

**STATE OF MONTANA
HIGH PERFORMANCE BUILDING STANDARDS GOALS**

Based on the 61st Legislature SB049, amending Section 17-7-201 MCA, and enacted under 17-7-202 MCA, the Department of Administration (through its Architecture & Engineering Division) establishes High-Performance Building Standards for the construction, renovation, and maintenance of public buildings in this state as well as all new state-leased buildings.(1.a) These standards have been developed to improve the capacity of the state to design, build, and operate high-performance and resilient buildings. An integrated design process to optimize energy performance, enhance indoor environmental quality and conserve natural resources are encouraged for all projects. (2.a)

The overall goal of the HPBS is that state-owned and/or leased buildings will meet construction and operational standards that are cost-effective and:

1. Exceed the International Energy Conservation Code most recently adopted by the department of labor and industry by 20% or to the extent that is cost-effective over the life of the building or major renovation (1.b).
2. Increase the use of environmentally and socially sustainable (2.c), building materials, finishes, and furnishings from Montana and within the region with an emphasis on functionality, durability, and maintenance (2.d);
3. Encourage comprehensive energy plans for buildings that implement energy efficiency, passive design, utilization of local energy sources and local renewable energy sources;
4. Protect and conserve the natural resources of the state (2.a);
5. Reduce and properly manage waste generation;
6. Establish life-cycle cost analysis as the appropriate and most efficient analysis to determine the cost-effectiveness, including productivity, deferred maintenance, and operational considerations (2.b) of a building project;
7. Continue to ensure that the systems of each building project are designed, installed, and tested to perform according to the design intent and operational needs of the building;
8. Implement a comprehensive data base for all high-performing buildings;
9. The State Agency for whom the Project was built shall strive to operate and maintain all State Projects at optimal efficiency, providing a healthy working environment, and controlling long-term cost.
10. Develop building plans and other long-term strategic planning processes to incorporate the concepts of high performance buildings.

END OF HIGH PERFORMANCE BUILDING STANDARDS GOALS
EFFECTIVE DATE: DECEMBER 1, 2013

**STATE OF MONTANA
HIGH PERFORMANCE BUILDING STANDARDS**

1.1 GENERAL

- A. These High Performance Building Standards are promulgated to implement the directives established in SB 49 which amended Section 17-7-201, MCA.
- B. These High Performance Building Standards were adopted on December 1, 2013, as meeting the requirements of 17-7-213, and are otherwise referred to in this document as the HPBS.
- C. The HPBS will be administered by the Department for all State Projects.

1.2 DEFINITIONS

- A. "Checklist for Minimum Requirements" shall be the checklist required for all projects as defined in the attached Exhibit B to these HPBS.
- B. "Contracting Agency" means the agency responsible for administering the Project including the HPBS compliance.
- C. "Cost Effectiveness" means coordination and reconciliation of budget and project scope to meet the HPBS with consideration of the project's life-cycle, productivity, deferred maintenance and operational considerations as determined by the Contracting Agency in collaboration with the project team.
- D. "Department" means the State of Montana, Department of Administration, Architecture & Engineering Division.
- E. "Effective Date" shall be the date which defines the most current version of the HPBS.
- F. "Equivalent Standard" means a high-performance green building standard other than LEED or Green Globes, which provides a measurement tool that when used leads to outcomes similar to LEED or Green Globes.
- G. "Green Globes Rating" means a rating under the current version of the Green Globes system as operated by the Green Building Initiative (GBI).
- H. "High-Performance Building" means a building that integrates and optimizes all major high-performance building attributes, including but not limited to: (a) energy efficiency; (b) durability; (c) life-cycle performance; and (d) occupant productivity.
- I. "High-Performance Building Standards (HPBS)" means those standards, requirements and exemptions adopted by the Department in collaboration with the Montana university system and other state agencies.

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- J. "Integrated Design" means a collaborative method for designing buildings which emphasizes viewing the building as an interconnected and interdependent whole rather than an accumulation of its separate components.
- K. "Integrated Design Process" means multidisciplinary collaboration, including appropriate key stakeholders and design professionals, from conception to completion of design phases. Decision-making protocols and complementary design principles must be established early in the process in order to satisfy the goals of multiple stakeholders while achieving the overall project objectives. This process should include the General Contractor or Construction Manager when using an alternative delivery method process. Projects executed under a normal design/bid/build process would by its nature exclude Contractor input.
- L. "International Energy Conservation Code" means the current version of the IECC adopted by the State of Montana.
- M. "LEED Certification" means certification under the current version of the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design green building rating standard. The most pertinent LEED rating system shall be used for each State Project as follows:
1. LEED for New Construction & Major Renovations.
 2. LEED for Existing Buildings: Operations & Maintenance
 3. LEED for Core & Shell.
 4. LEED for Commercial Interiors.
 5. LEED for Retail.
 6. LEED for Homes.
 7. LEED for Neighborhood Development.
 8. LEED for Schools.
 9. LEED for Healthcare.
- N. "Life-cycle cost analysis" refers to the total cost of ownership over the life of an asset. Typical areas of expenditure which are included in calculating the life-cycle cost include, planning, design, construction and acquisition, operations, maintenance, renewal and rehabilitation, depreciation and cost of finance and replacement or disposal.
- O. "Major Renovation" is a project which will increase the capacity, effect a major change in use, increase the efficiency or economy of operation, or extend the life of an existing fixed asset to a major degree.
- P. "Minimum Design Standards" means the current version of the Minimum Design Standards adopted by the Contracting Agency.
- Q. "Minimum Requirements for All Projects" shall be the design guidelines as defined in the attached Exhibit A to these HPBS.
- R. "Natural Resources of the State" shall generally be defined to include, but not limited to, the forests, surface and subsurface water, energy sources, minerals, land and air of the State of Montana.

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- S. “New Building” Any new building that is funded under the State of Montana Long-Range Building Program.
- T. “New State-Leased Buildings” means any lease entered into by the State which requires major renovation of an existing building or a lease for a new building (i.e. build-to-lease building).
- U. “Optimize Energy Performance” shall be defined as achieving increasing levels of energy performance a minimum of 20% above the baseline in the prerequisite IECC standard to reduce environmental and economic impacts associated with excessive energy use as described in Article 1.3.A below.
- V. “State Projects” means all new construction, renovation, alteration and equipping and furnishing during construction, renovation or alteration funded under 17-7-202 and new state-leased buildings.

1.3 REQUIREMENTS

- A. All State Projects shall exceed the International Energy Conservation Code by 20% above the baseline or to the extent that is cost-effective over the life of the building or major renovation as determined by the Contracting Agency.
- B. All State Projects shall comply with the Minimum Requirements for All Projects described in the HPBS Exhibit A as well as comply with Article 1.3.A.
- C. All State Projects with a Project Budget of greater than \$5,000,000 shall achieve a LEED Certification of a minimum Silver level or a Green Globes Rating of a minimum Two Globes rating or Equivalent Standard rating as well as comply with Article 1.3.A. The Contracting Agency in conjunction with the Department may determine if third-party certification or rating is not feasible.
- D. If any requirements in this Article 1.3 are feasible for an applicable project and are attempted but not met, a post-project review shall be held at the end of the project to document the reasons why the requirement was not achieved. This document shall be archived in the final project closeout documents.

1.4 DOCUMENTATION

- A. All State Projects that are required to exceed the International Energy Conservation Code by 20% shall include the written documentation which shall be archived in the final project closeout documents.
- B. All State Projects that are required to submit the HPBS Checklist for Minimum Requirements (Exhibit B) shall include a copy of this checklist in the final archived project closeout documents.
- C. All State Projects that are required to achieve a minimum LEED Silver Certification, Green Globes Two Globes rating or an Equivalent Standard rating

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shall include the certification/rating documentation in the final archived project closeout documents.

- D. The Contracting Agency's Project Manager shall be responsible for management and archiving of any appropriate documentation.

1.5 ONGOING REVIEW

- A. The HPBS shall be reviewed by the Department every two years in collaboration with Montana university system and other state agencies. Applicable updates and revisions enacted will be incorporated into the current version which will be identified with a current Effective Date so that Users can confirm that they are working with the governing version.

END OF HIGH PERFORMANCE BUILDING STANDARDS
EFFECTIVE DATE: DECEMBER 1, 2013

**STATE OF MONTANA
HIGH PERFORMANCE BUILDING STANDARDS
MINIMUM REQUIREMENTS FOR ALL PROJECTS (EXHIBIT A)**

(CORRESPONDING CHECKLIST FOR SUBMITTAL IS EXHIBIT B)

1.1 DESIGN AND DOCUMENTATION

- A. Incorporate an integrated design process.
- B. Integrate cost-effectiveness analysis early in the project.
- C. Incorporate Contracting Agency Minimum Design Standards.
- D. The Checklist for Minimum Requirements (Exhibit B) shall be maintained and completed by the Contracting Agency.

1.2 SUSTAINABLE SITES

- A. Comply with the intent of Construction Activity Pollution Prevention (LEED SS Prerequisite 1). *Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.*
- B. Comply with the intent of Construction on Appropriate Sites (LEED Credit SS 1). *Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.*
- C. Comply with the intent of Protect and Restore Habitat (MT regional priority LEED Credit SS 5.1). *Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.*
- D. Comply with the intent of Stormwater Design Quantity Control (LEED Credit SS 6.1). *Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants.*
- E. Comply with the intent of Light Pollution Prevention (LEED Credit SS 8). *Minimize light trespass from the building and site, reduce sky-glow to increase night access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments.*

1.3 WATER EFFICIENCY

- A. Comply with Water Use Reduction by 20% (ASHRAE, LEED WE Prerequisite 1). *Increase water efficiency within buildings to reduce burden on municipal & ground source water supply and wastewater systems.*
- B. Comply with the intent of Water Efficiency in Landscape and Irrigation (LEED WE Credit 1). *Limit or eliminate the use of potable water or other natural*

surface or subsurface water resources available on or near the project site for landscape irrigation.

1.4 ENERGY & ATMOSPHERE

- A. Exceed current Int'l Energy Conservation Code by 20% (MT legislation).
- B. Comply with the intent of Fundamental Building Systems Commissioning (MT A&E requirement, LEED EA Prerequisite 1). *Verify that the project's energy-related systems are installed, calibrated, and perform according to the owner's project requirements (OPR), basis of design (BOD), and construction documents.*
- C. Comply with the intent of Fundamental Refrigerant Management (LEED EA Prerequisite 2). *Reduce stratospheric ozone depletion through zero use of chlorofluorocarbon (CFC)-based refrigerants in new base building heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems.*

1.5 MATERIALS & RESOURCES

- A. Comply with the intent of Storage and Collection of Recyclables / Composting (LEED MR Prerequisite 1, Green Globes). *Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills and incinerators.*
- B. Comply with the intent of Recycled Content (LEED Credit MR 4). *Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.*
- C. Comply with the intent of Regional Materials (LEED Credit MR 5). *Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.*
- D. Comply with the intent of Low-Emitting Materials (LEED Credit IEQ 4.1-4.4 and Green Globes). *Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. Products include adhesives and sealants, paints and coatings, flooring systems, composite woods and agrifibers, and furniture.*
- E. Comply with the intent of Building Durability, Adaptability, and Disassembly (Green Globes). *Specify durable and low-maintenance building materials and assemblies that can withstand the following: sunlight, temperature and humidity changes, condensation, and wear-and-tear associated with the amount and type of traffic expected; Implement a building design that promotes building adaptability; Specify fastening systems that allow for easy disassembly.*

1.6 INDOOR ENVIRONMENTAL QUALITY

- A. Comply with the intent of Minimum Indoor Air Quality Performance (ASHRAE 62.1-current, LEED IEQ Prerequisite 1). *Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants. Meet ASHRAE-62.1, current version.*
- B. Comply with the intent of Environmental Smoke Control (State Facilities mandate, LEED IEQ Prerequisite 2). *Prevent or minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental smoke.*
- C. Comply with the intent of Construction IAQ Management Plan (LEED IEQ Credit 3.1/3.2). *Reduce indoor air quality (IAQ) problems resulting from construction or renovation and promote the comfort and well-being of construction workers and building occupants. Develop and implement plan during both construction and prior to occupancy.*
- D. Comply with the intent of Indoor Chemical and Pollutant Source Control (LEED IEQ Credit 5). *Minimize building occupant exposure to potentially hazardous particulates and chemical pollutants.*
- E. Comply with the intent of Controllability of Systems—Lighting (LEED IEQ 6.1) *Provide a high level of lighting system control by individual occupants or groups in multi-occupant spaces and promote their comfort and well-being.*
- F. Comply with the intent of Controllability of Systems—Thermal Comfort (LEED IEQ 6.2) *Provide a high level of thermal comfort system control by individual occupants or groups in multi-occupant spaces and promote their comfort and well-being. Definition of thermal comfort shall be as defined by LEED as control over at least 1 of the following primary factors in the occupant's vicinity: air temperature, radiant temperature, air speed and humidity.*
- G. Comply with the intent of Daylight and Views—Daylight (LEED IEQ 8.1) *Provide building occupants with a connection between indoor spaces and the outdoors through introduction of daylight and views into the regularly occupied areas of the building.*
- H. Comply with the intent of Acoustic Comfort (Green Globes) *Provide optimum protection from undesirable outside noise. Specify appropriate sound transmission class rating of perimeter walls in response to external noise levels. Provide noise attenuation of the structural systems and measures to insulate primary spaces from impact noise. Specify acoustic controls to meet the acoustic privacy requirements. Specify measures to meet speech intelligibility and requirements for carious spaces and activities. Mitigate acoustic problems associates with mechanical equipment and plumbing systems noise and vibration.*

1.7 OPERATIONS AND MAINTENANCE

- A. Comply with the Intent of Water Performance Measurement (LEED-EB: O&M WE Credit 1). *Measure building and major subsystem water performance over time to understand consumption patterns and identify opportunities for additional water savings.* (LEED-EB: O&M suggests whole building metering or sub-metering of irrigation, indoor plumbing fixtures and fittings, cooling towers, domestic hot water, and other process water.)
- B. Comply with Energy Efficiency Best Management Practices—Planning, Documentation, and Opportunity Assessment. (LEED-EB: O&M EA Prerequisite 1) *Promote continuity of information to ensure that energy-efficient operating strategies are maintained and provide a foundation for training and system analysis.* (Develop a building operations manual that includes an occupancy schedule, equipment run-time schedule, design set points for all HVAC equipment, and design lighting levels throughout the building. Provide a systems narrative describing the mechanical and electrical systems and a preventive maintenance plan for equipment.)
- C. Comply with Title 75, Chapter 10 MCA Waste and Litter Control.
- D. Minimum Indoor Air Quality Performance (LEED-EB: O&M IEQ Prerequisite 1) By meeting Indoor Environmental Quality (1.6 A.) current version of ASHRAE 62.1, buildings and renovations will comply with this standard. However, on-going compliance with ASHRAE 62.1 requires implementation and maintenance of an HVAC system maintenance program to ensure the proper operations and maintenance of HVAC components as they relate to outdoor air introduction and exhaust; also testing and maintenance in the operation of all building exhaust systems, including bathrooms, shower, kitchen and parking exhaust systems and on-going training of facility personnel. A minimum building automation system (BAS) for control monitoring and verification including an automated fault detection for effective O&M energy use monitoring and notification shall be incorporated into the project.
- E. Implement the Environmentally Preferable Purchasing Policy and Green Cleaning Policy as defined in the Montana Operations Manual.
- F. High-Performance Building Education. (LEED and Green Globes). *Develop and provide opportunities for education on sustainable technologies, policies, and processes appropriate to the building for occupants, visitors, and maintenance personnel.* (Suggested opportunities include short case studies, web-based materials, tours, signage, brochures, public presentations, educational learning sessions, advanced maintenance training, professional development, etc.)
- G. Post-Occupancy Evaluation. *Provide ongoing training for commissioned buildings, develop a one-year warranty check that includes an opportunity to obtain occupant feedback; develop a process for addressing thermal comfort complaints if more than 20% of occupants are dissatisfied.*

END OF HPBS MINIMUM REQUIREMENTS FOR ALL PROJECTS
EFFECTIVE DATE: DECEMBER 1, 2013

**STATE OF MONTANA
HIGH PERFORMANCE BUILDING STANDARDS
CHECKLIST FOR MINIMUM REQUIREMENTS (EXHIBIT B)**

Project:
Agency:
Project A/E #:

ATTACH WRITTEN EXPLANATIONS FOR ALL NON-APPLICABLE ITEMS.

1.1 DOCUMENTATION

- A. All State Projects that are required to submit the HPBS Checklist For Minimum Requirements shall include a copy of this checklist in the final archived project closeout documents.

1.2 CHECKLIST

DESIGN AND DOCUMENTATION

- Incorporated an integrated design process.
Not applicable to project _____ (initials of project manager)
Date of Charrette _____
- Integrated cost-effectiveness analysis early in the project.
Not applicable to project _____ (initials of project manager)
Date/Project Phase _____
- Incorporated State A&E Minimum Design Standards.
Date of Review _____
- The Checklist for Minimum Requirements (Exhibit B) is being maintained and completed by the Contracting Agency.
Date filed and initials of Project manager _____

SUSTAINABLE SITES

- Complied with the intent of Construction Activity Pollution Prevention (LEED SS Prerequisite 1).
Not applicable to project _____ (initials of project manager)
- Complied with the intent of Construction on Appropriate Sites (LEED Credit SS 1).
Not applicable to project _____ (initials of project manager)
- Complied with the intent of Protect and Restore Habitat (MT regional priority LEED Credit SS 5.1).
Not applicable to project _____ (initials of project manager)
- Complied with the intent of Stormwater Design Quantity Control (LEED Credit SS 6.1).
Not applicable to project _____ (initials of project manager)
- Complied with the intent of Light Pollution Prevention (LEED Credit SS 8).
Not applicable to project _____ (initials of project manager)

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WATER EFFICIENCY

- Complied Water Use Reduction by 20% (ASHRAE, LEED WE Prerequisite 1).
Not applicable to project_____ (initials of project manager)
- Comply with the intent of Water Efficiency in Landscape and Irrigation (LEED WE Credit 1).
Not applicable to project_____ (initials of project manager)

ENERGY & ATMOSPHERE

- Exceed Int'l Energy Conservation Code by 20% (MT legislation).
Anticipated percentage reduction _____
- Complied with Fundamental Building Systems Commissioning as required by State A/E, LEED EA Prerequisite 1).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Fundamental Refrigerant Management (LEED EA Prerequisite 2).
Not applicable to project_____ (initials of project manager)

MATERIALS & RESOURCES

- Complied with the intent of Storage and Collection of Recyclables / Composting (LEED MR Prerequisite 1).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Recycled Content (LEED Credit MR 4).
Percentage achieved _____
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Regional Materials (LEED Credit MR 5).
Percentage achieved _____
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Low-Emitting Materials (LEED Credit IEQ 4.1-4.4 and Green Globes).
Not applicable to project_____ (initials of project manager)

Check those included in project that comply:
 - Paints and coatings _____
 - Adhesives and sealants _____
 - Flooring systems _____
 - Composite wood and agrifibers _____
 - Furniture _____
- Complied with the intent of Building Durability, Adaptability, and Disassembly (Green Globes).
Not applicable to project_____ (initials of project manager)

ADOPTED VERSION 1

INDOOR ENVIRONMENTAL QUALITY

- Complied with the intent of Minimum Indoor Air Quality Performance (ASHRAE 62.1-current, LEED IEQ Prerequisite 1).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Environmental Smoke Control (State Facilities mandate; LEED IEQ Prerequisite 2).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Construction IAQ Management Plan (LEED IEQ Credit 3.1/3.2).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Indoor Chemical and Pollutant Source Control (LEED IEQ Credit 5).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Controllability of Systems—Lighting (LEED IEQ Credit 6.1).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Controllability of Systems—Thermal Comfort (LEED IEQ Credit 6.2).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Daylight and Views--Daylight (LEED IEQ Credit 8.1).
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Acoustical Comfort (Green Globes G.5).
Not applicable to project_____ (initials of project manager)

OPERATIONS AND MAINTENANCE

- Complied with the intent of Water Performance Measurement (LEED-EB:O&M WE Credit 1)
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Energy Efficiency and Best Management Practices—Planning, Documentation, & Opportunity Assessment (LEED-EB: O&M Prerequisite 1)
Not applicable to project_____ (initials of project manager)
- Complied with Title 75, Chapter 10 MCA Waste and Litter Control
Not applicable to project_____ (initials of project manager)
- Complied with the intent of Minimum Indoor Air Quality Performance (LEED-EB: O&M IEQ Prerequisite 1)
Not applicable to project_____ (initials of project manager)
- Complied with requirement to implement the Environmentally Preferable Purchasing Policy and Green Cleaning Policy
Not applicable to project_____ (initials of project manager)
- Complied with requirement for High-Performance Building Education Program.
Not applicable to project_____ (initials of project manager)

ADOPTED VERSION 1

- Complied with requirement to develop and administer a Post-Occupancy Evaluation.
Not applicable to project_____ (initials of project manager)

Signature of Project Manager

Date

END OF HPBS CHECKLIST FOR MINIMUM REQUIREMENTS (EXHIBIT B)
EFFECTIVE DATE: DECEMBER 1, 2013