

Columbia Square, Portland OR



A Practical Approach to Green Building

*Presentation for
EPA's CIAQ Webinar, Indoor Environments
Division
October 7, 2015*

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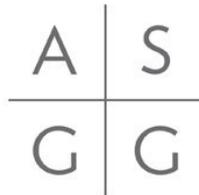
Learning objectives

- **Orientation on the Green Building Initiative**
 - Board, Clients, Products -- Who, How & What we do
- **Green Globes Overview**
 - Points, weighted criteria, non-applicables – How it Works
- **Guiding Principles Compliance Survey Tool Overview for IAQ**
- **IAQ in Our NC Rating System – Current**
 - What can we tell EPA about Green Globes building characteristics on IAQ
- **GBI's ANSI Standard – Consensus Process Review**
- **Changes to IAQ in Revised Draft 1 of Standard**
- **How to Submit Comments**
- **Where Sizes, Types Where Our Focus is Today**

Board of Directors



GBI Board of Directors



Stimson Lumber
A TRADITION OF QUALITY



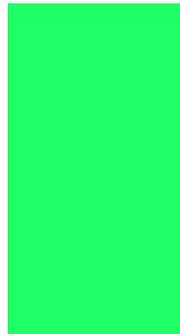
SOLVAY
asking more from chemistry®



Clients



Clients



GBI Product Line





Green Globes for New Construction (NC)

- Guides the integrated design process at each stage of the project



Green Globes for Existing Buildings (EB)

- Establishes a baseline and guides improvement for individual buildings or portfolios

Green Globes EB for Healthcare

- Specializes for healthcare buildings with licensed in-patient beds



Green Globes for Sustainable Interiors (SI)

- Designed for tenant improvement projects, fit-outs and remodels



GBI Personnel Certifications



GUIDING PRINCIPLES
COMPLIANCE
PROFESSIONAL

*Green
Globes
Overview*



A Practical Approach to Green Building

Green Globes Overview - Rating System

1000
Points

Four levels

GREEN GLOBES RATING SCALE		
Buildings that achieve 35% or more of the points possible in the Green Globes rating system are eligible for a certification of one, two, three, or four Green Globes.		
85-100%		Demonstrates national leadership and excellence in the practice of energy, water, and environmental efficiency to reduce environmental impacts.
70-84%		Demonstrates leadership in applying best practices regarding energy, water, and environmental efficiency.
55-69%		Demonstrates excellent progress in the reduction of environmental impacts and use of environmental efficiency practices.
35-54%		Demonstrates a commitment to environmental efficiency practices.

Scores range
from 0% – 100%

35% Minimum
Score Required
to certify

Point Allocations by Assessment Area in Green Globes 2013

Sneak preview of GBI 201X – Draft 1

Point Allocations for Green Globes		
	2013	201X Draft 1
Project Management	50	100
Site	115	150
Energy	390	260
Water Efficiency	110	190
Materials	125	150
Indoor Environment	160	150
Emissions	50	0
Total Possible Points	1000	1000

A Practical Approach to Green Building

Green Globes Overview - Features

- An interactive online evaluation



- No prerequisites

- Minimum Energy Performance
- Water Use Reduction
- Storage and Collection of Recyclables

A Practical Approach to Green Building

Green Globes Overview - Features

- “Non-applicable” provision

3.4.3.1 Do boilers and/or water heaters have the following features:			
3.4.3.1.1 • Boilers and water heating systems of 50 bhp and above have a boiler feed makeup meter?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA
3.4.3.1.2 • Boiler systems with over 50 bhp have condensate return systems?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA
3.4.3.1.3 • Boilers have conductivity controllers?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA
3.4.3.1.4 • Steam boilers have conductivity meters?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> NA

- Incremental Point Awards & Partial Credit

3.7.4.1.3 Do open circulation areas such as open offices and healthcare general patient areas have thermal control zones that are 1,000 ft. ² (93 m ²) or less?	<input type="radio"/> 500 ft. ² (46 m ²) or less <input checked="" type="radio"/> 1,000 ft. ² (93 m ²) or less <input type="radio"/> More than 1,000 ft. ² (93 m ²) <input type="radio"/> NA	3	2
3.7.4.1.4 Do smaller functional areas such as offices, meeting rooms, and hospital/hotel rooms have thermal control zones that are 1,200 ft. ² (111 m ²) or less?	<input type="radio"/> 750 ft. ² (70 m ²) or less <input checked="" type="radio"/> 1,200 ft. ² (111 m ²) or less <input type="radio"/> More than 1,200 ft. ² (111 m ²) <input type="radio"/> NA	3	2

“The online survey tool gave me more control in the process, I could see whether we were on target or not, which gave me a higher confidence level.”

Michael Vaughn

Manager of Research and Technical Services

ASHRAE

ASHRAE's National Headquarters earned Four Green Globes

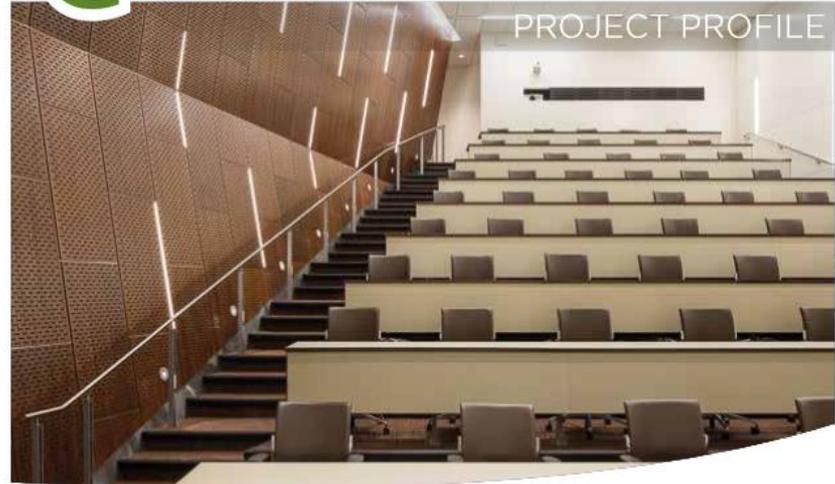


IPEX in Philadelphia earned Three Green Globes

“Green Globes is completely different philosophically... throughout the process it was easy to see that Green Globes is trying to help you succeed.”

Todd Grant
Associate
L2Partridge

<http://www.thegbi.org/project-portfolio/building-profile-directory/>



> GREEN GLOBES FOR NEW CONSTRUCTION

GREEN GLOBES HELPS UNIVERSITY OF THE SCIENCES SURPASS EXPECTATIONS

Nestled into a steep embankment, the University of the Sciences Integrated Professional Education Complex (IPEX) in Philadelphia, Penn. combines nature and innovation to offer high efficiency in a modern atmosphere.

The new 57,000-square-foot, three-story building facilitates integrated healthcare education and houses common spaces, classrooms, laboratories and a variety of therapy rooms. Through strict adherence to quality aesthetics and performance, the IPEX garnered an exemplary certification of Three Green Globes.

“We incorporated Green Globes early in the design process, and as we answered the survey questions and received responses an evolution took place,” recalls the project’s architect Todd Grant, Associate at Philadelphia’s L2Partridge. “Every time I filled out a questionnaire, the feedback loop helped push us to the next level. I could examine how our project might incorporate the suggested options and then show the client which ones had negligible cost impacts.”

Water retention was one example. Without having any impact on the building foundation, the team increased the soil depth to four inches across the site. This micro shift had a massive impact on helping the site retain more water and exceeded a threshold that garnered a tax incentive from the city.

“Throughout the process it was easy to see that Green Globes is trying to help you succeed.”

TODD GRANT, Associate
L2Partridge



PROJECT RATING:
THREE GREEN GLOBES



High-touch Customer Service and Value-Added On-site Visit and Assessment

- On-site assessment by a sustainability expert
- A detailed final assessment report



- GBI staff support (project managers and technical experts)

GBI to provide more video training in 2016-2017...
see www.thegbi.org

The image shows a screenshot of the Green Building Initiative (GBI) website. At the top left is the GBI logo with the tagline "A practical approach to green building". The top right navigation bar includes links for "CONTRIBUTE", "ANSI", "CONTACT", and "LIVE CHAT". Below this is a secondary navigation bar with "FREE TRIAL", "CREATE ACCOUNT", and "LOG IN" buttons, along with a search bar. A green horizontal menu contains dropdowns for "Green Globes Certification", "Guiding Principles Compliance Certification", "Professional Certification", "Project Portfolio", "About GBI", and "Training & Resources". The main content area features a large video player. The video frame shows the GBI and Green Globes logos. The video player interface includes a play button, a progress bar showing "02:35", and "HD" and full-screen icons. Below the video player is an orange "LEARN MORE" button. The background of the page is a blurred image of a smiling man wearing a white hard hat.

*GBI Indoor
Environment
Green
Globes 2013*





Green Globes for New Construction (“GG NC”) – IAQ Analyses

Six IAQ Metrics: This area of the built environment relates most directly to human interaction and environmental health science.

1. Occupant illness frequency
2. Occupant productivity
3. Staff/occupant missed work days
4. Results – periodic staff/occupant satisfaction survey
5. Periodic IAQ test results
6. Spontaneous complaints from staff/occupants/**visitors** regarding air quality.



GG NC 2013 Certified Buildings – IAQ Analyses: Building Materials & Envelope

All six IAQ metrics apply here. These are preventative best practices for IAQ, and the very high percentages achieved by GG NC certified buildings are driven by improved packing and tarping technology (shrink wrap, etc.) as well as preventing financial losses (owner rejects materials onsite, etc.).

3.1.2.3.1 Building Materials and Building Envelope

Construction best practices to protect building materials and control mold:

- 1. 3.1.2.3.1.1 (Protect building materials in transit and at construction site): 93% achieved**
- 2. 3.1.2.3.1.2 (Weather-tight envelope, dried before interior installations): 97.7% achieved**



GG NC 2013 Certified Buildings – IAQ Analyses: Ventilation Air Quantity

All six IAQ metrics are potentially impacted here. Good ventilation can work in reverse when other IAQ problems affect the air distribution, including outside air quality. Our GG NC certified buildings are showing a trend toward adoption of the ASHRAE 62.1-2010 standard, which has been updated.

3.7.1.1 Ventilation Air Quantity

Which code or standard of ventilation air quantity is the building compliant with...

- **ASHRAE 62.1-2010: 49%** achieved
- **ASHRAE 62.1-2007: 28%** achieved
- **ICC 2009: 19%** achieved



GG NC 2013 Certified Buildings – IAQ Analyses: Volatile Organic Compounds

The high compliance numbers here demonstrate that building certification has helped push industry toward low VOC products being standard practice. Market transformation is a foundational and fundamental goal of GBI.

3.7.2.1 Volatile Organic Compounds

Do the following comply with prescribed limits of VOCs and/or be certified?

- **Adhesives & sealants VOC requirements: 86% achieved**
- **Paint VOC requirements: 93% achieved**
- **Floors, floor coverings, & other interior products VOC requirements: 88% achieved**



GG NC 2013 Certified Buildings – IAQ Analyses: Thermal Comfort Design

Over 50% of GG NC certified buildings – and 70% overall – is a strong indicator for this voluntary best practice, indicating owner awareness of the role basic comfort plays in morale and productivity.

3.7.4.2 Thermal Comfort Design

The Engineer has signed off on the design, showing the building conforms to:

- **ASHRAE 55-2010: 56%** achieved
- **ASHRAE 55-2004: 16%** achieved

GPC

Overview



Guiding Principles Compliance Certification for Federal Real Estate

Can be customized for individual agencies



New Construction
(including Major Renovations)



Existing Buildings



GBI's Guiding Principles Compliance Survey Tool, Assessment and Certification

A	B	C	D	E	F	G	H	I	J	
1	GPC NC Survey Version 1.0								© 2014 Green Building Initiative, Inc. All rights reserved.	
2	#	GP	GG NC Criteria			Select Your Answer			Enter Supporting Documentation & Comments	
3	IV. ENHANCE INDOOR ENVIRONMENTAL QUALITY									
4	IV.A	Ventilation and Thermal Comfort Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.			Have you met the intent of this Guiding Principle? <i>(pick from drop down list)</i>					
5	If "In Process," how many points?									
7	<div style="text-align: center;"> Requirement Conditional Requirement Required as applicable </div>									
9	3.7.1.1.1 Ventilation Air Quantity			X						
10	3.7.4.2.1 Thermal Comfort Design			X						
12	3.7.1.1.1	Ventilation Air Quantity Is the quantity of ventilation air for the building compliant with ANSI/ASHRAE STANDARD 62.1-2007, ANSI/ASHRAE STANDARD 62.1-2010, the ICC 2009 International Mechanical Code, IAPMO 2009 Uniform Mechanical Code, ASHRAE STANDARD 170-2008 (for hospitals or healthcare occupancies), or local codes or standards (if more stringent)?			<i>(pick from drop down list)</i>					
13	3.7.4.2.1	Thermal Comfort Design Has an Engineer signed off on the design that shows that the building conforms to ANSI/ASHRAE 55-2010 or ANSI/ASHRAE 55-2004?			<i>(pick from drop down list)</i>					

ANSI Consensus Process



32 - Member Balanced Consensus Body

Users



Government



General Interest



Testing & Standards Organizations



Producers

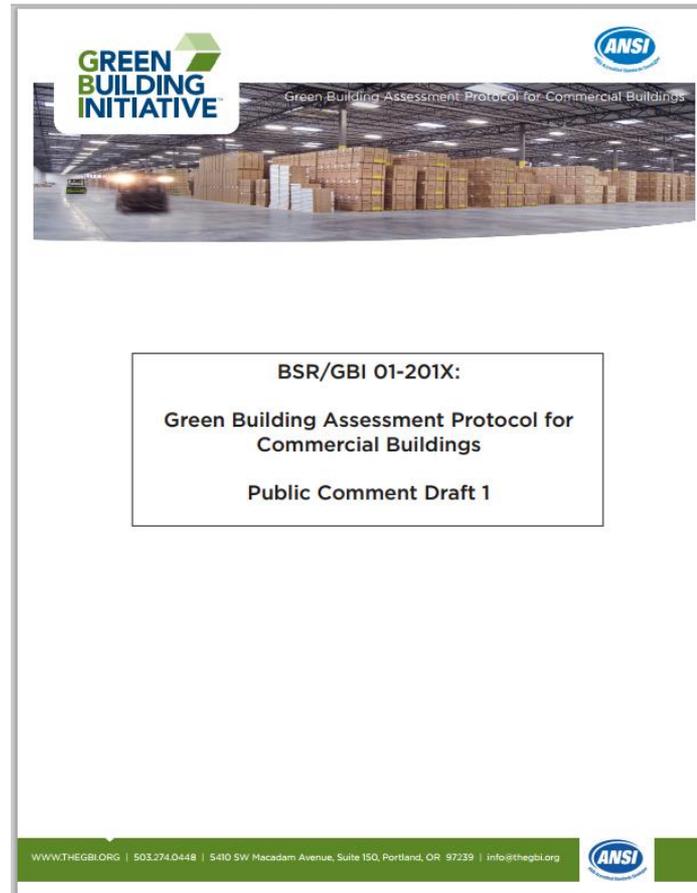


BSR/GBI 01-201X is revision to ANSI/GBI 01-2010

- 112 pages
- More than 70 public meetings/calls so far
- 100 SMEs
- Out for public comment until 10/26/15 at www.thegbi.org/ansi
- 2 public comment periods planned
- Finalize in 2016
- Move to Continuous Maintenance



11. INDOOR ENVIRONMENT



- 150 Total Possible Points
- 15% of the total number of possible points in the standard.

Quote from Chris Dixon, Committee Member:

“This version is state of the art. It’s provides a pathway to achieving success in IAQ. Following the measures outlined by ANSI 201X will get buildings further than they ever have in the past.”

11.1.1 Ventilation Air Quality (9 out of 35 pts)

- *ASHRAE Standard 62.1-2013*



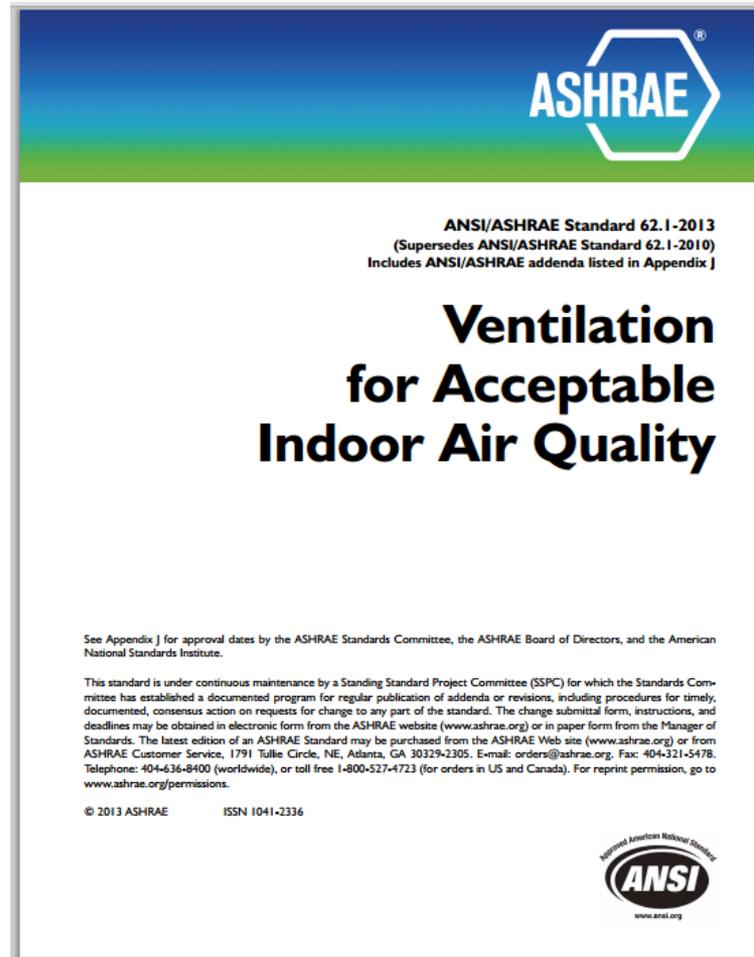
- *ASHRAE Standard 62.1-07*

- *ICC 2009*



- *ICC IMC 2012*

11.1.2 Air Change Effectiveness (9 out of 35)



11.1.3 Air Handling Equipment (11 out of 35 points)

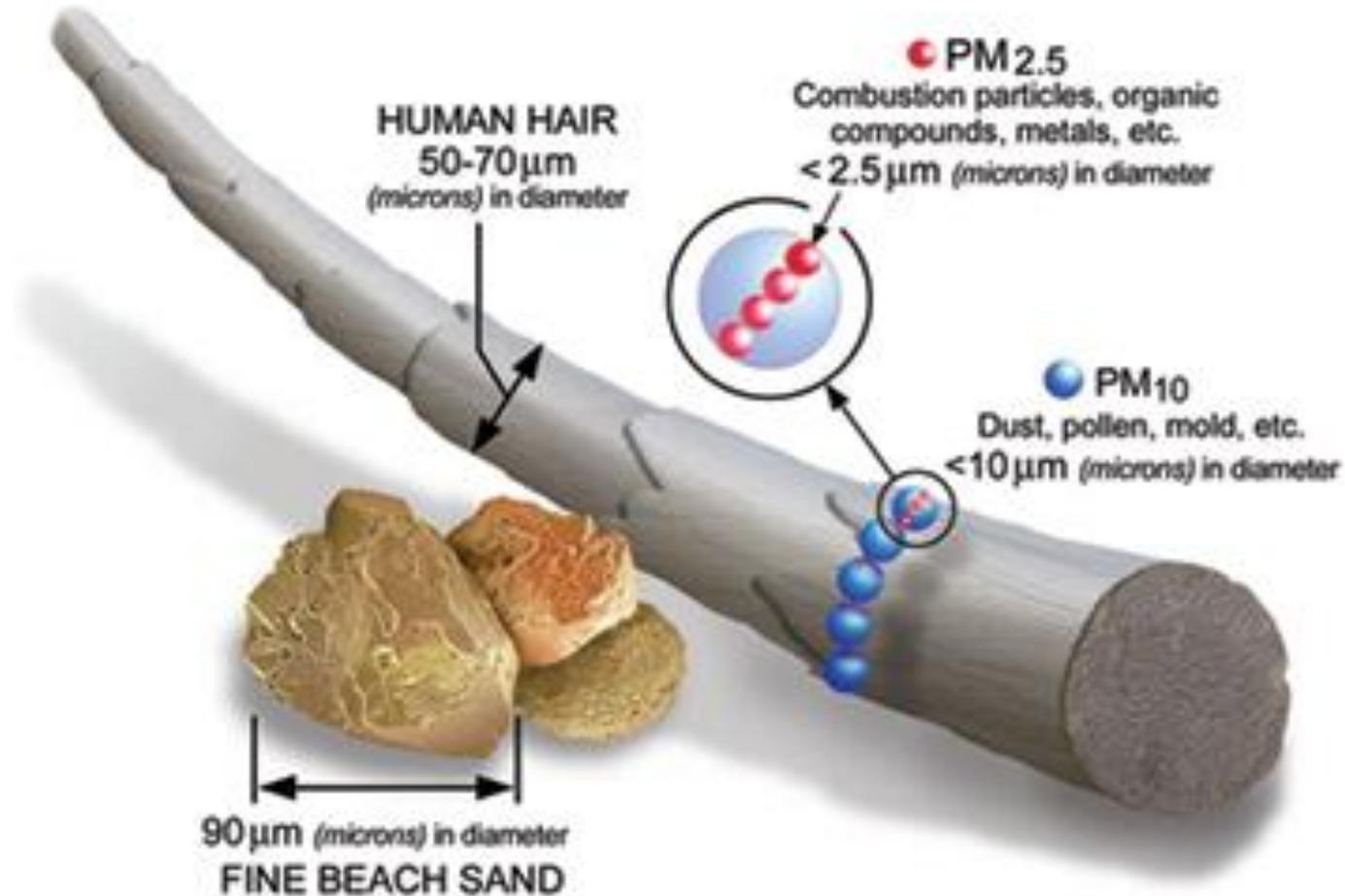


Image courtesy of the U.S. EPA

11.2 Source Control and Measurement of Indoor Pollutants (35 points)



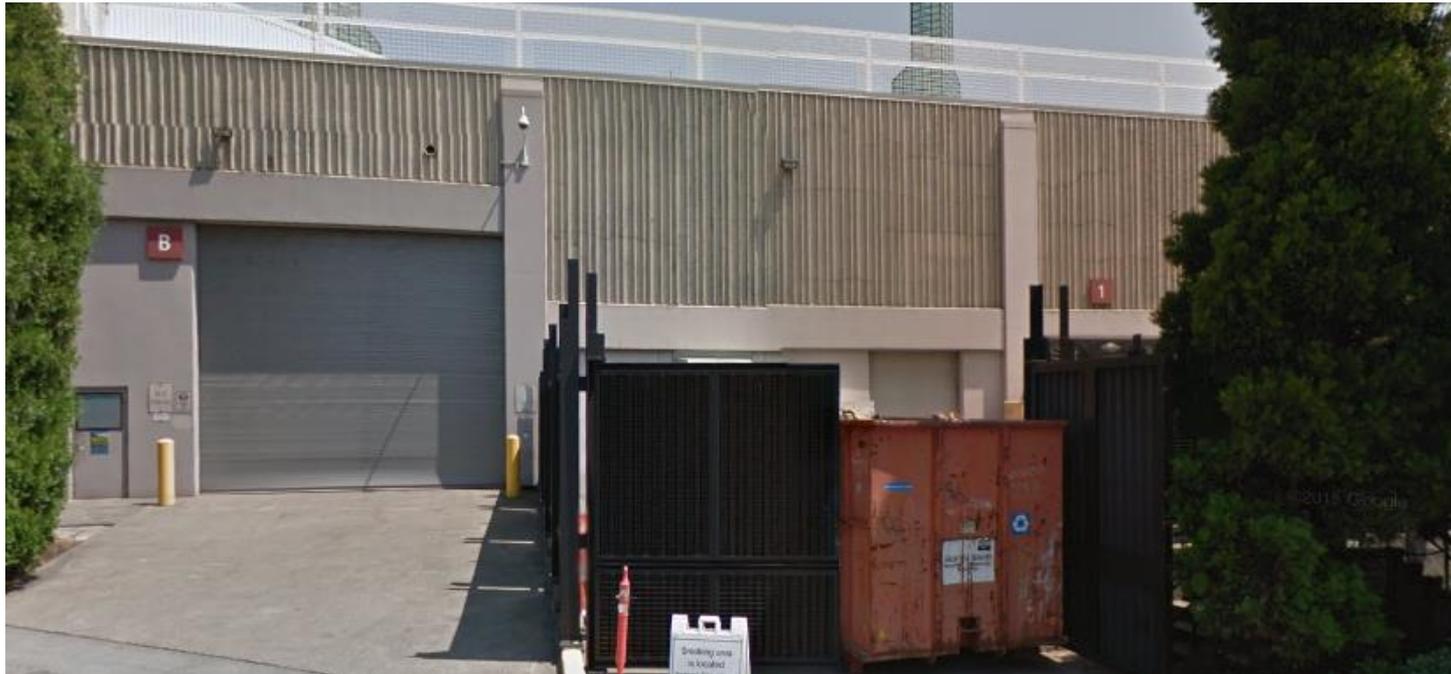
11.2.2 Pre-Occupancy Indoor Air Quality Testing



11.2.4 Legionellosis Mitigation (3 pts)



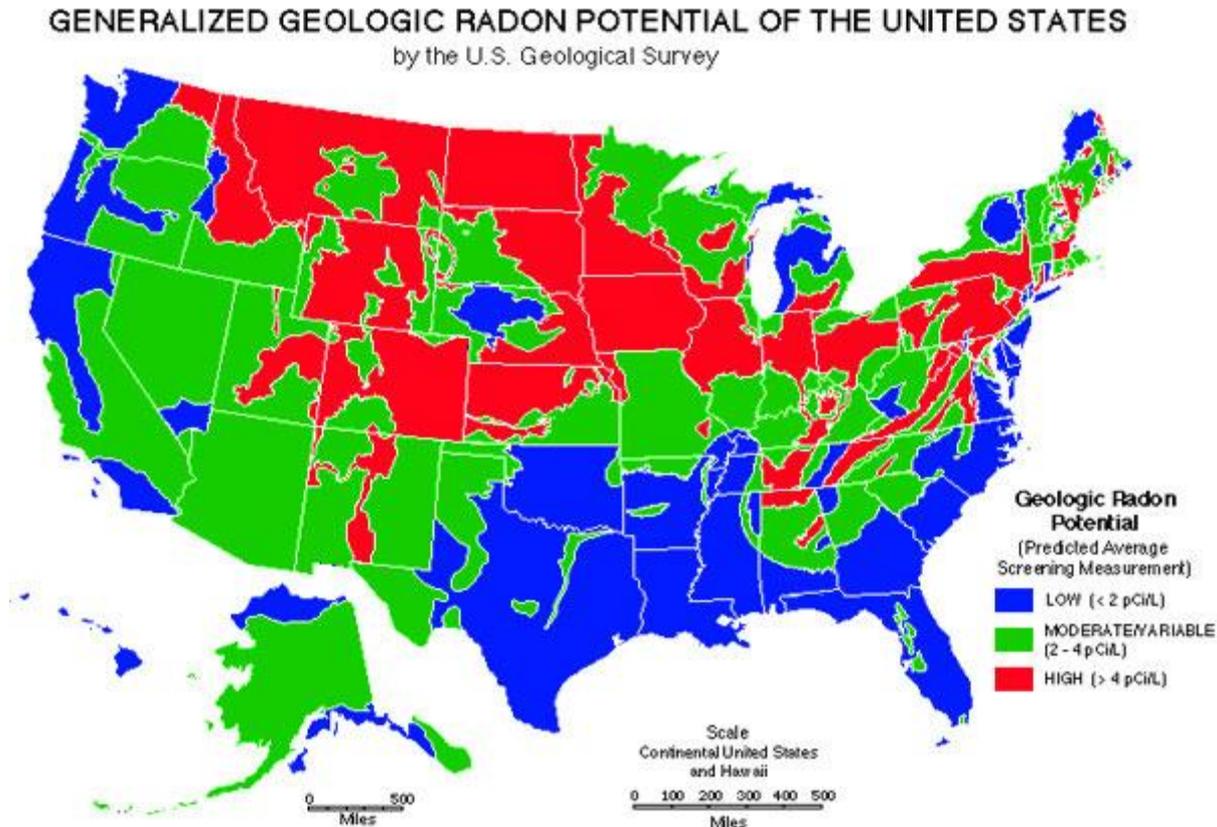
11.2.5.2 (1 point) *Building has a sealed storage area for food/kitchen waste and recycling (1 point)*



11.2.6 Other Indoor Pollutants (Tobacco, Radon) (4 pts)



11.2.6.2 (3 points or N/A; 2 points where radon potential assessed + 1 point where prevention and mitigation measures implemented)

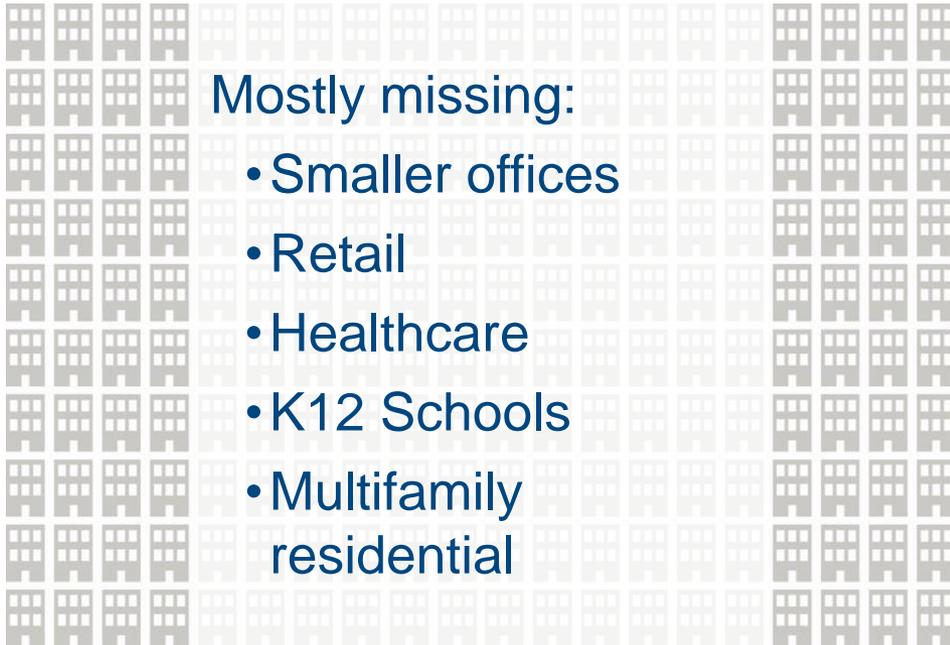


11.5 Acoustic Comfort (20 pts)



GBI's Track Record Corresponds to Market Opportunity

total area =
85 billion square feet



Green Building certified =
2.5 billion square feet

Mostly large buildings:

- Commercial/
corporate offices
- Government/NGO
- Universities





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