

LEED-CI EQ 4.5 Option C BIFMA Furniture Emissions Standards (FES) Frequently Asked Questions

1. *What is Option C?*

Option C is a new, alternative compliance path for achieving the LEED-CI EQ 4.5 credit for low-emitting materials, systems furniture and seating products. It is based on the BIFMA Furniture Emissions Standards. It was approved by the U. S. Green Building Council July 12, 2006, as an alternative to LEED-CI EQ 4.5 Options A or B.

2. *What are the BIFMA Furniture Emissions Standards?*

There are two: the BIFMA M7.1-2005 test method and the BIFMA X7.1-2005 conformance standard. Both have been subjected to an open consensus forum with a broad range of stakeholders including architects, designers, laboratories, scientists, researchers, manufacturers, and governmental agencies.

3. *How are emissions from furniture measured?*

Emission levels are measured by unpacking new furniture product(s) and placing the product into a clean test chamber under controlled conditions. After a period of time has passed, samples of air from the chamber are taken and analyzed to measure the concentration of emissions from the furniture. The chamber test results are then used to estimate the impact of furniture emissions on building indoor air quality using a modeled office environment.

4. *What's the advantage to users?*

Indoor air quality is a subject that continues to be a concern to customers, as well as manufacturers. The BIFMA FES provides a consistent and transparent process for testing, measuring and determining conformance for furniture emissions. With its acceptance by the USGBC as an alternative path for compliance to the LEED-CI EQ 4.5 credit requirement, users can be assured:

- Option C utilizes the 2004 ASHRAE 62.1 standard for building ventilation, a prerequisite for the EQ (environmental quality) credits for LEED projects, which is not currently incorporated into Option A.
- Option C is open to testing by multiple qualified laboratories, which offers a broader choice for users.
- Option C addresses user concerns as to whether furniture emission testing represents actual building conditions. It is based on research and analysis conducted on more than 5,000 new workstation floor plans from 31 buildings randomly selected across North America.
- It provides customers – and contract furniture manufacturers -- an open, consensus-based standard for determining the impact of office furniture on building indoor air quality which provides a common basis of comparison and emphasizes education, knowledge-sharing and understanding

5. Why is USGBC acceptance of the BIFMA furniture emissions standards important?

The USGBC's ruling followed months of investigation, including holding a public comment period, regarding the technical merit of the BIFMA furniture emissions standards. The USGBC Environmental Quality Technical Advisory Group, chaired by Bob Thompson, Chief of the U. S. EPA Indoor Environment Management Branch, determined that the BIFMA FES are technically equivalent to Greenguard, when used with a qualified third party test laboratory and certification body to demonstrate compliance with the requirements in the LEED-CI EQ 4.5 credit. This ruling opens up testing to multiple qualified laboratories throughout North America.

6. Who developed it and when?

Option C is based on the new BIFMA Furniture Emissions Standards which are the result of over 10 years of development initiated at the request of the U.S. GSA in 1994. After partnering with the U.S. EPA and other stakeholders in development of the 1999 EPA Environmental Technology Verification (ETV) protocol (referenced in Option B), BIFMA ultimately partnered with Dr. Jianshun (Jensen) Zhang of Syracuse University in 2004 for a comprehensive, two year project to include the latest advancements in chamber emissions testing.

Dr. Zhang is a leading scientist in the field of emissions chamber testing, with more than 18 years experience in building ventilation and indoor air quality research. BIFMA also involved technical peer reviewers from Air Quality Sciences, the National Research Council of Canada, the U.S. EPA Indoor Environment Management Branch, the State of California Department of Health Services, and Berkeley Analytical Associates.

BIFMA's goal was to provide the industry with strong testing and conformance standard tools accredited by the American National Standards Institute (ANSI) that can consistently, scientifically and transparently determine and report on the indoor air quality performance of office furniture. After achieving industry consensus, BIFMA released the standards for use in September, 2005. Final ANSI approval is still in process.

7. Does this mean BIFMA will be executing these emission tests?

No. There are numerous laboratories throughout North America that can test furnishings against the BIFMA FES, and for the USGBC LEED EQ 4.5 credit. BIFMA does not certify products and does not test products for compliance.

8. Is BIFMA recommending any particular third-party certifier for emissions standards? If so, who is it and why?

No. BIFMA is an American National Standards Institute-accredited standards developer, which requires open, consensus-based processes with an emphasis on resolving objections from any interested party. BIFMA standards are open to use by any interested laboratory, certifier, manufacturer or user.

9. What certification organizations use the new BIFMA Furniture Emissions Standards?

Scientific Certification Systems (SCS) announced their Indoor Advantage™ and Indoor Advantage Gold™ certifications in November 2005 based, in part, on the BIFMA FES. BIFMA is aware of other organizations which have expressed interest in certifications based on the BIFMA FES.

10. Does this replace Greenguard™?

No. It is another option available to achieve the LEED-CI EQ 4.5 credit.

11. Is the BIFMA FES better than Greenguard?

Greenguard is a well recognized certification program which has raised awareness of the importance of furniture emissions and indoor air quality, while directly contributing to manufacturers learning and working to reduce the emissions of office furniture and other products. However, the BIFMA FES builds on the base of existing emissions science currently used by Greenguard and improves the state-of-the-art in the following ways:

- BIFMA FES requires a full seven days in chamber (like the 1999 U.S. EPA ETV protocol) to determine compliance with the LEED-CI seven day requirements, rather than testing for four days in chamber and then modeling out to day seven as Greenguard does.
- BIFMA FES allows users to determine compliance with both the LEED-CI criteria at seven days, and the California 1350 requirements at 14 days with a proven approach which has been adopted in both the 2006 California state government office furniture purchase criteria and the SCS Indoor Advantage certification program.
- All furniture emissions programs estimate the impact of furniture emissions by using a model office environment, but only the BIFMA FES model offices are based on a rigorous statistical analysis of over 5,000 new workstations in 31 building floor plans randomly selected from actual office buildings across North America and spanning seven major office furniture manufacturers.
- BIFMA FES incorporates the outdoor/clean air flow requirements of the 2004 ASHRAE 62.1 ventilation standard, which is the most current and stringent ASHRAE ventilation standard and is a LEED-CI EQ prerequisite requirement. Greenguard does not.
- BIFMA FES is open to use by multiple qualified laboratories and certification bodies. Greenguard uses proprietary test protocols with a single laboratory and a sole certification body.
- BIFMA FES provides additional scientific rigor and detail to the furniture emissions testing process, promoting better repeatability and confidence in test results.

12. What other organizations, besides the USGBC, support the BIFMA FES?

A broad range of stakeholders including the U. S. General Services Administration, the Canadian General Standards Board, multiple test laboratories, scientists, architects, interior designers and manufacturers have voted in favor of the approval of the BIFMA standards as ANSI standards. In addition, the State of California Department of Health Services has incorporated the BIFMA M7.1-2005 test method into their current purchasing specifications.

13. Who in my organization should be familiar with this standard and testing options?

People who are responsible for specifying products, as well as those responsible for ensuring compliance to various standards should be familiar with the standards and Option C.

14. How can I get a copy of the standard?

They are available from the BIFMA website at www.bifma.org or by calling Roxanne Deboer at 616-285-3963.

Frequently asked questions of particular interest to manufacturers

15. What's the advantage of the BIFMA FES to manufacturers?

- It offers a credible, scientific emissions standard that serves as an alternative to satisfy the USGBC LEED-CI EQ 4.5 credit requirement and provides sample acquisition, packaging, and shipping procedure information which was missing from Option B.
- It enables the identification of additional commercial test labs capable of conducting IAQ tests and requires labs to be third party accredited for emissions chamber testing.
- It provides screening tools for determining major emission sources from office system furniture components and materials.
- It represents standards based on the combined research and input of scientists, technical professionals and BIFMA members so that the most current information on what customers purchase and how they use it is integrated into the standards.

16. My company has made a huge investment in Greenguard certification. How does the BIFMA FES affect that certification?

The BIFMA FES does not impact Greenguard certification. The BIFMA FES provides a publicly available set of tools for the evaluation of office furniture systems, components, and seating emissions and their impact on building indoor air quality, which also provides an alternative to achieve the LEED-CI EQ 4.5 credit for low-emitting furnishings.

17. Can the Greenguard Environmental Institute apply this standard to my product? If so, how would it be differentiated against the current Greenguard standard?

The Greenguard Environmental Institute applies its Greenguard program only through Air Quality Sciences, the laboratory that started the program. Greenguard is welcome to certify to the BIFMA FES and AQS is welcome to apply and test to the BIFMA standards. Multiple Greenguard participating companies have requested AQS and Greenguard to harmonize and adopt the BIFMA M7.1-2005 test method.

18. Will it cost more for a manufacturer to apply the BIFMA standards?

No additional costs other than those normally incurred with any testing/certification laboratory.

19. Do the standards lengthen the amount of time it takes to get a product certified? Or the cost for the work?

The standards should not lengthen the time for attaining certification. We expect costs may be more competitive as the standards are open to use by multiple qualified laboratories and certification bodies.

20. Once a product is certified against the BIFMA standard – regardless of who executes the standard – does the product certification have to be continually updated? At what time periods and costs?

Yes, as with other certifications, the BIFMA FES Option C certification for LEED requires testing at least every two years. The BIFMA FES provides guidance for manufacturers, users, and third parties to determine even more frequent retesting or evaluation, which will vary depending upon the breadth of manufacturer products, materials, frequency of product and process changes, test results, requirements of the third party certification body, and other factors. As an example, the SCS Indoor Advantage certification program requires continual oversight, onsite reviews, and retesting at least annually. Overall program costs will vary.

21. As a member of BIFMA, does my company have the option of not adopting this standard?

The requirements of all BIFMA standards are voluntary.

22. Does BIFMA have technical advisors that can respond to questions? If so, how can they be reached?

Richard Driscoll is the Director of Technical Services for BIFMA and he can provide general guidance. His email address is rdriscol@bifma.org and the phone number is 616-285-3963.

**LEED-CI EQ 4.5 Option C
BIFMA Furniture Emissions Standards (FES)
Fact Sheet**

- What:** LEED-CI EQ 4.5 Option C -- a new, alternative compliance path for achieving credit for low-emitting materials, systems furniture and seating products using the BIFMA Furniture Emissions Standards; an open consensus project which included input from architects, designers, laboratories, scientists, researchers, manufacturers, and governmental agencies.
- When:** Option C was approved by the U.S. Green Building Council on July 12, 2006, as an alternative to LEED-CI EQ 4.5 Options A and B. The BIFMA Furniture Emissions Standards were issued in September, 2005.
- Why:** Indoor air quality continues to be a concern to customers, as well as manufacturers. BIFMA's goal was to provide a consistent and transparent process for testing, measuring and determining conformance for furniture emissions. The USGBC's acceptance of the BIFMA FES validates that goal.
- Impact:** The USGBC's ruling of Option C as an alternative compliance path for achieving the LEED-CI EQ 4.5 credit opens up testing and certification to multiple qualified labs and certification bodies. By expanding the choices available to customers, specifiers and manufacturers, Option C facilitates more accessible indoor air quality testing and validation, a faster overall certification process, and more competitive certification program costs.
- Who:** The BIFMA Furniture Emissions Standard (FES) subcommittee, comprised of representatives of 16 BIFMA member organizations, developed its new standards with assistance by Dr. Jianshun (Jensen) Zhang, of Syracuse University. Dr. Zhang is a leading scientist in the field of emissions chamber testing, with more than 18 years experience in building ventilation and indoor air quality. He is the primary author of two American Society for Testing and Materials (ASTM) standards for emissions testing, helped to develop the Environmental Protection Agency (EPA) Environment Technology Verification (ETV) protocol during advanced emissions research at the National Research Council of Canada, and developed a world class emissions testing facility at Syracuse University.
- Additional participants and technical peer reviewers included representatives from the State of California Department of Health Services, Air Quality Sciences, Berkeley Analytical Associates, National Research Council of Canada, and the U.S. EPA Air Pollution and Control Division, among others.

Key Milestones in BIFMA's work to establish Indoor Air Quality Standards

Late 1980's/ early 1990's	Varied customer/government requirements for emissions.
1994	The U.S. General Services Administration (GSA) asks BIFMA to establish a common standard for measuring furniture emissions.
1998	BIFMA files public notice with ANSI to begin development of an ANSI standard for office furniture emissions.
1999	BIFMA works with the U.S. EPA and other groups to establish the ETV (Environmental Technology Verification) Large Chamber protocol.
2000	Greenguard and California 01350 initiated.
2001	USGBC includes Greenguard and ETV as options to satisfy LEED CI-EQ credit 4.5 requirements.
2004	BIFMA Board of Directors makes standardization of IAQ testing and measurement protocols a top priority. The current standards represent an evolution of all prior work, and incorporate the latest research, learnings and testing technologies.
2005	<p>BIFMA partners with Dr. Zhang to develop a test method, and then involves top North American scientists as peer reviewers. BIFMA conducts research to identify representative "worst-case" office environment models for furniture emissions by analyzing 31 office building floor plans randomly selected from buildings across North America and containing over 5,000 workstations.</p> <p>BIFMA issues new furniture emissions standard in September, following overwhelming consensus by members.</p> <p>Research, round robin and validation testing begins.</p>
2006	<p>California builds on BIFMA method for revised purchasing specifications.</p> <p>USGBC EQ Technical Advisory Group votes unanimous support.</p> <p>BIFMA standards incorporated into SCS Indoor Advantage™ voluntary third-party certification program</p> <p>USGBC ruling issued July 12 approving Option C as an alternative compliance path for achieving LEED-CI EQ 4.5 credit.</p>