documentation:

- Energy consumption figures/Utility bills for the 12-month period
- Energy Star documentation
- Phase 1 energy audit and report to have been conducted during the last 3 years
- Written plan that address energy management issues, budget, training, and maintenance schedules
- Evidence of maintenance schedules and preventive maintenance
- As-built drawings/specifications and/or O&M manuals for lighting system, boilers, chillers, controls, hot water heater, and other energy efficiency features
- Copy of contract to verify credit for RECs or other documentation to verify credit for Green Energy
- Building envelope assessment and/or specifications for envelope components
- Documentation or link to bus route and schedule

CASE STUDY

The ReVerb Century Station earned points in the Energy assessment area for its use of a Lochinvar boiler that is dedicated to snow melt for parking ramp and garage spaces. This high efficiency boiler was installed at the time of original construction.

This project certified with One Green Globes in 2016.



WATER

In a similar manner to Energy, Green Globes EB provides a focus on both whole building water performance and prescriptive water efficiency criteria, as well as a host of management topics. The whole building criteria awards performance credit based on actual water consumption. Offices has an integrated point scale to award credit, based on actual yearly consumption thresholds. Other building types should use the Green Globes Water Consumption Calculator.

WATER		MAXIMUM POINTS: 80
2.1	Water Consumption	30
2.2	Water Conserving Features	32
2.3	Water Management	18

Suggested Documentation:

- Water consumption figures/Utility Bills for the 12-month period
- Phase 1 water audit with a written water management policy intended to minimize water use
- As-built drawings/specifications or O&M manuals for plumbing fixtures, water saving features, and irrigation system

CASE STUDY

ReVerb Century Station also earned points for water usage. The building and parking cover over 80% of the project site, therefore, there is no water used for irrigation. A policy plan created by Property Markets Group and implemented by Kass Management Group addresses the continual monitoring of water use efficiency and analyzing conversion to higher performance plumbing fixtures and fittings as technology improves and replacement of plumbing fixtures occurs.



RESOURCES

Within the EB program, a review of facilities for recycling and composting are followed by a waste reduction work plan subsection, including a metric for improving waste management – the waste diversion rate. The end of the Resources section treats site criteria, including contamination and site enhancements.

Green Globes NC offers the following four Energy Performance paths:

RESOURCES		MAXIMUM POINTS: 110
3.1	Facilities for Storing and Handling Recyclable Materials	25
3.2	Waste Reduction Workplan	30
3.3	Site Pollution	50
3.4	Site Enhancement	5

Suggested Documentation:

- Written policy (waste reduction work plan) intended to minimize construction waste
- Waste Management contract, waste audit, and/or other records of waste either by volume or weight including diversion rate
- Records of waste either by volume or weight including diversion rate
- Documentation that addresses a recycling program that incorporates all fiber and consumable products
- Phase I Environmental Assessment or other documentation to verify site is free from pollution

CASE STUDY

The North Water Apartments occupy the 15th to 50th floors of a mixed-use facility that was built in 2013. The apartments and the Loews Hotel combined are approximate 932,000 total SF. The certification applies to whole buildings; therefore, the Loews Hotel is included in the assessment where data was provided. Points were prorated to account for contribution for areas where the hotel did not provide data.

This project certified in March 2017 with Three Green Globes.

The diversion rate is the highest of five similar properties owned by Invesco. The diversion rate was greater than 75% , which earned 5 out of 10 points. North Water Apartments earned full credit for regular waste monitoring, waste-reduction targets and implementation of a construction, renovation and demolition waste management policy. Both waste and recycling rates are tracked in ENERGY STAR® Portfolio Manager®.



EMISSIONS & OTHER IMPACTS

Low NOx heating equipment is treated first in this category and is heavily weighted. Refrigerants and refrigerant management practices follow, and then an extensive treatment of site and building characteristics related to contamination and hazardous substances. Underground storage tank management, drinking water, and a thorough treatment of consumable hazardous substances used in the building and grounds conclude this section.

EMISSIONS AND OTHER IMPACTS		MAXIMUM POINTS: 175
4.1	Boiler Emissions	30
4.2	Refrigerants	25
4.3	Management of Ozone Depleting Refrigerants	10
4.4	Halons	10
4.5	Waste Water Effluents	20

EMISSIONS AND OTHER IMPACTS		MAXIMUM POINTS: 175
4.6	Asbestos	15
4.7	Radon	5
4.8	PCBs	5
4.9	Storage Tanks	20
4.10	Drinking Water (lead and bacteria)	2
4.11	HCS Program	10
4.12	Health and Safety and Management of Hazardous Products	18
4.13	Pesticides	5

Suggested Documentation:

- Records for cleaning burners, monitoring controls, and analysis of flue gas
- Management program for Ozone Depleting Substances with inventory of refrigerants and records
- Maintenance contract for cooling systems with certified contractor
- Hazardous building materials survey
- Inventory and MSDs of hazardous materials
- Hazardous building materials plan
- Documented asbestos management plan where applicable
- PCB management plan that designates responsibility, inventory of materials containing PCB's etc. and documentation showing regular inspection of PCB site where applicable
- Spill response plan that includes training of staff
- Storage tank management plan where applicable
- Pest management contract to verify IPM, licensing, and approved products
- Health and Safety Committee minutes

CASE STUDY

The 546,000 SF, 11-story Crown Plaza Office building in Portland recertified under the Green Globes for Existing Buildings program in September 2016. This project originally certified in 2010 with Three Green Globes and increased their rating to Four Green Globes in 2016.

The Crown Plaza earned 95% of the applicable points in the Emissions & Other Impacts Assessment Area. Contributing to the points earned in this category was the implementation of a Health & Safety Committee. The committee is composed of 6 individuals; 3 from management and 3 from field representation of the building. They meet to perform periodic inspections of the

property by walking through the entire complex and have created an Emergency Spill Response Plan for the property, with contact information and procedures.



INDOOR ENVIRONMENT

The EB Indoor Environment section covers most of the same subtopics as GG NC, but with an emphasis on management, response and operations. Ventilation addresses both the building and parking facilities. Indoor pollutants appropriately emphasizes potential problems with existing buildings, such as mold, housekeeping cleaning agents, local exhaust, etc. Lighting includes both quality and O&M procedures. The Acoustics subsection addresses actual sound transmission and sound privacy criteria.

INDOOR ENVIRONMENT		MAXIMUM POINTS: 185
5.1	Ventilation System	24
5.2	Filtration System	11
5.3	Humidification System	15
5.4	Cooling Towers	15

INDOOR ENVIRONMENT		MAXIMUM POINTS: 185
5.5	Parking and Receiving	10
5.6	Control of Pollutants at Source	43
5.7	IAQ Management	25
5.8	Lighting Features	25
5.9	Lighting Management	7
5.10	Noise	10

Suggested Documentation:

- As-built drawings and/or O&M manuals and maintenance records for HVAC equipment including ventilation, filtration, humidification, cooling towers
- Tenants/occupants concerns log regarding indoor air quality
- Indoor air quality audit within the past year
- Documentation of CO2 levels
- Cleaning contractor's contract indicating use of environmentally benign cleaning products
- Landscape contract (if applicable) indicating use of environmentally benign products
- Checklist of items connected to IAQ (e.g. use of low-VOC emitting, non-toxic, and chemically inert materials) that must be discussed with architects, engineers, contractors, and other professionals prior to renovations and repairs
- Lighting survey or audit to verify lighting levels and/or as-built drawings with lighting plan and calculations

CASE STUDY

North Water Apartments received 92% of the applicable points in the Indoor Environment Assessment Area. The project received full credit under the Parking & Receiving category. Enclosed parking areas were mechanically ventilated, parking and receiving areas are designed to not introduce contaminants to the building and carbon monoxide levels are monitored in garages and near boilers.



ENVIRONMENTAL MANAGEMENT

The umbrella management process underpinning the criteria in this environmental assessment area is the environmental management system (EMS). Key EMS elements include updated policies, action plans for improvement, as well as training and education. Building specific areas that directly impact environmental management and improvement are also addressed. Purchasing policies and practices are especially emphasized. Emergency response planning and management are comprehensively covered for both environmental and environmental health incidents. Finally, as with any complete EMS, “tenant” communication, awareness and input is included. ‘Tenant’ is to be interpreted as any users of the building, but especially the full time occupants.

A high score in this area demonstrates a commitment to ongoing continual improvement in sustainable operations and management, helping to minimize environmental impact while optimizing the building service life.

ENVIRONMENTAL MANAGEMENT SYSTEM		MAXIMUM POINTS: 100
6.1	Environmental Management System (EMS) Documentation	30
6.2	Environmental Purchasing	25
6.3	Emergency Response	20
6.4	Tenant Awareness	25

Suggested Documentation:

- Written environmental policy for building
- List of goals and specified targets to improve and maintain environmental performance
- Written environmental-purchasing policy and documentation of products purchased
- Emergency response or management plan
- Communication strategy with tenants regarding environmental issues
- Evidence of tenants’ satisfaction survey

CASE STUDY

We will revisit North Water Apartments once more for an example for Environmental Management. The project earned 93% of applicable points in this Assessment Area. Invesco provides a written environmental policy and the local facility provided an environmentally significant features map. Goals and targets are listed for specific categories such as energy, water, waste recycling and reduction, environmental purchasing, hazardous materials, and training. The local goals are on top of those required by Invesco.



ASSESSMENT GUIDANCE

MULTI-USE BUILDINGS

When a building has multiple uses, the criteria may apply differently depending upon the use. For example, a theater with concessions and an office space. Daylighting will negatively impact the conditions for viewing within the theater but is important in the concessions area and office space.

How are these situations handled? The assessor will pro-rate the applicable points according to the percentage of building for each occupancy type. If the theater is 70% of the square footage and the office space is 30%, Daylighting would be N/A for 70% of the points. If daylighting is worth 10 points, then 7 points would be N/A and 3 points would be applicable. Point awards are based upon compliance to the criterion, so if the office space has appropriate daylighting to warrant credit, you would be awarded 3 points yielding 100% compliance.

SPACE WITHIN A COMPLEX OR WITHIN A LARGER OFFICE

Spaces within a larger office or complex can be certified with the Green Globes EB program. In addition to the direct leased space, shared spaces can be included in the assessment, such as restrooms or custodial spaces.

This type of assessment is not without its challenges. Not all items being assessed are in direct control of the lessee; however, the tenant is encouraged to influence building management regarding decisions that impact the sustainability of the space and site. Undergoing an assessment will likely require collaboration with the lessor or property manager.

Even if the client is not in direct control, some items may still be applicable. For example, water consumption data for water performance may not be available, but the criteria for water may still be determined to be applicable since water consumption is a critical aspect of sustainability.