BUSINESS AND INSTITUTIONAL FURNITURE SUSTAINABILITY ASSESSMENT STANDARD

DRAFT

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Acknowledgments

The Business and Institutional Furniture Manufacturers Association (BIFMA) International thanks the extraordinary group of stakeholders that came together to assist in the development of this standard:

(List of participants will be listed here.)

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Foreword

This Standard was developed by the Joint Committee for Business and Institutional Furniture. The Committee was created by the Business and Institutional Furniture Manufacturers Association (BIFMA) and NSF International.

Business and Institutional Furniture Manufacturers Association (BIFMA)

Established in 1973, the Business and Institutional Furniture Manufacturers Association (BIFMA) International's mission is to lead, advocate, inform and develop standards for the North American office and institutional furniture industry. We serve businesses that are primarily engaged in design, development, marketing and fulfillment of office and institutional furniture products.

BIFMA is a not-for-profit organization that provides an effective forum for Members to cooperate and collaborate on appropriate industry issues. We develop voluntary product and industry standards that support safe, healthy and sustainable environments; publish key industry statistics; advocate for legislation and government regulation that have a direct impact on the health of the industry; and facilitate meaningful dialog and education to support our core services and the industry we serve.

NSF International

Popularly referred to as NSF, NSF International is a noncommercial agency. It is incorporated under the laws of Michigan as a not-for-profit organization devoted to research, education, and service. It seeks to solve problems involving man and his environment. It wishes to promote health and enrich the quality of life through conserving and improving that environment. Its fundamental principle of operation is to serve as a neutral medium in which business and industry, official regulatory agencies, and the public come together to deal with problems involving products, equipment, procedures, and services related to health and the environment. It is conceived and administered as a public service organization.

NSF is perhaps best known for its role in developing standards and criteria for equipment, products, and services that bear upon health. NSF was the lead organization in the Consortium responsible for developing this Standard. NSF conducts research; tests and evaluates equipment, products, and services for compliance with standards and criteria; and grants and controls the use of NSF registered Marks.

NSF offers product certification (Listing Services) for all products covered by its standards. Each program has established policies governing the associated product evaluation, Listing Services, follow-up and enforcement activities. The NSF Listing Mark is widely recognized as a sign that the product or service to which it relates complies with the applicable NSF standard(s).

NSF and BIFMA developed this Standard in order to provide the marketplace with a meaningful standard that would harmonize sustainability standards for the office furniture industry and help to distinguish environmentally preferable business and institutional furniture. The Standard was designed to allow for multiple levels of achievement, to provide an open alternative to proprietary certification programs, and to grant incentives for smaller companies to participate.

This Standard was developed using the consensus process described by the American National Standards Institute.

This Standard is intended to be subjec to continuous improvement and updating as market and technological opportunities evolve. Suggestions for improvement of this Standard are welcome. Comments should be sent to Chair, Joint Committee on Business and Inst. Furniture, c/o NSF International, Standards Department, P. O. Box 130140, Ann Arbor, Michigan 48113-0140, USA.

Standard for
Business and Institutional Furniture

1 General

1.1 Purpose

The purpose of this voluntary Standard is to provide measurable market-based definitions of progressively more sustainable furniture by establishing performance criteria that address environmental, economic and social aspects throughout the supply chain.

1.2 Scope

This Standard provides a pathway towards sustainability by establishing measurable criteria for multiple levels of achievement and/or performance. It allows a significant amount of flexibility in identifying the boundaries that should be used to an applicant's strategic advantage in defining the scope of the applicant's conformance.

This Standard is applicable to all business and institutional furniture; this includes but is not limited to moveable walls, systems furniture, desking systems, case goods, tables, seating and accessories. The Standard is also applicable to materials and components manufactured by suppliers to furniture manufacturers.

This Standard is applicable to business and institutional furniture manufactured in one facility or multiple facilities, one country or multiple countries. It addresses product-based characteristics in the general areas of materials, use of energy, human and ecosystem health, social responsibility impacts, and economics.

2 Normative references

ASTM E06.71.10
ISO 14040
SFI sustainable forest practices
CSA sustainable forest practices
FSC sustainable forest practices
USEPA regions

3 Definitions

3.1 air pollutant: Any substance in air that could, in high enough concentration, harm humans, animals, vegetation, or material.

3.2 air pollution: The presence of contaminants or pollutant substances in the air that interfere with human health or welfare, or produce other harmful environmental effects.

3.3 alternative fuels: Substitutes for traditional liquid, oil-derived motor vehicle fuels like gasoline and diesel. Includes mixtures of alcohol-based fuels with gasoline, methanol, ethanol, compressed natural gas, and others.

3.4 bioaccumulants: Substances that increase in concentration in living organisms as they take in contaminated air, water, or food because substances are very slowly metabolized or excreted.

3.5 biodegradable: Capable of decomposing under natural conditions.

3.6 biodiversity: The number, variety, and variability of living organisms.

3.7 biomass: All the living material in a given area; often refers to vegetation.

3.8 byproduct: Material, other than the principal product, generated as a consequence of an industrial process or as a breakdown product in a living system.

3.9 carcinogen: A substance that can cause or aggravate cancer.

3.10 closed loop process:

3.11 compost: The relatively stable humus material that is produced from composting process in which bacteria in soil mixed with garbage and degradable trash break down the mixture into organic matter.

3.12 Design for the Environment (DFE): The systematic integration of environmental attributes into the design of products and processes. There are three unique characteristics of DFE:

- The entire life-cycle is considered
- Point of application is clearly in the product realization
- Decisions are made using a set of values consistent with industrial ecology, integrative systems thinking or another framework.

3.13 ecology: The relationship of living things to one another and their environment, or the study of such relationships.

3.14 ecological/environmental sustainability: Maintenance of ecosystem components and functions for future generations.

3.15 ecological integrity: Characteristic of a living system that, when subjected to disturbance, sustains and organizes a self-correcting ability to recover toward a biomass and end-state that is normal for that system.

3.16 ecosystem: The interacting system of a biological community and its non-living environmental surroundings.

3.17 electric power improvement portfolio ("Improvement Portfolio"): The combined improvements to a regional power baseline from new source development, upgrades and retrofits to existing power generation, and efficiency improvements to transmission and distribution infrastructure over a defined period.

3.18 environment: The sum of all external conditions affecting the life, development, and survival of an organism.

3.19 environmental aspect: An element of an organization's activities, products or services that can interact with the environment.

3.20 environmental impact profile ("Impact Profile"): The cumulative summary of life-cycle impact assessment (LCIA) impact indicator results representing the environmental performance of an electric power system, or electric power improvement portfolio, normalized to a specific functional unit (e. g., 1000 GWh).

3.21 environmental performance declaration: A report summarizing the environmental impact profile and environmental performance index of a given energy utility's improvement portfolio.

3.22 environmental performance index: Quantitative comparison of the environmental impact profile of an electric power improvement portfolio to the impact profile of its regional power baseline

3.23 environmentally preferable power: Power that represents reduced impacts on the environment as compared to the regional power baseline.

3.24 environmental policy: A statement by the organization of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets.

3.25 environmental management system: The part of a company's overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.

3.26 fossil fuel: Fuel derived from ancient organic remains. Some examples are peat, coal, crude oil, and natural gas.

3.27 green chemistry: (A set of principles to aid) the design of chemical products and processes that reduce or eliminate the use and generation of hazardous or toxic substances.

3.28 green engineering: (A set of principles to aid) the development and commercialization of industrial processes that are economically feasible and reduce the risk to human health and the environment.

3.29 greenhouse effect: The natural heat-trapping qualities of trace gases in the Earth's atmosphere. Human activities have significantly increased the concentrations of *natural* greenhouse gases such as carbon dioxide. While carbon dioxide is not the only greenhouse gas, it is the main contributor to warming. Other important greenhouse gases include nitrous oxide and methane, both of which have increased in the last century.

3.30 greenhouse gas (GHG) emissions: Emissions of gases related to human activities that accelerate the greenhouse effect.

3.31 indoor air pollution: Chemical, physical, or biological contaminants in indoor air.

3.32 industrial waste: Unwanted materials from an industrial operation; may be liquid, sludge, solid, or hazardous waste.

3.33 life-cycle: The total impact of a system, function, product, or service from the extraction of raw materials through its end-of-life management.

3.34 life cycle assessment (LCA): A tool for the systematic evaluation of the environmental aspects of a product or service system through all stages of its life cycle consistent with ISO 14040. An analytical tool to implement life cycle thinking, inclusive of both product and process. An LCA is generally quantitative and requires that the results be normalized to a functional unit.

3.35 life cycle thinking: A conceptual approach that addresses environmental problems from a whole-systems or holistic perspective. The essential difference from an LCA is that the results are not normalized to a functional unit, and the results may be expressed qualitatively or quantitatively.

3.36 material intensity: Continuously improving the utility and durability of a product or service while reducing its total material and energy throughput such as the use of less energy, the generation of less waste, and the use of less mass per unit produced.

3.37 material of origin: The source(s) of a chemical; the relevant point of reference for calculating content of the chemical.

3.38 post-consumer waste: Recovered materials that are diverted from municipal solid waste for the purpose of collection, recycling and disposition.

3.39 pollution: Generally, the presence of a substance in the environment that because of its chemical composition or quantity prevents the functioning of natural processes and produces undesirable environmental and health effects.

3.40 precautionary principle: When information about potential risks is incomplete, basing decisions about the best ways to manage or reduce risks on a preference for avoiding unnecessary health risks instead of unnecessary economic expenditures.

3.41 recycle/reuse: To minimize waste generation by recovering and reprocessing usable products that might otherwise become waste (e. g., aluminum cans, paper and bottles, etc.).

3.42 regional power baseline: The dispatch territory of the Independent System Operator or its equivalent, to which an electric power system, or its improvement portfolio, is connected.

3.43 regional power pool: The mix of power technologies that is interconnected to provide power to the regional power baseline.

3.44 renewable energy: Energy from a source that is replenishable and replenished on some reasonable time scale. Potential renewable energy sources include, but are not limited to wind, solar, heat from the earth's interior, oceans, rivers, and eligible biomass. The relative renewability of a given energy source should be documented through the environmental performance evaluation methodology described in ASTM E06.71.10.

3.45 renewable raw material: A material that is replenishable and replenished on some reasonable time scale. Renewable material sources include, but are not limited to wood, grass fibers, plant-based plastics, fuels and 100 percent recycled content metals, papers, plastics and glass.

3.46 significant environmental aspect: An environmental characteristic that has or can have significant environmental impact.

3.47 social responsibility (or equity): The identification of issues, the development of standards, and the implementation of programs that address corporate responsibility for the ethical treatment of employees, communities, and other stakeholders.

3.48 solid waste: Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes also include sewage sludge, agricultural refuse, demolitions wastes and mining residues. Technically, solid waste also refers to liquids and gases in containers.

3.49 source reduction: A pollution prevention technique that eliminates the potential for pollution at the source, or where the polluting material enters the product or service cycle.

3.50 stakeholders: People who are (or might be) affected by any action taken by an organization. Examples are: Customers, owners, employees, associates, partners, contractors, suppliers, related people or located nearby.

3.51 sustainable business code: A voluntary business code of conduct or code of practice that calls for simultaneous improvements in economic, environmental, and social performance.

3.52 sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their needs.

3.53 sustainable practices: Efforts by industry to achieve sustainable development goals that call for simultaneous performance improvements in economic vitality; ecological integrity; and social equity.

3.54 Tier One Supplier: A supplier with prime design responsibility for key subsystems or components of the end product. Also referred to as prime contractor" or simply "prime".

3.55 toxic: Presenting an unreasonable risk of injury to human health or the environment.

3.56 toxic waste: A waste that can produce injury if inhaled, swallowed, or absorbed through the skin.

3.57 triple bottom line: Sustainable development involves the simultaneous pursuit of economic vitality; ecological integrity; and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line, but against the triple bottom line.

3.58 virgin materials: Resources extracted from nature in their raw form, such as timber or metal ore.

3.59 waste: Unwanted materials left over from a manufacturing process, or refuse from places of human or animal habitation.

4 Conformance, evaluation, and assessment criteria

Organizations that choose to assess their business and institutional furniture and/or products to this Standard can achieve first-party, second-party, or third-party conformance. Organizations can show continuous improvement by moving products to higher levels of achievement rather than by incorporating requirements in the Standard that change over time, e.g., year-over-year improvements in energy efficiency. The manufacturer of the applicant product can determine the scope of the conformance to the extent that the scope can be clearly communicated to potential purchasers of the product.

The scope of conformance can be defined based on geographic location. A product that is manufactured in one location can be included, while the same product manufactured in another location can be excluded. In this case, the credits that are based on “facility” or “corporate” characteristics (such as energy use, water use, and health and safety management) shall be evaluated based on the activities only at the location included in the scope of conformance. The scope of conformance can also be limited or defined based on product options or characteristics. For example, wood/veneer options could be included while laminate/non-wood options are excluded, or vice versa. Certain color options or fabric options could be included in the scope of the conformance while others are excluded.

4.1 Elements

This Standard is divided into four elements, each composed of various prerequisites and credits that are potentially available to organizations seeking conformance to the standard. The four elements are:

– materials;
– energy;
– human and ecosystem health; and
– social responsibility.

4.2 Prerequisites

Each element has one or more prerequisites that are required as the minimum performance against the standard and users shall meet all prerequisites in each element in order to proceed. Once all prerequisites are met; users may achieve additional point credits toward multiple levels of achievement in each element by meeting the specified performance requirements.

4.3 Credits

Beyond the prerequisites, there is no minimum number of credits from any of the four major elements required to demonstrate conformance to this Standard. The required credits can come from any of the four elements.

4.3.1 Levels of achievement

There are three levels of achievement or conformance available within this Standard. All credits in the Standard have the same weighting or value toward conformance. Below are the three levels, with the associated percent of credits needed to achieve each level:

Silver	48‹61 percent of total points
Gold	62‹74 percent of total points
Platinum	75≤ percent of total points

4.3.2 Summarized score sheets

Prerequisites and potential credits for each element are summarized in tabulated scorecards. See sections x,y,z for more information.

5 Materials

5.1 Prerequisite

The organization shall implement a Design for Environment (DFE) program. The DFE program shall, at a minimum, consist of the following elements: renewable materials; recycled materials; recyclable and biodegradable materials; end of life management; water management and energy efficiency.

5.2 Life cycle assessment

The organization shall encourage use of Life Cycle Assessment (LCA) to inform product design and development, and to optimize materials choices. The organization may complete an LCA for the furniture product being assessed. By fulfilling one of the three criteria below, an organization can earn one, two, or three points in this element, as detailed below.

5.2.1 The organization shall receive one point if it provides evidence that the company has incorporated life cycle thinking into product design by applying at least two of the four components in ISO 14040.

5.2.2 The organization shall receive two points if it provides evidence that the company has completed an LCA utilizing all four components in ISO 14040.

5.2.3 The organization shall receive three points if it demonstrates compliance to 5.2.2 and provides evidence that the company has completed an independent third-party review of its LCA.

5.3 Increased materials use efficiency

The organization shall reduce the quantity of raw materials used in the manufacture and delivery of products and services. Facility material efficiency is evaluated at the facility where 75% of raw material conversion processes occur. By fulfilling one of the two criteria below, an organization can earn either one or two points in this element, as detailed below.

5.3.1 The organization shall receive one point if it demonstrates a Facility Material Efficiency of 80%.

5.3.2 The organization shall receive two points if it demonstrates a Facility Material Efficiency of 90%.

"Waste mass" includes materials sent to recycling unless full economic value recovery is demonstrated.

5.4 Bio-based renewable materials excluding wood

The organization shall increase the use of renewable materials that are obtained from bio-based sources and decrease dependency on petroleum-based materials. By fulfilling one or both of the two criteria below, an organization can earn either one or two points in this element, as detailed below:

5.4.1 The organization shall receive one point if it selects renewable materials for use as an integral component of new or existing product.

5.4.2 The organization shall receive two points if it demonstrates compliance to 5.4.1 and ensures that renewable material production waste is composted or recycled.

The organization shall utilize its DFE process to compare and select renewable materials.

5.5 Bio-based renewable materials – sustainable wood

The organization shall encourage environmentally responsible forest management. The use of endangered wood is prohibited. By fulfilling one of the two criteria below, an organization can earn either one or two points in this element, as detailed below:

5.5.1 Base level

An organization shall receive one point if either:

– A minimum of 50 percent of the total wood weight of the product conforms to SFI's, CSA's, or another qualified organization's sustainable forest practices; or

– A minimum of 20 percent of the total wood weight of the product conforms to FSC sustainable forest practices.

5.5.2 Advanced level

An organization shall receive two points if either:

– A minimum of 75 percent of the total wood weight of the product conforms to SFI's, CSA's, or another qualified organization's sustainable forest practices; or

– A minimum of 30 percent of the total wood weight of the product is compliant to FSC sustainable forest practices.

5.6 Recycled content

The organization shall increase the amount of recycled content material incorporated into products. By fulfilling one of the two criteria below, an organization can earn either one or two points in this element, as detailed below:

5.6.1 Base level

An organization shall receive one point if either:

– It incorporates recycled content materials into the product so that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 40 percent of the total weight of the materials in the product; or

– It incorporates recovered materials into the product at the levels specified in the recommended recovered materials content ranges as listed below in Table 1.

TABLE ONE- Recommended Recovered Materials Content Ranges

Product	Material	Post-consumer Content (%)	Total Recovered Materials Content (%)
Furniture structure	Steel[1]	16	25-30
Furniture structure	Aluminum	--	75-100
Cellulose Loose-Fill and Spray-On	Post-consumer Paper	75	75
Particleboard/ Fiberboard component[2]	Wood or wood composite Agricultural fiber	Greater than 0 --	80-100 100
Fabric	PET	See note 3 below	100
Plastic furniture component	HDPE	70-75	95
Remanufactured or Refurbished Furniture	Various	25-75	25-75

[1] The recommended recovered materials content levels for steel in this table reflect the fact that the designated item is generally made from steel manufactured in a Basic Oxygen Furnace (BOF). Steel from the BOF process contains 25% - 30% total recovered steel, of which, 16% is postconsumer steel.

[2] Particleboard and fiberboard used in the wood components of office furniture may also contain other recovered cellulosic materials, including, but not limited to, paper, wheat straw, and bagasse. The percentages of these materials contained in the product would also count toward the recovered materials content level of the item.

3 The 100% post-consumer content requirement of the CPG for PET fabric is not replicated here.

5.6.2 Advanced level

An organization shall receive two points if it demonstrates compliance to either requirement in 5.6.1 and either:

– It incorporates recycled content materials into the product so that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 50 percent of the total weight of the materials in the product; or

– It demonstrates that the recovered content of its product exceeds the levels specified in the recommended recovered materials content ranges listed in Table One by at least 20 percent in each element, relevant to the product being assessed, if 100 percent recovered content has not already been achieved.

5.7 Recyclable and biodegradable materials

The organization shall increase the use of 'closed loop' processes for recyclable and biodegradable materials in the product.

The organization shall receive one point if it:

– Identifies and quantifies the amount of recyclable and biodegradable materials in the product. All qualifying recyclable and biodegradable materials shall be clearly labeled or otherwise identified in a manner that facilitates easy identification of materials during disassembly; and

– Verifies availability of recycling/biodegradation facilities (excluding waste to energy) for recyclable and biodegradable materials in product in at least six of the ten U. S. EPA regions (see appendix for map of regions); and

– Demonstrates commercial viability of extraction of recyclable /biodegradable materials from product.

5.8 Reclamation

An organization shall earn one point if it utilizes an in-house reclamation and recycling program in which at least 80% of recycled and biodegradable materials in the product are utilized by the original manufacturer (excluding waste to energy).

5.9 End-of-life management

5.9.1 Design for durability/upgradeability

An organization shall earn one point if it maximizes the useful life of the product to make it easy to refurbish and upgrade for multiple uses by the original or subsequent users. In order to accomplish this, the organization shall adopt and publicize a policy stating that it will design and manufacture products that have a long useful life; can withstand repeated service, repair, and handling; and has standardized product parts and components available to facilitate maintenance, servicing, and re-assembly. The organization's policy may allow for the replacement of design components and reuse of functional components.

5.9.2 Design for remanufacturing

An organization shall earn one point if it designs products to ensure that they can be remanufactured. The products shall be designed in a modular fashion to facilitate the replacement of components that are subject to wear or breakage, likely to go out of style, or likely to be upgraded. In order to earn a point in this element, the organization shall conform to all three of the requirements below in its design for remanufacturing:

– Product disassembly instructions are included in the package;
– Disassembly is possible with standard tools and does not require special training; and

– Disassembly can occur in a reasonable amount of time.

5.9.3 Design for recycling

The organization shall maximize the degree to which materials from the product that cannot be reused or remanufactured can be recycled into value-added products. In order to earn a point in this element, the organization shall conform to all four of the requirements below in its design for recycling:

– Product disassembly instructions are included;

– Disassembly is possible with standard tools and does not require special training;

– Disassembly of the product can occur in a reasonable amount of time; and

– Product parts are labeled to facilitate separation by material content, and identification and separation of toxic components.

5.9.4 Other facilitation efforts

By fulfilling one or both of the two criteria below, an organization can earn up to three points in this element, as detailed below:

5.9.4.1 Research on recovery options

The organization shall receive one point if it researches and publishes information on the highest value recovery opportunities for its legacy product lines and the materials that comprise them.

5.9.4.2 Buy-back/take-back/leasing

The organization shall receive two points if it makes a buy-back or take-back program part of its strategic sales strategy for products it is selling or leasing. The organization shall ensure that the program is managed consistently with its own environmental programs.

5.10 Water management

5.10.1 Water inventory of factory

The organization shall receive one point if it establishes a baseline water inventory to document water sources/withdrawals, uses, and discharges for the manufacturing facility where the finished product is assembled or manufactured. In situations where multiple manufacturing or supply chain facilities are utilized in producing the product, the organization shall establish the baseline water inventory for the facility that has the highest water usage rate.

5.10.2 Water efficiency

The organization shall receive one point if it maximizes water efficiency to reduce the burden on the water supply and local wastewater treatment systems by 20 percent for the manufacturing facility where the finished product is assembled or manufactured. In situations where multiple manufacturing or supply chain facilities are utilized to produce the product, the organization shall calculate the water efficiency improvement for the facility that has the highest water usage rate.

5.10.3 Wastewater discharge

The organization shall receive two points if it achieves zero net water usage or wastewater discharge rates for the manufacturing facility where the finished product is assembled or

manufactured. In situations where multiple manufacturing or supply chain facilities are utilized to produce the product, the organization shall achieve zero discharge for the facility that has the highest water usage rate.

6 Energy

6.1 Prerequisite

Top management of the organization shall develop and implement a corporate energy policy that shall establish the organization's overall direction in terms of its commitment to energy conservation and increasing the environmental performance of the regional power baseline. The policy shall:

– Be appropriate to the nature and scale of the organization's activities, products, and services;

– Include a commitment to continual improvement;

– Include a commitment to comply with relevant local, state, and federal regulations, and with other requirements to which the organization subscribes;

– Provide the framework for setting and reviewing objectives and targets; and

– Be documented, implemented, and communicated.

The policy should focus on the organization's mission, vision, and core values. Specific local or regional conditions should be considered, as should the organization's image and the views of other interested parties. Other interested parties may include employees, shareholders, customers, consumers, local communities, environmental groups, lenders, and regulators.

6.2 Building energy inventory

An organization can earn points for conducting a building inventory to create a Professional Engineer (PE)-verified *Statement of Energy Efficiency Performanc*e. By fulfilling one or more of the following criteria, an organization can earn one, two, or three points in this element, as detailed below.

6.2.1 The organization shall receive one point if it conducts a building energy inventory to create a PE-verified *Statement of Energy Efficiency Performance* for the manufacturing location of the product.

6.2.2 The organization shall receive two points if it conducts a building energy inventory for 50% or more of the total number of buildings over which it has operational control or influence when creating a furniture product (i. e., manufacturing facilities and office facilities) to create a PE-verified *Statement of Energy Efficiency Performance* for the manufacturing location of the product.

6.2.3 The organization shall receive three points if it conducts a building energy inventory for 100% of the total number of buildings over which it has operational control or influence when producing business and institutional furniture (i. e., manufacturing facilities and offices facilities) to create a PE-verified *Statement of Energy Efficiency Performance* for the manufacturing location of the product.

6.3 Energy Star rating

The organization shall receive one point if it reduces energy consumption to achieve Energy Star Rating for 5% or more of the total square footage of the buildings in which it has operational control or influence when producing furniture.

6.4 Embodied energy – raw materials

By fulfilling one of the following criteria, an organization can receive either one or two points in this element, as detailed below.

6.4.1 Baseline

The organization shall receive one point if it establishes a baseline of embodied energy used to produce component parts or subassemblies. The process of calculating the baseline shall include determining the energy usage for raw material production and transportation of components.

6.4.2 Reduction

The organization shall receive two points if it conforms to 6.4.1 and reduces embodied energy consumption used to produce component parts or subassemblies of a specific product line, including energy used for raw material production and transportation of components, by 10% of the baseline.

6.5 Embodied energy – components

By fulfilling one of the following criteria, an organization can earn either one or two points in this element, as detailed below.

6.5.1 Baseline

The organization shall receive one point if it establishes a baseline of the amount of energy used to produce supplied components from 20% of tier one suppliers of the product line.

6.5.2 Reduction

The organization shall receive two points if it conforms to 6.5.1 and achieves a 10% reduction from the baseline of the energy consumed to produce supplied component parts.

6.6 Product manufacturing

By fulfilling one of the following criteria, an organization can earn either one or two points in this element, as detailed below.

6.6.1 Baseline

The organization shall receive one point if it establishes a baseline of the amount of energy consumed to create a specific product line.

6.6.2 Reduction

The organization shall receive two points if it conforms to 6.6.1 and achieves a 10% reduction from the baseline of the energy consumed to create a specific product line.

6.7 Finished product energy consumption

6.7.1 California Title 20

By fulfilling one or both of the following criteria, an organization can earn either one or two points in this element, as detailed below.

The organization shall receive one point if it reduces energy consumption of lighting products during product usage by meeting Title 20 of the California Energy Code .

6.7.2 Use of Energy Star motors

The organization shall receive one point if it reduces energy consumption during product usage of motors in finished products by meeting U. S. EPA Energy Star Requirements.

6.8 Transportation – carrier and shipper strategies

6.8.1 An organization can earn one point by fulfilling one of the two criteria below:

– The organization shall reduce environmental impact of freight transportation by developing and implementing technologies and strategies to facilitate reductions in fuel consumption and emissions associated with freight transportation activities, including receiving and shipping of raw materials, components, and finished products; or

– The organization shall develop, document, and implement technologies and strategies that help truck carriers save fuel, reduce air pollution, and reduce emissions that contribute to climate change.

6.8.2 The organization shall earn one point if it documents carrier and shipper participation in EPA's *SmartWay Transportation Partnership* or an equivalent program.

6.9 Facility energy use

The organization shall use environmentally preferable power to help reduce greenhouse gases and other environmental impacts, and to minimize the use of petroleum products. By fulfilling one of the three following criteria, an organization can earn one, two, or three points as detailed below.

6.9.1 The organization shall receive one point if the manufacturing facility of the product line obtains power from an energy company whose improvement portfolio has an ASTM E06.71.10 Environmental Performance Index (EPI) of 40 or higher. NOTE: ASTM E06.71.10 is in the final stages of approval, and is not final, and applies to all relevant subsequent points.

6.9.2 The organization shall receive two points if the manufacturing facility of the product line obtains power from an energy company whose improvement portfolio has an Environmental Performance Index (EPI) of 60 or higher.

6.9.3 The organization shall receive three points if 20 percent of Tier One suppliers obtain power from an energy company whose improvement portfolio has an Environmental Performance Index (EPI) of 40 or higher.

6.10 On-site energy

The organization shall encourage and recognize increasing levels of on-site renewable energy self-supply. The goal of this criterion is to reduce environmental and economic impacts associated with fossil fuel energy use by encouraging the reuse of materials that would normally go to the waste stream for onsite energy. The organization shall receive one point if reuse for onsite energy represents a minimum of 1% of total facility energy requirement where final assembly or manufacturing of the finished product occurs.

6.11 Greenhouse gases

By fulfilling one of the two following criteria, an organization can earn either one or two points as detailed below.

6.11.1 Baseline

The organization shall receive one point if it establishes a baseline for greenhouse gas (GHG) emissions from such activities as energy use, industry processes, and mobile sources, including all emissions sources of the six major GHGs below:

- Carbon Dioxide (CO_2);
- Methane (CH_4);
- Nitrous Oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur Hexafluoride (SF_6).

The emissions baseline shall be calculated by taking the average of emissions inventories from 1998 – 2001 for the facility where the final assembly of the product is manufactured.

6.11.2 Reduction

The organization shall receive two points if it conforms to 6.11.1 and reduces greenhouse emission inventory by 4% from the baseline for all emissions sources of the six previously listed GHGs. Calculation of the baseline shall be based on the facility where the final assembly of the product occurs.

7 Human and ecosystem health

7.1 Prerequisites

7.1.1 Demonstration of compliance

The organization shall screen all facilities for compliance with environmental and health and safety requirements of their products and processes. The organization shall evaluate compliance with all applicable environmental and health and safety regulations that govern toxic and hazardous substance use and risk management associated with human and ecosystem health. The organization shall not have any current or unresolved significant violations from the previous three years.

7.1.2 Key chemical, risk, and EMS policies

The organization shall adopt a policy statement to reduce worker exposure to harmful chemicals; community impact; risk of legacy issues; and product liability associated with human and ecosystem health. The policy statement shall be publicly available and communicated to all persons working for or on behalf of the organization. In addition to the aforesaid topics, the organization shall document the following:

- An environmental policy that includes commitments to prevention of pollution, continuous improvement, and compliance with applicable regulations and other obligations;

- A chemical management policy that includes a statement of how the company assesses and reduces human and ecosystem health impacts; and

- Incorporation of life-cycle thinking into company policies.

7.2 ISO 14001 or equivalent

The organization shall receive two points if it documents compliance with the most recent version of ISO 14001 *Environmental management systems – Specification with guidance for use*, or a recognized equivalent, for all facilities associated with the product being assessed.

7.3 Chemical management plan (CMP) – facility

The organization shall establish a chemical management plan (CMP) to manage chemicals in products and processes. By fulfilling one of the following three criteria, an organization can earn one point as detailed below.

– The organization shall receive one point if it develops and implements a system for inventory tracking and control of process, product, and facility management chemicals that includes acquisition, use, storage, transportation, and final disposition; or

– The organization shall receive one point if it adopts as part of best management practices (BMPs) chemical hazard recognition using elements of the Process Safety Management Standard (OSHA Std. 29 CFR 1910.119) and/or EPA Risk Management Plan (RMP) (40 CFR Part 68);; or

– The organization shall receive one point if its CMP contains a documented action plan for emergency planning and response that includes the basic reporting requirements of SARA Title III (U.S. Code Title 42- The Public Health and Welfare, Chapter 116 – Emergency Planning and Community Right to Know).

7.4 Effects of process and product chemicals

The organization shall design safer products and processes by using the Design for Environment (DFE) protocol to identify and assess the human health and ecosystem health impacts of chemicals of concern. Evaluation may take place at the:

– Product level; and/or
– Process level; and/or
– Maintenance/operations level.

7.4.1 Product level (material specification)

The organization shall identify all chemical constituents down to 0.1% (by weight) of the materials used to manufacture the product, and shall assess them for human and ecosystem impact. By fulfilling one of the following criteria, an organization can earn up to four points as detailed below.

– The organization shall receive one point for 75% by weight of product; or

– The organization shall receive two points for 95% by weight of product; or

– The organization shall receive three points for 99.9% by weight of product; or

– The organization shall receive four points for 99.99% by weight of product down to 0.01% (by weight) of materials.

7.4.2 Process level (process chemicals)

The organization shall receive one point if it identifies and assesses all chemical constituents down to 0.1 percent by weight of 50 percent (by purchase amount) of process chemicals used directly in the manufacture of the product, and assesses them for human and ecosystem impact.

7.4.3 Maintenance/operations level

The organization shall receive one point if it identifies and assesses all chemical constituents down to 0.1 percent by weight of 50 percent (by purchase amount) of all maintenance and operating chemicals not directly used in the manufacture of the product, and assesses them for human and ecosystem impact.

7.4.4 Chemical reduction strategy

The organization shall receive four points if it conforms to the requirements of 7.4.1, 7.4.2, and 7.4.3, and uses the findings from the resulting assessments to develop a strategy to improve public and environmental health by reducing the use of materials and processes with significant life cycle impacts. Significance shall be based on quantity of chemical used, relative impact, applicable impact categories, likelihood of impact, and feasibility.

7.5 Reduction/elimination of chemicals of concern

The organization shall minimize the impact on human and ecosystem health of chemicals used in or associated with production of furniture.

7.5.1 Reduction from products

The organization shall document that the product does not contain chemicals of concern in the following classifications down to 100 ppm. The organization shall receive two points for each classification that is shown not to be present above 100 ppm:

- persistent, bioaccumulative, and toxic (PBT); and
- very persistent, very bioaccumulative (vPvB); and
- carcinogen, mutagen, reproductive toxicant (CMR); and
- endocrine disruptor (ED).

7.5.2 Reduction from processes

An organization can earn points by reducing and/or eliminating chemicals of concern that are recognized as being:

- persistent, bioaccumulative, or toxic (PBT); and/or
- very persistent, very bioaccumulative (vPvB); and/or
- a carcinogen, mutagen, or reproductive toxicant (CMR); and/or
- an endocrine disruptor (ED); and/or
- eutrophic; and/or
- any other recognized significant life-cycle impact category that directly impacts human or ecosystem health

An organization can earn points by fulfilling the criteria above, but shall not receive more than four total points for 7.5.2 regardless of how many criteria it fulfills beyond this limit.

7.5.2.1 An organization shall receive:

– One point for demonstrating a 10-19% reduction in chemical(s) in one or more of the above categories; or

– Two points for demonstrating a 20-29% reduction in chemical(s) in one or more of the above categories; or

– Three points for demonstrating a 30-39% reduction in chemical(s) in one or more of the above categories; or

– Four points for demonstrating a reduction of 40% or more in chemical(s) in one or more of the above categories.

For re-conformance, the organization shall earn points in this category by demonstrating further reductions in increments of 10%, or by showing the levels of reduction detailed above in a different set of chemicals without an increase in the former set.

7.5.2.2 An organization can earn points if it documents that the processes used to manufacture the product do not contain any chemical of concern at a concentration greater than 1000 ppm in one or more of the listed classifications. The organization shall receive one point for each of the classifications in 7.5.2 that is shown to be absent above this concentration.

A chemical is relevant to 7.5.2 if it is present and/or released at any stage of the processing of the final product. Presence or release during processing may be intentional or unintentional; direct or indirect (e. g., intentionally added chemicals, or background levels). For the purposes of 7.5.2, a chemical of concern shall be considered successfully phased out if the presence or release of the chemical in the process is below 1000 ppm. Where reduction is achieved by substitution, there shall be no net increase of chemicals from any of the above categories.

7.5.3 Reduction of hazardous emissions and wastes

7.5.3.1 Hazardous waste

The organization shall receive one point if it either:

– reduces the amount of hazardous waste generated from the manufacturing of the product by at least 20% on a per-unit basis over three years; or

– demonstrates that there is no hazardous waste generated in the process of manufacturing the product.

7.5.3.2 Air emissions

By fulfilling one or both of the following criteria, an organization can earn either one or two points, as detailed below.

– The organization shall receive one point if it reduces hazardous air pollutants from the manufacturing of the product by at least 20% on a per-unit basis, or demonstrates that there are no hazardous air pollutants released in the process of manufacturing the product; and

– The organization shall receive one point if it reduces criteria air pollutants from the Clean Air Act from the manufacturing of the product by at least 20% on a per-unit basis, or demonstrates that there are no hazardous air pollutants released in the process of manufacturing the product.

7.6 Low emitting furniture

The organization shall ensure good indoor air quality by reducing irritating, odorous, and/or harmful indoor air contaminants in finished products. By fulfilling one or both of the following criteria, an organization can earn either one or two points, as detailed below.

The organization shall receive one point if furniture emissions meet the following criteria at 168 hours:

Workstation systems (open plan and private office)
TVOCtoluene ≤0.5 mg/m3
Formaldehyde ≤ 50 ppb
Total Aldehydes≤ 100 ppb
4-Phenylcyclohexene ≤0.0065 ppb

Seating and Individual furniture components
TVOCtoluene ≤ 0.25 mg/m3
Formaldehyde ≤ 25 ppb
Total Aldehydes≤ 50 ppb
4-Phenylcyclohexene ≤ 0.00325 ppb

The organization shall receive one point if furniture emissions do not exceed the individual Volatile Organic Chemical (VOC) concentration limits listed in Annex A at 336 hours (14 days) or sooner when determined in accordance with the BIFMA M7.1 standard test method. These criteria are based on California EPA's OEHHA's reference exposure VOC limits in the CA Section 01350 specification, on the Standard Practice for the Testing of Volatile Organic Emissions from Various Sources using Small-Scale Environmental Chambers, and on the 2006 California office furniture bid specification.

> NOTE – When the emission factor at 336 hours is determined using the power-law defined in BIFMA M7.1 Section 10.4 and 10.5, emission factors with -0.20<b<0.20 shall be reported as constant.

Chairs and individual furniture components of workstations (e.g., file cabinets, desks, drawer pedestals, work surfaces, tables, vertical panels, privacy screens, etc.) may obtain either or both points of this credit by meeting ½ the maximum acceptable limit of 9.7.1 and/or 9.7.2. For workstation components calculate the VOC concentration in accordance with BIFMA M7.1 Section 10.6.2 where Ai0 is the standard surface area for the component type as defined in the appropriate furniture configuration defined in BIFMA M7.1 Appendix 2, (e.g., for panels used in open plan workstations use Ai0 = 11.08 m2).

The organization shall receive one point if the individual furniture component meets half the maximum acceptable limit. The chamber emission factor, and a model calculation using the surface area in the BIFMA M7.1 configuration Appendix 2, shall be used in this calculation

- Panels – 11.08 m^2
- Work surfaces- 6.103 m^2
- Storage Units – 4.569 m^2

One of the following protocols shall be used for chamber testing:

– BIFMA M7.1 Standard Test Method for Determining VOC emissions from Office Furniture Systems, Components and Seating; or

– Method for Measuring Chemical Emissions from Various Sources Using Dynamic Environmental Chambers, prepared for the Greenguard Certification Program by Air Quality Sciences.

NOTE – if the GREENGUARD Method is used for testing, the furniture configuration and exposure model calculations shall be performed as defined in the BIFMA M7.1 standard.

Small chamber testing of component pieces of workstations per the BIFMA M7.1 standard is acceptable for this point, provided that there is third-party oversight in selecting representative components and in applying the calculations in BIFMA M7.1 Section 10.6.1 and 10.6.2 to estimate the emission factor of a product.

8 Social responsibility

8.1 Prerequisites

8.1.1 Employee health and safety management

The organization shall ensure employee health and safety by establishing management processes to detect, avoid, or respond to actual and potential threats to the health and safety of all personnel. The processes shall include the following components:

– Identification of the local, national, and international health and safety laws applicable to each facility;

– Appointment of a management social responsibility representative with defined responsibilities;

– An employee health and safety policy;

– Documented procedures for the management of the system, including a corrective action process that addresses regulatory compliance and actual and potential threats to employee health and safety;

– Establishment and maintenance of employee health and safety metrics;

– Health and safety training for all employees; and

– Regular evaluation of compliance to applicable health and safety laws, as well as internal procedures and requirements.

8.1.2 Labor and human rights

The organization shall protect and respect the rights of human resources at the local, national, and global levels, by ensuring that forced or involuntary labor is not used or supported in any form, that employment is voluntary, and that child labor is not used or supported in any form.

8.2 Policy on social responsibility

The organization shall adopt a corporate position on social responsibility. It shall develop a documented, publicly available policy on social responsibility that, at a minimum, addresses:

– Fair hiring practices;
– Education for applicable employees in this subject area;
– Corporate ethics;
– Receipt of gifts; and
– Insider trading.

8.3 External health and safety management standard

The organization shall receive one point if it enhances productivity and employee welfare by implementing policies and procedures that go beyond the requirements of 8.1 by conforming to the requirements of a publicly available external health and safety management system standard.

8.4 Diversity

The organization shall receive one point if it promotes diversity in the workforce, in management, and in corporate governance bodies, while recognizing the unique local norms in different countries around the world. It shall develop and maintain a diversity process that includes, at a minimum, the following components:

– A diversity policy;

– Identification of the local, national, and international diversity rules and regulations applicable to each facility;

– Documented procedures for the management of the system;

– A corrective action process;

– Establishment and maintenance of employee diversity metrics and internal performance tracking and reporting;

– Diversity training available for employees; and

– Regular evaluation of compliance to applicable diversity rules and regulations, as well as internal procedures and requirements.

8.5 Community outreach and involvement

The organization shall receive one point if it demonstrates good corporate citizenship to benefit the communities where it operates. It shall demonstrate at least one volunteer effort and/or financial contribution supporting community projects within each twelve-month period.

8.6 Social responsibility reporting

The organization shall promote transparency through public reporting of social responsibility activities and results. Wherever possible, it shall use widely accepted metrics to evaluate the effects of these policies and activities on the company's stakeholders. By fulfilling one or both of the following criteria, an organization can earn either one or two points, as detailed below.

– The organization shall receive one point if it creates a public report that, at minimum, addresses employee health and safety management, labor and human rights management, diversity, and community outreach and involvement; and

– The organization shall receive one point if it creates a comprehensive public report that is based on reporting elements in Global Reporting Initiative G3 Social Responsibility section or another recognized guideline.

8.7 Supply chain

Through the use of internationally recognized social responsibility criteria, the organization shall encourage continuous improvement in the supply chain relative to sustainable business criteria, and particularly to social responsibility. By fulfilling one of the following criteria, an organization may earn either one or two points, as detailed below.

8.7.1 The organization shall receive one point if it establishes a documented supplier self-assessment tool containing social responsibility criteria for Tier One suppliers. At a minimum, the self-assessment tool shall contain criteria in the following categories:

- Child labor;
- Forced labor;
- Health and safety;
- Discrimination; and
- Discipline/harassment.

8.7.2 The organization shall receive two points if it conforms to 8.7.1 and provides completed responses to the self-assessment tool from Tier One suppliers comprising at least 75% of the total direct material spend of the OFM's supply base, measured using actual annual spend data for a time period within the previous 24 months.

Annex A
(informative)

From the State of California, Request for Bid Solicitation No. 55756, Section 4 Appendix C:

Compound Name	CAS Number	MW	CREL	Maximum Allowable Conc. ($\mu g/m^3$)
Ethylbenzene	100-41-4	106.2	Y	1000
Styrene	100-42-5	104.2	Y	450
p-Xylene	106-42-3	106.2	Y	350
1,4-Dichlorobenzene	106-46-7	147	Y	400
Epichlorohydrin	106-89-8	92.52	Y	1.5
Ethylene Glycol	107-21-1	62.1	Y	200
1-Methoxy-2-propanol (Propylene glycol monomethyl ether)	107-98-2	90.12	Y	3500
Vinyl Acetate	108-05-4	86.1	Y	100
m-Xylene	108-38-3	106.2	Y	350
Toluene	108-88-3	92.1	Y	150
Chlorobenzene	108-90-7	112.56	Y	500
Phenol	108-95-2	94.1	Y	100
2-Methoxyethanol	109-86-4	76.1	Y	30
Ethylene glycol monomethyl ether acetate	110-49-6	118.13	Y	45
n-Hexane	110-54-3	86.2	Y	3500
2-Ethoxyethanol	110-80-5	90.1	Y	35
2-Ethoxyethyl acetate	111-15-9	132.2	Y	150
1,4-Dioxane	123-91-1	88.1	Y	1500
Tetrachloroethylene	127-18-4	165.8	Y	17.5
Formaldehyde	50-00-0	30.1	Y	16.5
Isopropanol	67-63-0	60.1	Y	3500
Chloroform	67-66-3	119.4	Y	150
N,N-Dimethyl Formamide	68-12-2	73.09	Y	40
Benzene	71-43-2	78.1	Y	30
1,1,1-Trichloroethane	71-55-6	133.4	Y	500
Acetaldehyde	75-07-0	44.1	Y	9
Methylene Chloride	75-09-2	84.9	Y	200
Carbon Disulfide	75-15-0	76.14	Y	400
Trichloroethylene	79-01-6	131.4	Y	300
1-Methyl-2-Pyrrolidinone	872-50-4	99.13	N	160
Naphthalene	91-20-3	128.2	Y	4.5
o-Xylene	95-47-6	106.2	Y	350