

Green Purchasing Best Practices: Office and Dorm Furniture



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OVERVIEW

- Furniture includes tables, chairs, desks, storage systems, work surfaces, beds, and other furniture used in office and school settings.
- Environmental, health and economic benefits can be realized by choosing products made with environmentally sensitive materials and safer chemicals.
- States can save money by ensuring products are durable and by reusing, repairing and remanufacturing existing furniture.
- Certified low-emitting furniture products are widely available.

WHY BUY GREEN OFFICE AND DORM FURNITURE?

- Low-emitting furniture can improve indoor air quality by reducing the types and quantities of volatile chemicals that are off-gassed.
- Some furniture contains or is treated with [highly persistent and toxic chemicals](#) (such as brominated flame retardants and fluorinated stain resistant chemicals) that are concentrating in wildlife and humans.
- Purchasing recycled-content or remanufactured furniture can conserve wood, petroleum and other valuable natural resources.
- Purchasing environmentally preferable furniture can [help your buildings qualify for LEED](#) and other “green building” credits.
- Furniture made with sustainably harvested wood protects forest health and biodiversity.

BEFORE BIDDING...

Which Products Are Needed?

- Review historical purchases to develop a list of high-volume items for your contract.
- Identify which products are needed with a Furniture Contract Development Team. Invite high-use agencies (e.g., facilities and education departments, etc.) as well as your procurement office and environmental agency to participate in developing specifications, bid evaluation procedures, etc.
- Determine any performance, safety, flammability or material requirements for the products.
- Assess whether the bid solicitation needs to include installation, hardware and accessories that are not typically part of the product.

What Green Products Are Out There?

- Office and institutional furniture products certified by the Business and Institutional Furniture Manufacturers’ Association (BIFMA), Cradle to Cradle (C2C), Forest Stewardship Council (FSC), GREENGUARD, the Institute for Market Transformation to Sustainability (SMaRT), and Scientific Certification Systems (SCS) are available throughout the marketplace.

Are There Useful Cooperative Purchasing Contracts?

- WSCA contract [w34-2011](#) for office furniture includes four manufacturers, all of which have many products that meet or exceed the recommended environmental criteria.
- US Communities’ [contract](#) for office and school supplies includes three manufacturers that offer many products that meet or exceed the recommended environmental criteria.

GREEN CERTIFICATIONS AND STANDARDS FOR FURNITURE

- [ANSI/BIFMA M7.1/X7.1-2011](#) are single-attribute testing (M7) and performance (X7) standards for the emission of VOCs and other toxic substances that can be referenced to protect indoor air quality.
- [BIFMA Level®](#) is a multi-attribute furniture certification based on the ANSI/BIFMA e3 standard. Certification is based on a points system with three levels of achievement.
- [California Section 01350](#) details special environmental requirements for building projects. It establishes emissions testing protocols and product selection guidelines for furniture.
- [Cradle to Cradle™](#) is a multi-attribute standard and certification for a broad range of

products that rewards achievement in five categories, with five standard levels.

- [Forest Stewardship Council \(FSC\)](#) certifies that wood used in a product comes from well-managed, sustainable forests.
- [GREENGUARD](#) is a third-party standard that has two certifications for chemical emissions from furniture that can impact indoor air quality.
- [SCS Indoor Advantage](#) is a third-party certification for chemical emissions that may be harmful to human health and the environment.
- [SMaRT](#) is a multi-attribute standard and certification for a broad range of products designed to address health and environmental impacts.

[BID SPECIFICATIONS](#)

Models: The State of [California](#) included multi-attribute green requirements in its bid solicitation for institutional furniture. The [Western States Contracting Alliance](#) and [US Communities](#) included green criteria in their vendor evaluation process, although the specifications were not minimum requirements. As a result, the contract offers a selection of green furniture products. The City of Eugene, Oregon has specifications for reupholstering and refinishing of chairs.

[Recommended Minimum Requirements \(Specifications\) for New Furniture](#)

- Products must not contain polyvinyl chloride (PVC), phthalates, lead, polybrominated diphenyl ethers (PBDEs), or fluorinated compounds.
- Products must qualify as low-emitting, recycled-content or sustainably sourced. Low-emitting products must be certified by GREENGUARD, SCS Indoor Advantage, Cradle to Cradle (Gold or Platinum), or SMaRT with points under PHE 3-2 and 3-3, or BIFMA Level Certified with Credit 7.6. Recycled-content products must contain at least 20% post-consumer or 40% total recycled materials, or be BIFMA Level Certified with Credit 5.7. Sustainably sourced products must be at least 30% wood by weight, and certified by FSC.

[Additional Desirable Attributes](#)

Vendors that promote sustainability beyond meeting minimum requirements (e.g. through takeback programs) or by offering products that meet even higher standards, can receive points in the bid evaluation process.

Develop a Green Bid List

- Develop a sample list of high-volume furniture products that meet your minimum requirements on which bidders can submit offers.

[PRODUCT EVALUATION](#)

- Purchasing agents should verify compliance of information by requesting third-party certificates from the vendors and ensuring the certificates cover the appropriate products and that they have not expired.
- Consideration should be given to performance, warranty, ergonomics, and environmental and health criteria, in addition to standard product evaluation criteria such as price.

[VENDOR EVALUATION](#)

- A vendor questionnaire (sample: [Appendix A](#)) can capture additional sustainability criteria, such as sustainable packaging and shipping services as well as furniture recycling programs.

[MAXIMIZE GREEN IMPACT](#)

- Before making a furniture purchase, check your state's surplus program or determine if existing furniture can be reupholstered and refinished instead.
- Track green and refurbished/remanufactured purchases of furniture to share your green purchasing successes.

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Executive Summary

Overview

The market for environmentally preferable furniture is relatively mature. There are many certified low-emitting products on the market and manufacturers are beginning to make significant changes to their existing product lines and introduce new product lines that reduce health and environmental impacts. Unfortunately, many traditional office and school furniture products contain harmful chemicals in the adhesives, finishes, foams, fabrics and other materials that could significantly impact public health. They may also use a large amount of virgin resources, from wood to plastics. As the industry has matured, it is now relatively easy to find greener alternatives that are comparable on performance, style, and price as manufacturers continue to make efforts to make their products more environmentally preferable.

Environmental and Health Benefits of “Green” Office and School Furniture

Traditional furniture products may contain chemical binding agents and flame retardants that emit pollutants into the air that can affect the health of those around the product on a daily basis. Some of these chemicals are known or suspected to cause cancer, reproductive harm, and endocrine disruption, and to persist in the environment. Additionally, furniture manufacturing utilizes significant amounts of natural resources, such as wood and petroleum which are being depleted from our planet at rapid rates. Purchasing environmentally preferable furniture can not only reduce resource consumption, but also help protect the health of employees, students and others using the furniture.

Availability

Environmentally preferable furniture is now widely available from many major vendors. In fact, many manufacturers of commercial and institutional furniture are actively competing on environmental and health attributes for their products. These products can be purchased directly from the manufacturers through their authorized distributors. Many certified green furniture products are available on states’ cooperative purchasing contracts.

Performance

Due to the wide availability of sustainable furniture from well-established, respected brands, performance needs are very likely to be met by available products. Dialogue with users that have strict performance requirements is recommended.

Green Certifications and Standards

There are many different multi- and single-attribute certifications for furniture. Single-attribute certifications mostly address chemical emissions related to indoor air quality, such as volatile organic compounds (VOCs). Multi-attribute certifications cover aspects of production, materials, emissions, lifespan, refurbishability and disposal, typically using a point system.

Purchasing Requirements for Environmental Preferability

The best available furniture meets requirements for recycled content, uses sustainably sourced materials, is designed for durability, is energy efficient if using lighting, has low emissions of volatile compounds and has eliminated other chemicals of concern. Vendors should provide evidence of the product’s attributes, such as providing certification verification and/or certifiers’ scorecards for all products.

Product and Vendor Selection

States should give preference to vendors that offer the widest selection of environmentally preferable furniture. States may also wish to take into account additional sustainability practices by the vendor or manufacturer, such as provision of a take-back and recycling program for the products at the end of their life.

Lifecycle Costs

The total long-term cost of a furniture product can be minimized by considering its durability and how it can be managed at the end of its useful life. Look for furniture that is designed for remanufacturing, making the product and its components easily repairable in the future. Consider reupholstering or repairing furniture if possible, instead of purchasing new furniture. Vendors may also offer a buy-back or take-back program that will reduce costs when the product is at the end of its useful life. If the product uses lighting equipment, ensure that it is energy efficient.

WHY BUY GREEN OFFICE AND DORM FURNITURE?

Office and institutional furniture is present in public buildings where people work and visit every day, or sleep at night. Because people sit in, work on and are generally around furniture all day, health impacts are important when evaluating furniture. Many traditional furniture products are made with toxic chemicals; these substances are most often found in the foam, fabrics, glues, and finishes. Exposure to these harmful chemicals by workers in an office setting can impact wellness and lead to increased sick time and medical expenses according to the U.S. EPA¹ and health professionals.²

Additionally, furniture consumes a large amount of natural resources. Buying green furniture can reduce consumption of wood, prevent unsustainable harvesting of forests, reduce production of virgin plastic, and more. Buying from environmentally responsible suppliers can also help reduce energy consumption and waste from the manufacturing process and during use when the product includes lighting and ensure the health and safety of workers building and assembling furniture.

There has been growing demand for environmentally preferable institutional furniture and many large manufacturers in the furniture industry has taken notice. There are many different standards and eco-labels available for furniture, which can cause confusion about which products are legitimately environmentally preferable. Eco-labels for this product category tend to focus on a single attribute, such as chemical emissions, but the overall environmental preferability of a product would ideally be based on a comprehensive measure that requires sustainability in materials used, chemicals added, furniture durability, and more. **Because there is no standard that has high thresholds for a wide variety of key environmental factors coupled with broad market availability, this Guide outlines a procurement approach that allows products to qualify in numerous ways, all of which contribute to sustainability.**

Health

There are many health concerns associated with furniture, generally due to the components used to make these products. Many furniture products have flame retardant chemicals added for the safety of the building and its occupants. However, such chemicals can be harmful to those who use the furniture. Many adhesives, paints and finishes used in and on furniture also release high volatile organic compounds (VOCs), which can be hazardous to human health. According to the U.S. Environmental Protection Agency³, indoor VOC emissions can be responsible for irritation, headaches, nausea, and damage to liver, kidney, and central nervous system. Some VOCs are also suspected or known to cause cancer and asthma in humans. Plywood used in furniture components can often contain urea formaldehyde as a binding agent, which is classified as a probable human carcinogen by the EPA. (For a matrix of certifications that

¹ <http://www.epa.gov/iaq/ia-intro.html>, Accessed December 1, 2012

² Bernstein et al, Journal of Allergy and Clinical Immunology, "The health effects of nonindustrial indoor air pollution", March 2008

³ <http://www.epa.gov/iaq/voc.html>, Accessed November 28, 2012

address VOC emissions, see Appendix C.) Additionally, some of the most prevalent chemical flame retardants used in upholstered furniture are neurotoxins, known to migrate from products into air and dust, where they bioaccumulate in humans.

Environment

A significant environmental impact from furniture is material use. Using virgin materials in furniture products can lead to depletion of forests and diminished biodiversity. Likewise, at the end of life, millions of tons of furniture end up in landfills instead of being reused or recycled. Chemical compounds used in furniture production can also release highly toxic VOCs into the environment, which can contribute to air pollution. Flame retardant chemicals are released into dust and waterways from furniture, ending up in fish, wildlife and humans.

Buying green furniture can greatly reduce resource consumption from using products with recycled materials and from forests that are harvested sustainably. Even better, repairing, refinishing or reupholstering existing furniture may be the best option environmentally if possible (as long as other environmental impacts such as chemicals are addressed). When the furniture is at the end of its life, recycling or reusing the furniture or its components in some way also greatly reduces environmental impacts.

In addition, some furniture products feature lamps or embedded light fixtures, especially workstations and desks. Buying furniture with energy efficient, low-mercury lamps can save your state money, reduce energy use and contribute to lower climate impacts.

Availability

There are thousands of products available on the market from most major manufacturers that are “green” in some way. Many of these products are certified only for indoor air quality, but not necessarily for all of the other health and environmental impacts associated with the products. However, as in the recommended specifications, certifications and standards can be used alongside one another to find the most sustainable products.

Furniture products are often offered by:

- Furniture product manufacturers or their licensed distributors,
- Office supply retailers such as Office Depot or Staples, and
- Hardware supply distributors such as Grainger, Fastenal, Home Depot or others.

These products may be also available through:

- [Cooperative purchasing contracts](#) (including those for hardware and office supplies) available through WSCA or US Communities, or
- A separate furniture contract for your jurisdiction or institution.

BEFORE BIDDING...

Which Products are Needed?

The first question to ask is if existing furniture can be repaired to a useable condition instead of purchasing new products. Not only will repairing existing furniture reduce environmental impacts, but it can also save money over buying new furniture. States use a variety of options to purchase refurbishment services. Purchasers may include such services in an overall contract for furniture purchase,⁴ work with a

⁴ As does the Commonwealth of Massachusetts – see [Contract OFF20](#), Exp 6/30/2014

state program such as a correctional employment company to refurbish furniture,⁵ or go out to bid for local furniture services.

If furniture must be purchased rather than refurbished, the first step should be to identify how and where the products will be used so the appropriate product types can be identified. For example, will the products be used in a public space such as a school or library where there is heavy traffic or will they be used in a reception area where they won't see much use. Based on the expected use, location, décor, previous purchasing patterns, performance needs, and other necessary parameters, the purchasing agent should identify the products to be included in the bid. Vendors will want to know the expected volume of purchasing over the life of the contract, which can help increase the discount offered off the MSRP price.

It is important to invite your environmental agency staff to participate in your contract development team along with agencies that are large-volume purchasers of furniture.

Considerations for identifying products to be included in the bid may include:

- Amount of use, which can indicate demands on the material (wood, plastic, fabric) and inform the required warranty requested from the vendor
- Existing furniture or décor may suggest desired material type and style of furniture
- Assessment of previous furniture purchases will show which types and styles of furniture have been purchased the most by state agencies and other contract users
- Whether remanufactured furniture would fulfill users' needs as well as new virgin furniture
- Special performance needs of users
- Taking an inventory of existing furniture and its age can help identify which furniture will likely need to be replaced most urgently.

What Green Products are Out There?

Generally, green furniture is available nationwide, but may not be available (or at least a sufficient selection available) from traditional local vendors. Many of the furniture manufacturers sell their products directly or through their own authorized distributors. Before going out to bid, assess what products are available from local vendors as well as those available from the manufacturers themselves.

Look for Environmentally Preferable Furniture on Existing Cooperative Purchasing Agreements

Cooperative purchasing agreements offer the advantage of utilizing another multi-state contract including their negotiated prices without having to go out to bid. You may want to ask the cooperative purchasing organization if environmental specifications were included in the bid solicitation and/or whether there are a significant number of "green" furniture products offered on the contract or included in the "core" list, which would make them eligible for the vendor's deepest discounts.

If green products are present alongside conventional products, take steps to encourage or ensure the purchase of products that meet environmental criteria:

- Verify certifications or standards with your vendor as items are purchased.
- Ask vendor or manufacturer for a list of products that meet the recommended standards and/or certifications, and direct purchasers to buy from this list.
- Block products on the "Brown List" (that is, products containing substances prohibited by the minimum recommended requirements). For example, block products containing PVC. Ask that the vendor's ordering software be set up to avoid products that do not meet minimum requirements.

⁵ As does the State of Texas – see Texas Correctional Industries, <http://www.tci.tdcj.state.tx.us/>

The Western States Contracting Alliance (WSCA) has a cooperative purchasing agreement that includes hundreds of products meeting third-party standards and certifications. Four vendors were awarded the 2012 [WSCA contract](#), expiring October 2015 (optional extension to October 2017). The vendors include:

Vendor	Certifications and Product Availability
AllSteel	AllSteel features a wide range of SCS Indoor Advantage (IA) and IA Gold certified products. Several furniture systems use only wood certified for sustainable forestry management (check for FSC certification).
Herman Miller	Approximately 30 product lines carry BIFMA Level certifications. Over 15 products or product groups are Cradle to Cradle certified, most to the Silver level. Additional products are certified by GREENGUARD.
The HON Company	Multiple HON product lines have earned SCS Indoor Advantage certification, and 75% of products have achieved Level certification from BIFMA. Products feature recycled industrial steel, paint, and fabric (be sure to verify percentage recycled content by weight).
Steelcase	Most Steelcase products are certified low-emitting by SCS Indoor Advantage. Its wood facility is FSC Chain of Custody certified. Over 80 product lines are Level certified to all three levels, including many of their legacy product lines in addition to new products. Over 25 Steelcase products or product groups are Cradle to Cradle certified, most to the Silver level.

While the WSCA cooperative contract for furniture contains many green products, not all products on the contract are green. Environmental criteria were used in the scoring process when awarding bids to vendors, but products do not need to meet any minimum environmental requirements to be included. Be sure to use the strategies outlined above to maximize the purchase of green products.

Certified green furniture products can also be found on [WSCA's Facilities Maintenance, Repair and Operations \(MRO\) contract](#) (expires February 2014, with one three year optional extension), through vendors Fastenal, Grainger and MSC, and on the [WSCA Office Supplies contract](#) (expires January 2015).

Vendor	Certifications and Product Availability
Fastenal	GREENGUARD certified products are plentiful, and even tend to include "Greenguard" as a part of the product name for easy searches. Fastenal also features SCS Indoor Advantage certified, FSC certified, and recycled-content products. All certifications, and the percent post-consumer and total recycled content, are listed on each product page under "Product Details."
Grainger	FSC, GREENGUARD, and SCS Indoor Advantage certified office furniture products are all available from Grainger, and easy to identify with the search-by-certification website function. (When viewing Office Furniture, click "Green" in the sidebar, and certification checkboxes will appear.) In the Bedroom Furniture category, only mattresses bear the Grainger green leaf label, for recycled content. Percent recycled content is not always displayed, but may be featured under a products' "Green Environmental Attribute."
MSC	MSC demonstrates a commitment to low VOC, recycled and ENERGY STAR rated products by featuring these in materials about their eco-friendly product offerings. However, due to MSC's more limited office furniture offerings, office furniture products bearing certifications that comply with the recommended standards prove difficult to identify.

The [US Communities cooperative purchasing contract](#) for office and school supplies also offers green-certified furniture products from three manufacturers. The [bid solicitation](#) requested general information on the environmental practices of the vendors, however the products on the contract do not need to meet any minimum requirements to be included. As always, standards and certifications should be verified with each purchase. The contract’s vendors include:

Vendor	Certifications and Product Availability
Haworth	Over 60 Haworth product lines are certified GREENGUARD or GREENGUARD Gold. FSC certification is standard for most products that contain wood. BIFMA Level has certified a wide selection of Haworth products at level 1 and some at levels 2 and 3. Haworth has also committed to eliminating PVC and PBDE flame retardants by 2015.
Herman Miller	Approximately 30 product lines carry BIFMA Level certifications. Over 15 products or product groups are Cradle to Cradle certified, most to the Silver level. Additional products are certified by GREENGUARD.
Knoll	All Knoll products are GREENGUARD certified. Many adhere to GREENGUARD Gold. BIFMA Level 3 certification has been achieved on all principle workplace product lines. Recycled content is a common feature in many Knoll products. FSC certification of wood is a part of the Knoll standard.

What other specifications are available?

If you choose to go out to bid, some other jurisdictions’ specifications may serve as models:

- State of California – [Environmental Specification for Furniture](#) includes minimum requirements for indoor air quality, toxics reduction and material use reporting. California also has a contract ([1-09-71-52](#)) that sets standards for energy efficient lighting, indoor air quality and recycled content for open office panel systems (OOPS).
- City of Portland, Oregon’s contract for [Adjustable Work Surfaces](#) contains specifications that act as a model for many different furniture categories. Specs include VOC emissions standards and minimum post-consumer recycled content.
- State of Massachusetts – Office, School and Library Furniture, available through the [Comm-PASS](#) contract system (document number OFF20), calls for the identification of environmentally preferable products, but does not set minimum requirements or utilize a specific scoring methodology for environmental criteria.
- City of Eugene, Oregon – RFP for Reupholster and Refinish Library Patron Chairs (Solicitation Number 2012200055). It asks that adhesives, dyes and finishes used be “non-toxic and/or low VOC,” preferably GREENGUARD certified, and reported as such to the city.

Bid Solicitation Strategy Options

If you opt to not use a cooperative purchasing agreement, you’ll need to write your own specifications. There are a sufficient number of environmentally preferable furniture products available that the solicitation can now include minimum green requirements without cutting off competition, since many manufacturers have implemented environmental programs across multiple product lines and categories. States may also choose to use a scoring system to evaluate vendors’ overall environmental performance alongside other parameters, or to use a scoring system instead of minimum requirements. If the solicitation uses a scoring system, the solicitation should make clear how environmental attributes, health benefits, and other criteria are weighted and scored for the award evaluation. (See [Appendix A, Sample Vendor Questionnaire](#), for a model scoring system template.)

GREEN CERTIFICATIONS AND STANDARDS

Many third-party organizations have developed standards for environmentally preferable furniture with varying numbers of certified products available on the market. Ideally, a label would address multiple attributes including toxicity, emissions, and material use. However, because multi-attribute labels take into account so many factors, it can sometimes be difficult or time-consuming to determine if certain impacts can be guaranteed, or if a product meets a particular criterion of interest (such as low indoor air emissions). As a result, the recommendations below rely on both single- and multi-attribute labels. In this section, you will find a summary of each standard and label discussed in the Guide.

Multi-attribute Certifications, Standards and Availability

Furniture with third-party, multi-attribute certifications is abundantly available. Almost all of these are products certified under the BIFMA Level program, although there are lesser-known programs such as Cradle to Cradle and SMaRT. These third-party eco-labels offer the advantage of certifying products with multiple sustainability attributes, as well as ensuring that the manufacturer of a product engages in responsible sourcing in their supply chain, as well as sustainable production practices. Using a third-party certification also gives the purchaser the benefit of knowing that an independent third party has verified that the manufacturer complies with the appropriate criteria, including in many cases testing the products in a laboratory and performing on-site audits of the manufacturing facilities. Multi-attribute eco-labels generally address the following issues:





- ✓ Human health of workers and end-users of the product
- ✓ Environmental impacts of the product during manufacturing and use
- ✓ Environmental management systems implemented at facilities where the product is produced
- ✓ Social responsibility of the manufacturers and their supply chain

However, in the case of the furniture market, multi-attribute labels benefit from a second look. Under both the Level and SMaRT certification programs, a product earns certification through a point or credit system, which means that each product does not necessarily comply with any criterion covered by the standard, unless it is a prerequisite. For example, Level certified products can earn a credit for adhering to low-emissions standards, but this credit is not required at any stage. Even the highest Level standard, Level 3, does not require products to meet a basic VOC emissions standard. (For more information, see Appendices B and C.) Still, a certified product's Scorecard indicates which credits have been earned, not only on emissions standards but in a broad range of sustainability categories. This means that multi-attribute standards can be very useful, but that when using them it is important to further verify the attributes that are of most interest.

As an alternative to multi-attribute standards, some certification systems are based only on a single-attribute, and are focused on a particular aspect of environmental sustainability or health. Important single-attribute standards for furniture include certifications for chemical emissions, sustainable forestry practices and energy efficiency.

Below is a table describing relevant single- and multi-attribute standards that cover office and dorm furniture. For additional information on the specific standards of each certification that covers chemical emissions, see **Appendix C: Comparison Matrix of VOC Emissions Standards and Certification Programs**.

<i>Single Attribute Certifications and Standards</i>	
	<p><i>ANSI/BIFMA X7.1</i></p> <p>This is an American National Standard Institute standard that is managed by the Business and Institutional Furniture Manufacturers’ Association (BIFMA) for chemical emissions that affect indoor air quality. This standard specifies specific emission performance requirements when testing a furniture product in accordance with the M7.1 test standard. It is referenced in other certifications. Although this standard was developed by an industry trade association, it was developed through a multi-stakeholder process and is widely regarded as a credible standard for furniture emissions. See the VOC emissions matrix, Appendix C, for this standard’s minimum requirements.</p> <p>See website for more information</p>
	<p><i>California Section 01350</i></p> <p>Section 01350 includes environmental specifications for low-emitting building products. The standard practice document has become widely adopted by industry, manufacturers and the US Green Building Council’s LEED program for conducting VOC testing in small-scale environmental chambers. This is not a certification, but a standard set of VOC criteria to which third-party certifiers test and verify. As a stricter standard, it is the basis for the GREENGUARD and Indoor Advantage “Gold” standards.</p> <p>See Specification for more information</p>
	<p><i>Restriction on Hazardous Substances</i></p> <p>RoHS is the European Union’s Directive on Restriction of Hazardous Substances, which limits the amount of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated biphenyl ethers (PBDEs) in electronics and other types of electrical equipment. It is commonly referenced in environmental standards (such as ENERGY STAR’s specification for lighting equipment). The most recent set of RoHS standards (under 65/2011/EU) can be accessed here.</p> <p>See website for more information</p>
	<p><i>ENERGY STAR</i></p> <p>ENERGY STAR was established by the U.S. Environmental Protection Agency in 1992 under the Clean Air Act, and was directed to identify and promote energy-efficient products by the Energy Policy Act of 2005. The rating system covers appliances, lighting, buildings, and a host of consumer and institutional products. ENERGY STAR lighting covers fluorescent and light-emitting diode (LED) systems, which may be included as fixtures in furniture products.</p> <p>See website for more information</p>

	<p><i>Forest Stewardship Council</i></p> <p>The Forest Stewardship Council (FSC) certification program ensures forest products used in certified furniture are managed and harvested responsibly. Any wood product used in a piece of certified furniture, no matter how small, must be produced sustainably and traded through approved channels. For wood to maintain its FSC certification, each participant in its supply chain must be FSC Chain of Custody certified.</p> <p>See website for more information</p>
	<p><i>GREENGUARD</i></p> <p>This is a certification program developed by GREENGUARD and now operated by UL Environment. It addresses chemical emissions that affects indoor air quality. It is considered an industry standard for low-emission certification. There are two types of GREENGUARD certifications, featuring differing thresholds: GREENGUARD Certified and GREENGUARD Gold (formerly named “GREENGUARD Children and Schools Certified”). See the VOC emissions matrix, Appendix C, for this standard’s minimum requirements.</p> <p>See website for more information</p>
	<p><i>SCS Indoor Advantage</i></p> <p>This is a certification program run by Scientific Certification Systems (SCS). It addresses the chemical emissions of furniture that affect indoor air quality. Certification to this standard means that the product meets the requirements of the BIFMA X7.1 VOC emissions standard, using the M7.1 testing protocol. See the VOC emissions matrix, Appendix C, for this standard’s minimum requirements.</p> <p>See website for more information</p>
<p><i>Multi-Attribute Certifications and Standards</i></p>	
	<p><i>Cradle to Cradle</i></p> <p>The Cradle to Cradle Certified^{CM} Products Standard is a multi-attribute eco-label that evaluates a wide range of products across five categories of human and environmental health.</p> <p>The standard includes:</p> <ul style="list-style-type: none"> • Material Health • Material Reutilization • Renewable Energy and Carbon Management • Water Stewardship • Social Fairness <p>Product certification is awarded at five levels (Basic to Platinum), in which products are certified to the lowest level achieved in each of the five categories. Cradle to Cradle Certified emphasizes the importance of continuous improvement; as a result, their Basic standard includes an inventory and a commitment to ongoing assessment, while higher standards carry guaranteed minimum thresholds reached in the five categories.</p> <p>See website for more information.</p>



Level® Certified

This certification is based on the ANSI/BIFMA e3-2012 standard, co-developed by a multi-stakeholder group of manufacturers, government representatives, nonprofits, architects and others, and coordinated by BIFMA, the furniture industry trade association. The Level certification indicates that a product and its manufacturer meet the criteria of the e3 standard and have been certified by an independent third party. Current certifiers qualified for the program include Intertek, NSF International, Scientific Certification Systems (SCS), TUV Rheinland and UL Environment.

The e3-2012 standard includes prerequisites and optional credits that the manufacturer and product must meet in the following categories:

- Materials
- Energy & Atmosphere
- Human & Ecosystem Health
- Social Responsibility

Each category has one or two prerequisites and a large number of optional points the manufacturer can achieve for each product. The number of optional points achieved determines the “level” of certification. The lowest level of certification is Level 1, and then Level 2, and Level 3 is the highest. Because the certification is based on a point system, although different products may be certified to the same level, they may have vastly different environmental and health attributes. For example, even Level 3 certified products are not required to meet the basic BIFMA VOC standard for low-emitting furniture (X7.1, see below). Purchasers should always ask for the e3 product scorecard to understand which criteria each product has met.

[See website for more information](#), or [Appendix B](#) for a summary of the standard



SMaRT Certified

Sustainable Materials Rating Technology (SMaRT) is a certification run by the Institute for Market Transformation to Sustainability. The rating system also considers multiple attributes across health, environmental and social performance and rates products as Sustainable, Sustainable Silver, Sustainable Gold and Sustainable Platinum.

There are a small handful of manufacturers who have SMaRT certified products, but there is not sufficient availability within office and dorm furniture to require this certification alone in a solicitation. However, states may wish to make this certification an option alongside other certification systems.

[See website for more information](#)

Key Environmental and Health Issues for Furniture

VOC Emissions

Indoor air emissions of chemicals used in furniture products are a serious environmental and health issue, which has been addressed by several certification programs requiring limits on volatile organic compounds (VOCs). According to the US Environmental Protection Agency (EPA), VOCs can have a variety of short- and long-term adverse health effects including “eye, nose and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney and central nervous system.”⁶ Certifications that cover VOCs have varied approaches and different permissible levels of relevant chemicals. A table is provided in Appendix C showing maximum allowable emission levels of key compounds under each certification program.

Formaldehyde

Formaldehyde, a VOC, is used in glues, foams, textiles, and pressed wood adhesives used in furniture products, which are released into the air and breathed in. It has been found by the EPA to be a probable human carcinogen, and has been linked to asthma and allergic reactions.⁷ In 2010, President Obama signed the [Formaldehyde Standards for Composite Wood Products Act](#), which established limits for formaldehyde emissions from composite wood products such as particleboard. Directed by Congress, regulations to implement the Act have been proposed, but at the time of writing they have not been finalized. In this Guide, formaldehyde is addressed in the minimum requirements for all products as well as through the low-emitting products standards. Appendix C shows maximum allowable emissions levels of formaldehyde under each certification program.

Chemical Flame Retardants

Flame retardant chemicals are semi-volatile organic compounds that migrate out of the products and into the air and dust. Many flame retardant chemicals have been found to be persistent, bioaccumulative and/or toxic. Among chemical flame retardants, polybrominated diphenyl ethers (PBDEs) have been popular in consumer and institutional products, despite being neurotoxins that have been linked to reproductive impacts and liver disorders.⁸ As a result, non-chemical flame retardants, such as appropriate smolder-proof fabric, should be used whenever doing so is compliant with fire safety requirements. In 2008, Washington State began restricting the manufacture and use of some products containing PBDEs.⁹

When chemicals must be used, less-toxic alternatives to PBDEs should be sought. However, as manufacturers move away from PBDEs, concerns have been raised about the alternative flame retardant chemicals used. Chlorinated Tris (also known as TDCPP)¹⁰, in particular, has risen in use as PBDEs have been increasingly avoided.¹¹ TDCPP appears on the State of California’s list of Chemicals Known to the State to Cause Cancer, as of October 2011.¹² In 2012 and 2013, bans on chlorinated Tris have advanced in

⁶ “An Introduction to Indoor Air Quality,” U.S. Environmental Protection Agency website, accessed November 2013.

<http://www.epa.gov/iaq/voc.html>

⁷ “An Introduction to Indoor Air Quality: Health Effects.” U.S. Environmental Protection Agency website, accessed December 2013. http://www.epa.gov/iaq/formaldehyde.html#Health_Effects

⁸ Washington State Department and Ecology and Department of Health. *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan*. January 19, 2006. Publication No. 05-07-048, Department of Ecology.

⁹ “What are PBDEs?” State of Washington Department of Ecology website, accessed November 2013.

<http://www.ecy.wa.gov/programs/swfa/pbt/pbde.html>

¹⁰ Tris (1,3-dichloro-2-propyl) phosphate (TDCPP). 13674-87-8. Added to CA Proposition 65 list October 28, 2011.

¹¹ “Washington state Senate passes bill to ban carcinogenic flame retardants in products made for kids.” *The Associated Press*, via *The Oregonian*. April 17, 2013.

http://www.oregonlive.com/pacific-northwest-news/index.ssf/2013/04/washington_state_senate_passes.html

¹² California Office of Environmental Health Hazard Assessment website, posted December 12, 2013.

http://oehha.ca.gov/prop65/prop65_list/files/P65single122013.pdf

the legislatures of New York and Washington State.¹³ In light of this, it is prudent to avoid all chemical flame retardants, not only PBDEs, when possible and consistent with fire safety standards.

What if the state has furniture flammability standards that require chemical flame retardants, or seem to?

Residential and office furniture (not for use in public buildings) in many jurisdictions is held to a widely-used furniture flammability standard, Technical Bulletin 117 (TB 117). Although it is a California regulation, it is referenced as a standard across the nation. TB 117 was revised on January 1, 2014. The new standard (TB 117-2013) will ensure fire safety without the use of flame retardant chemicals. While the new standard does not prohibit the use of flame retardant chemicals, manufacturers can comply by using a smolder-proof fabric that is not treated with flame retardant chemicals.

California’s TB 133 is similarly referenced by a number of states. This regulation covers public buildings and assembly areas, including healthcare facilities, correctional institutions and more. Products designed to meet TB 133 must withstand a more severe test and tend to be more expensive. According to the Bureau of Home Furnishings and Thermal Insulation (3/2000), “In California, TB 133 is voluntary or discretionary in any facility which is fully sprinklered. In this type of facility a manufacturer may choose to comply with TB 133, but it would not be a mandatory requirement. However, in California, even in sprinklered facilities, seating furniture must comply with TB 117.” Because many such facilities have sprinkler systems, any additional expense and potential for additional chemicals that comes along with meeting TB 133 may be unwarranted. Once the new standard under TB 117 has been applied to a broad range of furniture products, states should consider allowing TB 117 to be the standard for furniture in public buildings with sprinkler systems. If TB 117 is followed instead of TB 133, furniture products will be able to comply without the use of chemical flame retardants. Bid specifications can then promote the purchase of products that avoid flame retardant chemicals.

This table can help purchasers determine which standard is best suited for a particular context. Any purchases should be made in accordance with the regulations in your state. Purchasers are encouraged to check with the state fire marshal with further questions.

	Public Building or Assembly Area Including healthcare facilities, correctional institutions, stadiums , etc.	Office and Residential (Non-public) Areas
Fully sprinklered	TB 117 <i>TB 133 is voluntary</i>	TB 117
Not fully sprinklered	TB 133 <i>In applicable states only</i>	TB 117

Polyvinyl Chloride

Also known as PVC or vinyl, polyvinyl chloride is used as a base material for some furniture, and also as an upholstery fabric due to its ability to be easily cleaned. PVC can release dioxin, a known carcinogen, during manufacturing, at disposal if incinerated, or if it catches fire during use.¹⁴ Phthalates, commonly used to soften PVC, have been shown to leach, migrate and off-gas from furniture. Phthalates can damage the liver, kidneys, and lungs, and are linked to birth defects.¹⁵ According to the National Library of

¹³ “NYS Assembly Votes Unanimously to Ban Chlorinated Tris.” The JustGreen Partnership website, posted March 21, 2013. <http://www.just-green.org/2012/03/nys-assembly-unanimous-tris.html>. See also note 6.

¹⁴ Healthcare Without Harm, 2013. http://www.noharm.org/us_canada/issues/toxins/pvc_phthalates/

¹⁵ Safer Chemicals, Health Families Coalition, August 2013. <http://www.saferchemicals.org/2013/08/new-study-of-picnic-supplies-finds-lead-phthalates-hazardous-flame-retardants-organotins-and-other-h.html>

Medicine, PVC exposure from consumer products, furniture and other sources can mean direct exposure to dioxins from associated phthalates, which may be endocrine disruptors or carcinogens, and can cause reproductive and developmental health problems.¹⁶ Exposure to PVC dust may also cause asthma and affect the lungs.¹⁷ Furniture companies, especially those that manufacture children's furniture, are increasingly seeking alternatives to PVC and related additives such as phthalates.

Fluorinated Compounds

Fluorinated compounds include surface treatments, and also treatments on fabrics for stain or grease resistance. Fluorinated compounds such as perfluorooctanoic acid (PFOA) have been shown to cause "developmental and other adverse health effects" in animals.¹⁸ PFOA is used in the production of stain and water resistant fluoropolymers, and can also be produced by telomers, another type of surface treatment chemicals that is applied to furniture textiles. The U.S. Environmental Protection Agency is "taking action to help minimize the potential impact of PFOA on the environment." Purchasing PFOA-free furniture is a way to contribute to that goal.

Energy Use and Hazardous Substances in Lighting

Some furniture products have lighting pre-installed, such as task lights that may be included in desks. Using energy-efficient lamps and ballasts can reduce the environmental impacts associated with generating the electricity that will be saved. Depending on the method of power production, this can reduce potential climate effects, reduce air pollution, and have other benefits.¹⁹ Hazardous chemicals found in lighting equipment, such as those covered under the Restriction on Hazardous Substances (RoHS) including mercury and hexavalent chromium, can be persistent in the environment, bioaccumulative, toxic and/or carcinogenic.^{20,21,22} Being aware of environmental attributes of any included lighting equipment when purchasing furniture can help avoid adverse impacts.

¹⁶ "Polyvinyl chloride (PVC)." National Library of Medicine, ToxTown website. Accessed December 2013.

http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=84

¹⁷ *ibid.*

¹⁸ "Perfluorooctanoic acid (PFOA) and Fluorinated Telomers." U.S. Environmental Protection Agency website, accessed September 2012. <http://www.epa.gov/oppt/pfoa/pubs/faq.html>

¹⁹ "ENERGY STAR: Greenhouse Gas Reduction." ENERGY STAR Website, accessed December 2013.

http://www.energystar.gov/index.cfm?c=about.ab_index

²⁰ "Lighting: Social and Environmental Issues." Responsible Purchasing Network website, accessed December 2013.

http://www.responsiblepurchasing.org/purchasing_guides/lighting/social_environ/index.php

²¹ "Hexavalent Chromium." U.S. Department of Labor, Occupational Safety & Health Administration website, accessed December 2013. <https://www.osha.gov/SLTC/hexavalentchromium/>

²² "Mercury: Health Effects." U.S. Environmental Protection Agency website, accessed December 2013.

<http://www.epa.gov/hg/effects.htm>

CASE STUDY: Washington State's Correctional Industries Furniture Production

In many states including Washington, procurement agents are required to purchase preferentially or exclusively from preferred providers, such as employment programs for correctional inmates or disabled citizens. While contractual relationships are different in these cases and may not be conducive to detailed environmental specifications, states have the opportunity to work directly with their preferred providers, to provide information about environmental and health standards, and to support sustainability initiatives. Correctional Industries of the State of Washington is a preferred provider that has made significant strides toward sustainability. Other states may be able to learn from this example, and ensure open dialogue between furniture purchasers and furniture providers within state government.

Washington's Correctional Industries (CI) manufactures seating, tables, office and desk systems, and accessories as well as residence hall furniture routinely purchased by a wide range of state agencies and institutions. This furniture not only creates work opportunities for the state's inmates and contributes to reduction in recidivism, but it also promotes reduction of waste and VOC emissions. CI has met low-emissions standards through GREENGUARD certification for many years and recently switched to SCS Indoor Advantage certification. As a result, many of the products are certified low-emitting through Indoor Advantage. All production uses lean manufacturing principles, which promotes waste reduction and optimization of raw materials. Their factory was recently rebuilt and has earned a LEED silver rating, maximizing environmental benefit.

New construction by state agencies is required to meet LEED green building standards and CI is proud to contribute to achievement of LEED standards with its certified products and green manufacturing practices. Recently, CI discovered that there were no Washington state mattress recyclers and began recycling mattresses. CI breaks the mattresses down to the individual commodity level, baling up foam, springs and cloth to be used again. Their work keeps tens of thousands of mattresses out of landfills annually.

Green Furniture Can Help Earn LEED Credits

Purchasing furniture that contains recycled content, certified wood or has earned other “green” certifications can help a building achieve LEED credits from the New Construction, Commercial Interiors and Existing Building LEED Rating Systems. Below is a table of potential credits to which furniture can contribute.

Rating System	Details
Operations & Maintenance, Existing Buildings: Facility maintenance and renovation policy Required	Must have a purchasing policy that addresses furniture. Policy should address criteria in MR Credit 5, "Purchasing - facility maintenance and renovation"
Operations & Maintenance, Existing Buildings: Purchasing - facility maintenance and renovation MR Credit 5	One point in this category if at least 75% of total furniture cost meets at least one of following criteria (product valuation varies by criteria): <ul style="list-style-type: none"> ○ Recycled content (post-consumer plus one-half pre-consumer content) ○ Wood products (certified by the Forest Stewardship Council or equivalent) ○ Bio-based material (meeting the Sustainable Agriculture Network standard) ○ Salvaged, refurbished, or reused ○ Purchased from a manufacturer that participates in or is directly responsible for an extended producer responsibility program ○ GreenScreen v1.2 Benchmark: Products that have fully inventoried chemical ingredients to 100 ppm with no Benchmark 1 hazards ○ Certified Cradle to Cradle (see additional detail) ○ Contains no substances that meet REACH criteria for substances of very high concern ○ Products are sourced from product manufacturers who: <ul style="list-style-type: none"> ○ Engage in validated and robust safety, health, hazard, and risk programs ○ Have independent third party verification that processes are in place to encourage environmental health & safety with regards to chemical ingredients ○ Products comply with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 or 7.6.2 (equivalent to other low-emissions standards. See Appendix C) ○ Are part of other USGBC approved programs meeting leadership extraction criteria ○ Note: Local purchases are given additional weight in cost calculation for this MR credit
Interior Design & Construction, Commercial Interiors: Interiors life-cycle impact reduction MR Credit 2	A point can be obtained if at least 30% (by cost) of furniture was reused, salvaged, or refurbished furniture
Building Design & Construction, New construction: Low emitting materials EQ Credit 4	Furniture can contribute to a point in this credit category if at least 90% (by cost) of furniture meets either of the following criteria: -New furniture complies with ANSI/BIFMA e3-2011 Furniture Sustainability Standard, Sections 7.6.1 and 7.6.2; USGBC-approved equivalent contaminant thresholds are also acceptable -Salvaged and reused furniture more than one year old at the time of use, provided it meets the requirements for any site-applied paints, coatings, adhesives, and sealants.

MINIMUM REQUIREMENTS AND DEVELOPING A BID SOLICITATION

Before putting out a bid for furniture, consider all the information you might want to know about each product and vendor and include it in an electronic bid sheet. Whenever possible, limit your bid sheet to only “green” products to maximize environmental preferability, and encourage the greatest discounts from vendors.

1. First, determine your criteria. Chemicals to avoid and certifications and standards to require or desire can be found in the “recommended minimum requirements” section below. If certain criteria cannot be used as minimum requirements (because it would limit competition too much), then put them into your bid solicitation document in the form of a vendor questionnaire and award points for sustainability efforts (see [Vendor Selection](#), below, for more on this strategy.)
2. Require vendor tracking of individual attributes for your own reporting purposes as well as for achieving LEED credits. For example, you may wish to require tracking of recycled content for the full list of products. When building a report on the full selection of furniture, remember that if a product qualifies by being low-emitting, it may also have recycled content; avoid double-counting.
3. Allow for remanufactured furniture, if applicable. Some state contracts contain default requirements that products offered be new and/or unused unless specifically requested otherwise. Allowing remanufactured furniture to be offered alongside new furniture as available can help cut down on material use.
4. Determine the correct approach for going out to bid. Because furniture is often chosen on specific parameters and tastes, it is may be difficult to have a market basket of products. Because products offered by different manufacturers may not be readily comparable, it is possible for the bid to request or identify the subset of products from the vendor’s catalog that meet the solicitation requirements.
5. Next, determine all the information you will need to evaluate the products offered by vendors, and include space for all that information on an electronic bid sheet that can later be sorted or filtered.

Recommended Minimum Requirements for Bid Solicitation

Green furniture products come in many forms, including metal and wood, refurbished and new, energy-efficient and low-emitting. Because of this variety, the recommended standards allow different approaches to sustainability with one set of criteria, for ease of implementation. The standards can be adapted or narrowed based on the types of furniture purchased. For example, if only wood furniture is purchased, certification of sustainable forestry management may be considered a minimum requirement.

In the standards below, all green furniture is expected to avoid the use of the most harmful, persistent chemicals and materials, such as polyvinyl chloride (PVC), PBDEs, and fluorinated stain resistant treatments. These prohibited substances can be considered a “Brown List” of substances that manufacturers should avoid. After meeting this threshold, furniture can comply with the standards in one of three ways – by being low-emitting, using recycled content, or being sustainably sourced. A list of verified standards and certifications that would enable vendors to demonstrate that each product meets at least one of these standards criteria is provided.

Salvaged, refurbished, and remanufactured furniture is considered inherently environmentally preferable, and therefore must only meet the prohibited substance requirements. Because different vendors may offer used furniture than those that offer new products, states should consider soliciting them on separate contracts. Also, some furniture repair and re-upholstery may be conducted through service agreements with local vendors or preferred sources (such as correctional industries).

Lastly, the standards below include additional criteria for any product that contains lighting equipment, ensuring that it is energy efficient.

Minimum requirements for all GREEN FURNITURE PRODUCTS, including SALVAGED, REFURBISHED or REMANUFACTURED FURNITURE PRODUCTS:

Products must not contain:

- Polyvinyl chloride (PVC)
- Phthalates
- Lead
- polybrominated diphenyl ethers (PBDEs)
- Stain resistant treatments that contain fluorinated compounds

Products must not contain greater than 50 parts per billion (ppb) of: Formaldehyde.

Minimum requirements for NEW GREEN FURNITURE PRODUCTS:

Products must qualify as low-emitting, recycled-content or sustainably sourced.

Low-emitting products must be:

GREENGUARD or GREENGUARD Gold Certified

OR

SCS Indoor Advantage or Indoor Advantage Gold Certified

OR

Cradle to Cradle Gold or Platinum Certified (or achieve Gold or Platinum status under the C2C Material Health category)

OR

BIFMA Level Certified at level 1, 2 or 3, with Scorecard provided that shows at least one point for Credit 7.6, Low Emitting Furniture

OR

SMaRT Certified, with Scorecard provided that shows one point each under Public Health & Environment (PHE) standards 3-2 and 3-3.

Scorecards must be submitted along with bid and price documentation.

Recycled-content products must:

Contain at least 20% post-consumer recycled or remanufactured content by weight

OR

Contain at least 40% total recycled content by weight

OR

Be BIFMA Level Certified at level 1, 2 or 3, with Scorecard provided that shows at least one point for Credit 5.7, Recycled Content.

Scorecards must be submitted along with bid and price documentation.

Sustainably sourced products must be:

At least 30% wood by weight, and Forest Stewardship Council (FSC) Certified.

If the product contains lighting equipment, it must be:

Compliant with the European Union's Restriction of Hazardous Substances (RoHS) Directive (65/2011/EU)

AND

ENERGY STAR-rated including either a light emitting diode (LED) lighting system or a linear fluorescent lighting system.

Note regarding multi-attribute certifications with Scorecards (BIFMA Level and SMaRT) : In these systems, certification on its own does not guarantee low emissions or use of recycled materials. Scorecards must be requested for products to verify these important environmental criteria. When scorecards demonstrate that these minimums are reached, certification may mean that a variety of other beneficial steps have been taken by the manufacturer.

To read a summary of relevant multi-attribute certification credits, see [Appendix B](#).

PRODUCT EVALUATION

Once vendors have responded to a bid solicitation, products (or product lines) can be evaluated using a variety of methods. First, the bid evaluation team can identify products that meet all the minimum requirements. Verifying sustainability criteria is a crucial step to ensure that all vendors are on an equal playing field.

To verify green criteria, first review the product claims and documentation included by vendors. If vendors have neglected to include certifiers' Scorecards or manufacturer affidavits that were required in the bid solicitation, these can be requested. Online certification product databases and manufacturer fact sheets can also be used to confirm certifications, compliance with chemical prohibitions, recycled content and more.

These resources from certifiers and manufacturers will assist product claim verification:

Verifying Certifications

- **BIFMA Level** – Certified products can be found on the Level website, through the [Search Products](#) function. Levels 1, 2 and 3 can be searched individually, and products can be found by manufacturer or product subcategory. Certification expiration date and even the certificate itself can be viewed on each products' page. Remember, when using BIFMA Level certifications to comply with the recommended minimum standards, a Scorecard for each product showing the relevant credit is also required.
- **Cradle to Cradle** – Office seating and workstations can be found in the [certified products listing](#) on the C2C site. Search by product name, category or certification level.
- **Forest Stewardship Council** – FSC's [Public Certificate Search](#) can be used to verify claims of FSC certification. Search by manufacturer name in the "organization" field. Be aware that these sites will not verify the product's wood content – manufacturers should be able to confirm materials used and percentages by weight.
- **GREENGUARD** – Over 12,000 GREENGUARD or GREENGUARD Gold certified products are listed in the UL Environment [Sustainable Product Guide](#). The Guide allows searches by manufacturer and even by LEED credit compliance. On each product or product line's page, the certification status, time period, and any restrictions are listed.
- **SCS Indoor Advantage** – SCS Global Services certifies to both SCS Indoor Advantage and Indoor Advantage Gold. To search SCS' [Certified Green Products Guide](#) for furniture products, select the certifications in question and product category "furniture," or use Advanced Search to search by manufacturer.
- **SMaRT** – A downloadable list of SMaRT certified products is available on the main [SMaRT webpage](#). A scroll down on that page will show clickable links for fact sheets by manufacturer product line. Remember, when using SMaRT certifications to comply with the recommended minimum standards, a Scorecard for each product showing the relevant credit is also required.

Verifying Avoidance of Prohibited Substances

The recommended minimum requirements prohibit certain chemicals of concern (PVC, lead, etc.), and it is important to verify that these substances are absent. Original manufacturers will be the primary source of such information. However, multi-attribute certifications can provide a shortcut:

- **Cradle to Cradle** features a list of chemicals banned for use in product materials as intentional inputs above 1000 ppm. PVC, PBDEs, three common phthalates, lead, and perfluorooctanoic acid (PFOA) are banned (though lead is allowed as a “technical nutrient”). As a result, C2C certification does not guarantee compliance with all prohibitions, but it is a useful indication that many harmful substances have not been intentionally used. Because C2C “Basic” level certification is provisional, only C2C Bronze, Silver, Gold and Platinum should be considered compliant with the banned chemicals list.
- **SMaRT** prohibits a list of chemicals, including dioxin, from its certified products. According to a SMaRT representative, “Dioxin... is emitted in substantial amounts in PVC feedstock manufacturing, thus SMaRT can not certify furniture or other products containing PVC.” Formaldehyde is permitted up to 27 ppb, which means all certified products will contain fewer than 50 ppb, the recommended threshold. Additionally, if points have been earned for PHE 4-3, no PBDEs are present. As always, confirming substances used with the manufacturer is recommended.

Verifying Recycled Content

Recycled content should be verified with the product manufacturer. Procurement agents should include a manufacturer affidavit for each product or line, documenting environmental attributes as a requirement in bid solicitation documents.

VENDOR EVALUATION

Because vendors often offer different types, styles, colors/patterns and selections of furniture, the number of vendors on the contract will likely determine the variety of products available. Simple price competition finds a low bidder, but can ignore other factors such as broad selection and environmental benefit. When multiple vendors offer similar products for competitive prices, consider using a [Vendor Questionnaire](#) to allot additional points to vendors offering:

- Longer warranty periods on the products
- Product take-back or recycling programs at the product’s end of life
- Modular product design to promote remanufacturing and reuse
- “Green” spend reports on green/non-green products and attributes
- Bulk delivery and alternative packaging
- Products that have earned GREENGUARD Gold, Indoor Advantage Gold, or Cradle to Cradle Platinum certification, which have stricter standards than the recommended minimum requirements
- Products that have earned a multi-attribute certifications (e.g., BIFMA level certification, Cradle to Cradle certification, or SMaRT certification), in addition to meeting the minimum criteria for one of the three single attributes in the specification (i.e., low-emitting, recycled-content, or sustainably sourced)
- Products that meet more than one of the three minimum requirements in the specification
- Mattresses or upholstered products that meet the fire safety standards in your state WITHOUT the use of chemical flame retardants.

A vendor questionnaire is the best way to request and evaluate this additional information. See [Appendix A](#) for a sample Vendor Questionnaire that can be used by your state. Be sure to allocate points to each response, or to responses of the most interest to the state, according to your priorities. Then, your Team can tally the points received by each vendor and factor that into the contract award.

LIFECYCLE COSTS

Purchasing “green” furniture can be cost-competitive and can offer environmental and health benefits that represent value to contract users. By carefully selecting products and vendors, agencies can save significantly on the total lifecycle cost of the products. Because furniture takes up a significant amount of space in the built environment, it has been a focus of green efforts for quite a while. As a result, there are thousands of products that are greener alternatives to conventional products. Many manufacturers have improved their older product lines to reduce environmental and health impacts, and continue to set goals for phasing out chemicals of concern, etc.

The important considerations that affect the total cost of furniture that should be considered include:

1. Can existing furniture be repaired or remanufactured instead of purchasing new furniture? (To institutionalize the reuse of furniture when applicable, a model [regulation](#) from California, which requires the reuse of surplus furniture when possible, may be useful.)
2. Is the product durable and will it last a long time? The length of a manufacturer’s warranty can serve as an indicator of their confidence in the product holding up.
3. Is the product built in a modular fashion and with readily available replacement parts so that if a component breaks, it can be easily replaced without discarding the entire product?
4. Does the manufacturer offer a recycling program at the end-of-life?
5. If the furniture item includes lighting equipment, is it energy efficient?

MAXIMIZING GREEN IMPACT

Whether states are developing a green only contract or adding green furniture products to a conventional furniture contract, some best practices for maximizing the environmental and health impacts of the contract should be considered:

- States that secure attractive pricing for environmentally preferable furniture should make it easy for local governments, school districts and other public agencies in the state – as well as other states – to utilize their price agreements.
- It is important to require vendors to clearly identify the green products available for purchase on a conventional contract so that agencies can easily identify them. Notifying contract users about the availability of these products will also encourage contract users to choose them.
- Tracking environmentally preferable purchases can help the state measure environmental and health benefits, and also accurately reflect usage data to get the best prices from vendors. Some states track yearly green product spending or spending on remanufactured or recycled products – reporting your furniture purchases to the proper bodies can help your state share its green purchasing successes.
- Issuing a Request for Information (RFI) can help the purchasing agent understand the availability of environmentally preferable furniture products in advance of developing a bid solicitation.
- Holding a pre-bid meeting can help vendors understand the new specifications in the bid solicitation. Giving vendors sufficient time to review the bid specifications and ask questions can also help increase the number of responsive bids.
- Holding higher standards for products used by children can have health benefits. Many states have targeted policies regarding harmful substances such as flame retardants to children’s products or attire. Requirements could include higher standards – such as GREENGUARD or Indoor Advantage Gold standards for low VOC emissions, or avoidance of all chemical flame retardants – for furniture intended for school or youth-oriented settings.
- States can use chosen specifications to identify products that are on existing contracts they have with vendors that offer furniture on existing contracts for office products, Maintenance, Repair and Operations (MRO) supplies, etc.

- Choosing products that are designed for longevity, come with a long product warranty and can be repaired or remanufactured can reduce costs later in the product's life and eliminate the need to purchase furniture as frequently.

WHAT'S ON THE HORIZON?

- Starting in January 2015, consider prohibiting all chemical flame retardants. Beginning in January 2014, the CA TB 117 standard that many states reference for flame retardants allows manufacturers to comply without the likely use of chemical flame retardants. A year after the regulation change, manufacturers are expected to have a wide range of products available without chemicals that have been linked to adverse health effects.
- Multi-attribute certifications for furniture (including BIFMA Level, Cradle to Cradle and SMaRT) have become increasingly available in the marketplace. These certifications can make verifying environmental and health benefits much easier, and cover a wide range of vendor practices and product attributes, from delivery packaging to design for reuse. As the market expands, specifications can increasingly rely on multi-attribute certifications that require comprehensive prerequisites (including chemical emissions and use of flame retardants).

Credits

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APPENDIX A: SAMPLE VENDOR QUESTIONNAIRE – ENVIRONMENTAL SECTION

Vendor Sustainability Questionnaire

For firms providing Goods and Services
Please check and complete relevant items in this survey questionnaire
Return with Bid/Proposal

VENDOR NAME _____ Date _____
Website _____
Address _____

Contact Name _____ Title _____
Contact Phone _____ Email _____
Types of Furniture Offered _____
Brands of Furniture Offered (if applicable) _____

Please check off applicable items if the answer is “yes,” and provide supporting documentation as appropriate.

Internal Operations and Policies

- 1. Has your company implemented any of the following environmental policy initiatives for your facilities? (Please attach relevant policies or links)
 - Environmental or Sustainability Policy
 - Climate Action Plan/Energy Policy
 - Zero Waste Policy or Plan
 - Toxics Reduction Strategy or Policy
 - Water Reduction Strategy or Policy
 - Green Transportation Plan for employees
 - Sustainable Purchasing Policy - Please describe representative products bought for your facilities and list sustainability attributes - e.g., recycled materials, ENERGY STAR-rated, Green Seal or EcoLogo-certified, EPEAT.

- 2. Does your company meet an environmental management standard (e.g., ISO 14001, EMAS)? (Please describe and document) _____
- 3. Does your company have a furniture takeback and/or recycling program? (Please describe)

- 4. Has your company received any environmental and/or sustainability awards in the past five years? (Please describe) _____
- 5. Is your company certified as a Green Business? (Please list certifying agency and provide documentation)
- 6. Does it hold other environmental certifications? (Please list and document)
- 7. Does your company require a sustainability policy to be followed by its suppliers? (Please describe in detail)

- 8. Has your company ever been cited for non-compliance of an environmental or safety issue (please describe date, reason, outcome)

Sustainable Facilities

- 1. Have any buildings that you own or lease been LEED certified by the U.S. Green Building Council?
Describe: _____
- 2. Does your company create or purchase renewable energy in its operations?
 On-site Off-site Holds Green-E certification
_____ Percentage of overall energy derived from renewable sources
Purchases renewable energy credits (RECs)
(Please provide documentation)

Sustainable Packaging

- 1. Does your company provide reusable shipping containers?
 Always On request No
- 2. Do the shipping boxes used for order deliveries meet or exceed the U.S. EPA minimum of 25% postconsumer recycled content?
- 3. Does your company employ shipping-container take-back services or carton return? (Please describe)

- 4. Has your company made efforts to eliminate difficult-to-recycle packaging materials such as polystyrene foam? Please describe any sustainable packaging initiatives.

Sustainable Shipping Practices

- 1. Is your company an EPA SmartWay Partner or are products shipped via any EPA SmartWay Partners?

- 2. Are any of your company's passenger vehicles and light-duty trucks EPA SmartWay certified?
Percentage _____
- 3. Do your fleet vehicles utilize alternative fuels (e.g., Ethanol, E85, Biodiesel, Natural Gas)

- 4. Are any products offered manufactured in the state or within a 100 mile radius of the state? Please include percentage if possible.

- 5. Does your company minimize shipping energy and environmental impacts in other ways? (Please describe)

Sustainability Reporting

- 1. Does your company produce a public sustainability or environmental report about its policies and operations? Please provide a copy or link and indicate compliance with any international standards (e.g., Global Reporting Initiative, Carbon Disclosure Project, ISO 14000)

- 2. Does your company identify “green” products on order lists or software? If so, what criteria define “green”?

- 3. Can you produce purchase reports for customers that sort and identify products by their individual certifications and attributes (e.g., certified low-emitting, recycled, FSC-certified, BIFMA Level-certified, Cradle to Cradle-certified, SMaRT-certified, not just "green" designation)?

Products with Additional Sustainability Attributes

- 1. Have any of your products earned “above and beyond” labels such as GREENGUARD Gold, SCS Indoor Advantage Gold, and Cradle to Cradle Platinum? Please list any products offered that have earned any of these certifications: _____
- 2. Have any of your products earned multi-attribute certifications such as BIFMA Level certification, Cradle to Cradle certification, SMaRT certification, etc. in addition to meeting the minimum specification? Please list any products offered that have at least one of these multi-attribute certifications:

- 3. Do any of your offered products meet more than one of the three required sustainability specification options (e.g., low-emitting, recycled-content or sustainably sourced)?

- 4. Do any of your offered mattresses or upholstered products meet the fire safety standards in your state WITHOUT the use of chemical flame retardants? [Under CA TB 117, followed by many states, products will be able to meet the standard with a test that allows for chemicals to be avoided starting January 2014.] Please list any mattresses or upholstered products that do not contain chemical flame retardants:

- 5. Are any of your products manufactured, provided by or sourced from Disadvantaged Businesses Enterprises, such as minority- or women- owned enterprises? Please describe.

- Other environmental or sustainability achievements and practices: Please describe.

APPENDIX B: SUMMARY OF/LINKS TO MULTI-ATTRIBUTE CERTIFICATION STANDARDS

BIFMA Level

Minimum Requirements for Solicitation Beginning number identifies section of the standard	Criteria Description
Level® Certified 1, 2, or 3	Certified by a third-party to any of the three levels of the standard
5.2 Design for Environment – PREREQUISITE	This is a prerequisite in the standard. The requirement specifies that an organization shall implement a Design for Environment (DFE) program.
5.5.1 Rapidly Renewable Materials	<p>This credit assures that rapidly renewable material is used in at least 1% of the product.</p> <p>Complying with this criterion can also help the building earn LEED credits. Vendors should disclose the percentage of rapidly renewable material used in the product.</p>
5.6 Sustainable Wood	<p>Up to two points can be earned for products containing wood certified to SFI (Sustainable Forestry Institute) or FSC. For one point, a product must contain at least 50% of the total wood weight certified to SFI or 20% certified to FSC. For an additional point, the percentage of certified wood increases to 75% for SFI and 30% for FSC.</p> <p>Complying with this criterion can also help the building earn LEED credits. Vendors should disclose the applicable sustainable wood certifications and the percentage of total wood weight in the product.</p>
5.7.1 and 5.7.2 Recycled Content	<p>Two points can be earned for using recycled content in the product. The criterion sums the post-consumer recycled content with one-half the postindustrial content. The calculation should be at least 30% for one point and 50% for two points.</p> <p>Complying with this credit can also help the building earn LEED credits. Vendors should disclose the total and postconsumer recycled content percentages in the product.</p>
5.9.1 Design for Durability/Upgradeability 5.9.2 Design for Remanufacturing 5.9.3 Design for Recycling 5.9.4.2 Buy-back or take-back implementation	Section 5.9 contains several optional credits for extended producer responsibility. It is recommended that the product/manufacturer comply with one or more of the standard criteria listed on the left side.
6.1 Develop Energy Policy – PREREQUISITE	This is a prerequisite in the standard. This requirement specifies that the organization develop and implement an energy policy.
6.6.1 Lighting Products to meet California Title 24	If the product contains lighting, this criterion ensures energy efficient lighting is used.
7.1.1 Compliance with applicable environmental requirements – PREREQUISITE	This is a prerequisite in the standard. This requirement specifies that the manufacturer must screen all facilities for all applicable environmental, health and safety regulations that govern toxic substances and the organization may not have had any criminal violations within the previous three years.
7.1.2 Key Chemical, Risk, & EMS Policies – PREREQUISITE	This is a prerequisite in the standard. This requirement specifies the organization to adopt a policy statement on chemical management and incorporating life-cycle thinking into company policies.
7.4.1.2 All chemicals of concern are	The product can earn 3 points for identifying and assessing all chemicals of

listed to 100 ppm for materials that add up to 99% of the product weight	concern down to 100 parts per million using a provided list of chemicals in the standard. The chemicals of concern list in the standard is a very comprehensive list based on other commonly used sources, such as California Proposition 65, International Agency for Research on Cancer, National Toxicology Program Report on Carcinogens, EU Directive 76/769/EEC, and others.
7.4.4 Chemical Reduction Strategy	The manufacturer develops a strategy to reduce use of materials with significant life cycle impacts.
7.5.1 Elimination of the following classifications of chemicals of concern from products: <ul style="list-style-type: none"> • Persistent, Bioaccumulative and Toxic (PBT) • Reproductive Toxicant • Carcinogen • Endocrine Disruptors (ED) 	The product does not contain chemicals of concern as listed in the standard in the classifications at left, down to 100 ppm.
7.6 Low emitting Furniture	This credit denotes if products are low-emitting of potentially hazardous substances. This credit is attained by complying with the ANSI/BIFMA X7.1-2007 standard (one credit earned, 7.6.1) or California Section 01350 Best Practice. If a product is certified to SCS Indoor Advantage, that product would qualify for this criterion. Complying with this criteria can also help the building earn LEED credits.
8.1.1 Employee Health and Safety Management - PREREQUISITE	This is a prerequisite in the standard. This requirement specifies that the organization establish management processes that detect, avoid and respond to potential threats to the health and safety of personnel.
8.1.2 Labor and Human Rights - PREREQUISITE	This is a prerequisite in the standard. This requirement specifies that the organization shall verify that forced, involuntary or child labor is not used or supported in any form in the supply chain.

Cradle to Cradle

Overview of the standard is available online:

http://www.c2ccertified.org/product_certification/c2ccertified_product_standard.

SMaRT

Overview of the standard is available online:

<http://webstore.ansi.org/FindStandards.aspx?Action=displaydept&DeptID=3144>.

APPENDIX C: COMPARISON MATRIX OF VOC EMISSIONS STANDARDS AND CERTIFICATION PROGRAMS

To view the matrix, click [here](#).

APPENDIX D: GREEN FURNITURE BID SHEET TEMPLATE

To view the bid sheet, click [here](#).