

## Sustainable Facilities Policy

In response to the Governor's request, as the Chair of the State of Wisconsin Building Commission, to recognize and address the sustainable design and construction of state facilities, and in response to Executive Order 145, the Department of Administration, Division of State Facilities, proposes the following Sustainable Facilities Policy and Guidelines and recommends this Policy for incorporation into the State of Wisconsin Building Commission Policy & Procedure Manual.

For informational purposes and background information:

This Sustainable Facilities Policy combines and integrates the following related policies that have long been included within the Building Commission Policy Manual and state statutes.

SBC Policy Manual sections: II.C, I.1, VII.B.3 (environmental protection); II.L (protection of earth's ozone layer); I.1, I.3, I.6(d) (compact development /public-mass transit); I.6.f, VII.B, IX.A, B. (re-use, preservation and maintenance of existing structures); VI (energy conservation); VII.B (health and safety); and Wis. Statutes: §13.48 (2)h.2.a (daylighting & renewable energy systems); and §16.855 (10p) (recycled materials in construction).

This policy statement sets goals and direction. It does not prescribe a level of "performance", but makes reference to and relies upon "guidelines and minimum standards". The current Guidelines and Standards follows the policy statement and prescribe how the Policy is to be implemented.

The Department of Administration recommends that the Policy be adopted as soon as possible by the State Building Commission (Commission). The Guidelines are expected to develop and evolve as improvements are identified and these will be revised by the department as needed. The Division of State Facilities will be reviewing the guidelines quarterly for the next year and approximately every six months thereafter.

## **Recommended addition to Building Commission Policy and Procedure Manual**

### **1. SUSTAINABLE FACILITIES POLICY**

#### **Purpose**

It is the policy of the State Building Commission to be a leader in improving the overall quality and performance of state facilities and to minimize the total cost of occupancy.

The Building Commission adopts this Policy to promote the planning, improvement and management of state facilities in a sustainable manner that:

- Promote the effective use of existing state space
- Respects the larger environmental and social context into which they fit;
- Promotes human health, comfort and performance;
- Conserves natural resources and reduces detrimental effects on the environment; and
- Ensures energy efficiency.
- Considers the life-cycle cost of initiatives

#### **Policy**

The Department of Administration shall develop and implement guidelines and minimum standards to incorporate environmentally responsible and sustainable concepts and practices into the planning, design, construction, operation and maintenance of all state facilities. These guidelines and minimum standards shall include, but not be limited to: establishing performance criteria in the following categories: portfolio management, sustainable sites, water efficiency, energy and atmosphere, materials and resources, adaptive use and preservation of existing buildings, indoor environmental quality, construction waste and recycling, operation and maintenance, and purchasing of furniture, fixtures and equipment.

The Department shall report annually on the implementation of this policy and shall annually recognize the projects that most successfully contribute to the development of sustainable state facilities.

## **Introduction to Sustainable Facilities Guidelines and Minimum Standards**

These Guidelines and Standards are based on the LEED™ Rating System.

LEED™, Green Globes™, and other sustainable guidelines and rating systems approved by the Division may be used and Certification by LEED™, Green Globes™, and other sustainable guidelines and rating systems may be pursued, when approved by the Building Commission. Requirements and recommendations of LEED™, Green Globes™, and other guidelines and rating systems that are in conflict with these Guidelines must be approved by DSF prior to being used.

These Guidelines shall be addressed in all Design Reports. For projects that do not have a Design Report, written documentation addressing Guideline requirements shall be submitted.

These Guidelines and Standards are designed to promote and ensure that state facilities are constructed and renovated in a sustainable manner, starting with initial project planning and continuing through occupancy and operation. The Guidelines and Standards address all aspects of the planning, design and construction process. For specific projects, the Guidelines and Standards will be evaluated to determine which are appropriate based on the nature of the project. Not every Guideline and Standard will apply in every project. The project manager, working with agency and DSF planners and analysts, the design team, and contractors, will determine and apply the appropriate components. DSF is responsible for overall implementation within projects, working with the different participants on each aspect.

Implementation of the guidelines will be tracked within projects and documented in order to ensure consistent application, implementation, and results. Based on this information and ongoing feedback from agencies, architects, engineers, contractors and others, the Guidelines and Standards will be updated.

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# Project Checklist

## Portfolio Management & Assessment of Need

### Program Development

### Integrated Design

### Sustainable Sites

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SS C2	Development Density & Community Connectivity
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SS C4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles
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### Water Efficiency

WE C1.1	NOT USED
WE C1.2	Water Efficient Landscaping, No Potable Use or No Irrigation
WE C2	NOT USED
WE C3.1	Water Use Reduction, 20% Reduction
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### Energy & Atmosphere

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MR C1.2	NOT USED
MR C1.3	NOT USED
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MR C2.2	NOT USED
MR C3.1	Resource Reuse
MR C3.2	NOT USED
MR C4.1	Recycled Content
MR C4.2	NOT USED
MR C5.1	Regional Materials
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EQ C4.2	Low-Emitting Materials: Paints and Coatings
EQ C4.3	Low-Emitting Materials: Carpet
EQ C4.4	Low-Emitting Materials: Composite Wood
EQ C5	Indoor Chemical & Pollutant Source Control
EQ C6.1	NOT USED
EQ C6.2	NOT USED
EQ C7.1	Thermal Comfort: Design
EQ C7.2	Thermal Comfort: Verification
EQ C8.1	Daylight & Views
EQ C8.2	NOT USED

## Operation & Maintenance

### Purchasing of Furniture, Fixtures and Equipment

### Accountability, Verification, and Reporting on Results

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# Portfolio Management & Assessment of Need

## **Intent**

Integrate the use of sustainable elements and systems into properties across the enterprise including leased and owned space. Integrate decision making related to space needs across the portfolio. Effective use of existing properties in the State of Wisconsin facility portfolio can in many cases reduce or eliminate the need for additional facilities or for the renovation of space. Meeting program needs through existing space rather than new construction or renovation can be the most sustainable solution. Master planning for institutions and campuses can guide sustainability not only of specific building projects but overall development, renovation, and usage within these communities.

## **Requirements**

Property evaluation should include the use or potential for the elements and systems included in these Guidelines.

Review all existing facilities to ascertain optimal use and to insure maximum utilization of available resources. Identify usage data in the Operation and Maintenance portion to guide decisions regarding ability to meet program needs with existing assets. Institutions that develop master plans and agency six-year plans will address sustainability and should identify strategies for meeting these guidelines.

## **Submittals**

Reference in space requests or project requests what was done to assess ability to meet need with existing space, confirm in the Design Report or written documentation. Master plans and six-year plans include sustainability information and actions.

## **Potential Technologies & Strategies**

Improved space demand information for state facilities and determine appropriate usage metrics to guide decision making process.



# Program Development

## **Intent**

Develop a complete program, defining the problem and identifying all needs and requirements of the end user prior to site selection and design. Utilize an integrated approach to developing the program by including, at the earliest stages of program development, all disciplines that will be involved in the project.

## **Requirements**

Agency shall provide a complete program, defining the problem and identifying all needs and requirements. Program shall include all aspects of the project, site development, landscaping, all engineering disciplines, interior design, exterior and interior lighting, commissioning, operations and management, and any other specialty areas that will be utilized in the project.

## **Submittals**

Complete Program.

## **Potential Technologies & Strategies**

Develop the program through a “workshop” facilitated by a DSF project manager and/or outsourced architect with all engineering disciplines and specialty areas represented at the workshop.

# Integrated Design

## Intent

Utilize a totally integrated design team to develop a holistic solution to the problem articulated by the program.

Comply with 4.G.2 Integrated Design Process of DSF's Policy and Procedure Manual for A/Es. See the DSF Policy & Procedure Manual for Architects/Engineers for policy on "Energy Conservation" (Section 4.G.) and "Integrated Design Process" (Section 4.G.2).

## Requirements

The design team shall meet early and often. All disciplines shall be represented at the kick-off meeting and shall participate in the development of the schematic design for the project. The design team shall include representatives of all aspects of the project, site development, landscaping, all engineering disciplines, interior design, exterior and interior lighting, commissioning authority, operation and management staff, and any other specialty areas that will be utilized in the project.

## Submittals

- Schematic Design
- Design Report.

## Potential Technologies & Strategies

Develop the design through a collaborative effort integrating the knowledge and talents of all disciplines.

# Sustainable Sites

## SS W1

### Construction Site Erosion & Sedimentation Control

#### Intent

Minimize erosion during construction to reduce negative impacts on water and air quality.

#### Requirements

Design a sediment and erosion control plan, specific to the site that conforms to the requirements of NR 216 or COMM 61.115, NR 151 and any local construction site erosion control ordinances. The plan shall meet the following objectives:

- \_ Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- \_ Prevent sedimentation of storm sewer or receiving streams.
- \_ Prevent polluting the air with dust and particulate matter.

The plan will be designed and constructed in accordance with the Wisconsin DNR Storm Water Management Technical Standards for Construction Site Erosion & Sediment Control at

<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm#Construction>

or the Wisconsin Department of Transportation Erosion Control Product Acceptability List (PAL) at

<http://www.dot.wisconsin.gov/business/engrserv/pal.htm> .

#### Submittals

Reference in Design Report or written documentation.

Provide design calculations and information for the construction site erosion control measures shown in the plans demonstration conformance with NR 216 or COMM 61.115.

#### Technologies & Strategies

Adopt an erosion and sediment control plan for the project site during construction.

Employ strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps and sediment basins in accordance with DNR and DOT standards stated above.

# Sustainable Sites

## SS C1 Site Selection

### Intent

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Select sites that can provide multiple uses and stimulate sustainable development.

### Requirements

Avoid developing buildings, roads or parking areas on portions of sites that meet any one of the following criteria:

- \_ Prime farmland as defined by the United States Department of Agriculture in the United States Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5).
- \_ Land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by the Federal Emergency Management Agency (FEMA). NR 116
- \_ Land which is specifically identified as habitat for any species on Federal or State threatened or endangered lists. NR 27
- \_ Within 100 feet of any water including wetlands as defined by United States Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR greater than distances given in state or local regulations as defined by local or state rule or law, whichever is more stringent. Chapter 30, State Statutes
- \_ Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (Park Authority projects are exempt).

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the civil engineer or responsible party, declaring that the project site meets the requirements.

### Potential Technologies & Strategies

During the site selection process, give preference to those sites that do not include sensitive site elements and restrictive land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuckunder parking, and sharing facilities with neighbors.

# Sustainable Sites

## SS C2

### Development Density & Community Connectivity

#### Intent

Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources.

#### Requirements

##### OPTION 1 — DEVELOPMENT DENSITY

Construct or renovate building on a previously developed site AND in a community with a minimum density of 60,000 square feet per acre net (Note: density calculation must include the area of the project being built and is based on a typical two-story downtown development).

OR

##### OPTION 2 — COMMUNITY CONNECTIVITY

Construct or renovate building on a previously developed site AND within 1/2 mile of a residential zone or neighborhood with an average density of 10 units per acre net AND within 1/2 mile of at least 10 Basic Services AND with pedestrian access between the building and the services.

Basic Services include, but are not limited to:

1) Bank; 2) Place of Worship; 3) Convenience Grocery; 4) Day Care; 5) Cleaners; 6) Fire Station; 7) Beauty; 8) Hardware; 9) Laundry; 10) Library; 11) Medical/Dental; 12) Senior Care Facility; 13) Park; 14) Pharmacy; 15) Post Office; 16) Restaurant; 17) School; 18) Supermarket; 19) Theater; 20) Community Center; 21) Fitness Center; 22) Museum.

Proximity is determined by drawing a 1/2 mile radius around the main building entrance on a site map and counting the services within that radius.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the civil engineer, architect or other responsible party, declaring that the project has achieved the required development densities. Provide density for the project and for the surrounding area.

Provide an area plan with the project location highlighted.

#### Potential Technologies & Strategies

During the site selection process, give preference to urban sites with pedestrian access to a variety of services.

# Sustainable Sites

## SS C3

### Brownfield Redevelopment

#### Intent

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

#### Requirements

Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment) OR on a site classified as a brownfield by a local, state or federal government agency. Effectively remediate site contamination.

#### Submittals

Reference in Design Report or written documentation.

Provide a copy of the pertinent sections of the ASTM E1903-97 Phase II Environmental Site Assessment documenting the site contamination OR provide a letter from a local, state or federal regulatory agency confirming that the site is classified as a brownfield by that agency.

Provide a letter, signed by the civil engineer or responsible party, declaring the type of damage that existed on the site and describing the remediation performed.

Provide a copy of the NR 726 or NR 746 Wisconsin Administrative Code Closure letter

#### Potential Technologies & Strategies

During the site selection process, give preference to brownfield sites. Identify property cost savings. Give preference to sites that have already achieved closure via NR 726 or NR 746 Wisconsin Administrative Code. If site has not achieved closure, develop and implement an appropriate site remediation plan and remedial action to achieve closure within a reasonable time period.

# Sustainable Sites

## SS C4.1

### Alternative Transportation: Public Transportation Access

#### Intent

Reduce pollution and land development impacts from automobile use.

#### Requirements

Where public transportation systems exist, locate project within 1/2 mile of a commuter rail, light rail station or 1/4 mile of two or more public or campus bus lines usable by building occupants. Car and van pools are to be encouraged by providing preferential parking.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by an appropriate party, declaring that the project building(s) are located within required proximity to mass transit.

Provide an area drawing or transit map highlighting the building location and the fixed rail stations and bus lines, and indicate the distances between them. Include a scale bar for distance measurement.

#### Potential Technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit whenever possible.

# Sustainable Sites

## SS C4.2

### Alternative Transportation: Bicycle Storage & Changing Rooms

#### Intent

Reduce pollution and land development impacts from automobile use.

#### Requirements

For commercial or institutional buildings, provide secure and covered bicycle storage with convenient changing/shower facilities (within 200 yards of the building) for 5% or more of regular building occupants. For residential buildings, provide covered storage facilities for securing bicycles for 15% or more of building occupants.

#### Submittals

Reference in Design Report or written documentation.

For building projects other than residential building projects: provide a letter, signed by the Architect or responsible party, declaring the distance to bicycle storage and showers from the building entrance and demonstrating that these facilities can accommodate at least 5% of building occupants.

OR

For residential projects: provide a letter, signed by the architect or responsible party, declaring the design occupancy for the buildings, number of covered bicycle storage facilities for securing bicycles, and demonstrating that these facilities can accommodate at least 15% of building occupants.

#### Potential Technologies & Strategies

Design the building with transportation amenities such as bicycle racks and showering/changing facilities.



# Sustainable Sites

## SS C4.3

### Alternative Transportation: Low Emitting & Fuel Efficient Vehicles

#### Intent

Reduce pollution and land development impacts from automobile use.

#### Requirements

Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site.

*Low-emitting and fuel-efficient vehicles are defined as vehicles that are either classified as Zero Emission Vehicles (ZEV) by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.*

*“Preferred parking” refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped) or parking passes provided at a discounted price.*

#### Submittals

Reference in Design Report or written documentation.

Provide site drawings or parking plan highlighting preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site.

Provide calculations demonstrating that these facilities accommodate 5% or more of the total vehicle parking capacity.

#### Potential Technologies & Strategies

Provide transportation amenities such as carpool/vanpool programs.

Consider sharing the costs and benefits of refueling stations with neighbors.

# Sustainable Sites

## SS C4.4

### Alternative Transportation: Parking Capacity

#### Intent

Reduce pollution and land development impacts from single occupancy vehicle use.

#### Requirements

Size parking capacity to meet, but not exceed, minimum local zoning requirements AND provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants; OR add no new parking for rehabilitation projects AND provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants.

Where possible, incorporate parking with on-site roadways to avoid creation of massive paved parking areas.

Provide motorcycle parking with concrete slab. Number of motorcycle parking spaces shall be equal to 6% of the total number of parking spaces provided for motor vehicles.

#### Submittals

Reference in Design Report or written documentation.

For new projects: provide a letter, signed by the civil engineer or responsible party, stating any relevant minimum zoning requirements and declaring that parking capacity is sized to meet, but not exceed them. State the number of preferred parking spaces for carpools.

OR

For rehabilitation projects: provide a letter, signed by the civil engineer or responsible party, declaring that no new parking capacity has been added. State the number of preferred parking spaces for carpools.

#### Potential Technologies & Strategies

Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings.

# Sustainable Sites

## SS C5.1

### Site Development: Protect or Restore Habitat

#### Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

#### Requirements

On greenfield sites:

Limit all site disturbance to 40 feet beyond the building perimeter; 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area.

On previously developed or graded sites:

Restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation. Native/adapted plants are plants indigenous to a locality or cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds. Projects using vegetated roof surfaces may apply the vegetated roof surface to this calculation if the plants meet the definition of native/adapted.

*Greenfield sites are those that are not previously developed or graded and remain in a natural state.*

*Previously developed sites are those that previously contained buildings, roadways, parking lots, or were graded or altered by direct human activities.*

#### Submittals

Reference in Design Report or written documentation.

For greenfield sites: provide a letter, signed by the civil engineer or responsible party, demonstrating and declaring that site disturbance (including earthwork and clearing of vegetation) has been limited to 40 feet beyond the building perimeter; 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces that require additional staging areas in order to limit compaction in the constructed area. Provide site drawings and specifications highlighting limits of construction disturbance.

For previously developed sites: provide a letter, signed by the civil engineer or responsible party, declaring and describing restoration of degraded habitat areas. Include highlighted site drawings with area calculations demonstrating that 50% of the site area that does not fall within the building footprint has been restored or protected.

**Potential Technologies & Strategies**

On greenfield sites;

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Carefully site the building to minimize disruption to existing ecosystems and design the building to minimize its footprint. Strategies include stacking the building program, tuck-under parking and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of the existing site and restore previously degraded areas to their natural state.

For previously developed sites:

Utilize local and regional governmental agencies, consultants, educational facilities, and native plant societies as resources for the selection of appropriate native or adapted plant materials. Prohibit plant materials listed as invasive or noxious weed species. Native/adapted plants require minimal or no irrigation following establishment, do not require active maintenance such as mowing or chemical inputs such as fertilizers, pesticides or herbicides, and provide habitat value and promote biodiversity through avoidance of monoculture plantings.

# Sustainable Sites

## SS C5.2

### Reduced Site Disturbance: Development Footprint

#### Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

#### Requirements

Reduce the development footprint (defined as entire building footprint, access roads and parking) to exceed the local zoning's open space requirement for the site by 25%. For areas with no local zoning requirements (e.g., some university campuses and military bases), designate open space area adjacent to the building that is equal to the development footprint.

Maximize development using vertical rather than horizontal strategies.

#### Submittals

Reference in Design Report or written documentation.

Provide a copy of the local zoning requirements highlighting the criteria for open space. Provide a letter, signed by the civil engineer or responsible party, demonstrating and declaring that the open space exceeds the local zoning open space requirement for the site by 25%.

OR

For areas with no local zoning requirements (e.g., some university campuses and military bases), designate open space area adjacent to the building that is equal to the development footprint. Provide a letter from the property owner stating that the open space will be conserved for the life of the building.

#### Potential Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with a minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of existing and restore previously degraded areas to their natural state.

# Sustainable Sites

## SS C6.1

### Permanent Stormwater Management: Discharge Rate and Volume, per DNR 151

#### Intent

Limit disruption and pollution of natural water flows by managing stormwater runoff.

#### Requirements

If existing imperviousness is less than or equal to 50%, implement a stormwater management plan that prevents the post-development 1.5 year, 24 hour peak discharge rate from exceeding the pre-development 1.5 year, 24 hour peak discharge rate.

OR

If existing imperviousness is greater than 50%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the civil engineer or responsible party, declaring that the post-development 1.5 year, 24 hour peak discharge rate does not exceed the pre-development 1.5 year 24 hour peak discharge rate. Include calculations demonstrating that existing site imperviousness is less than or equal to 50%.

OR

Provide a letter, signed by the civil engineer or responsible party, declaring and demonstrating that the stormwater management strategies result in at least a 25% decrease in the rate and quantity of stormwater runoff. Include calculations demonstrating that existing site imperviousness exceeds 50%.

#### Potential Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing and custodial uses.

# Sustainable Sites

## SS C6.2

### Permanent Stormwater Management: Quality Treatment, per DNR 151

#### Intent

Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration and eliminating contaminants.

#### Requirements

Construct site stormwater treatment systems designed to remove 80% of the average annual post-development total suspended solids (TSS) and 40% of the average annual post-development total phosphorous (TP) based on the average annual loadings from all storms less than or equal to the 2-year/24-hour storm. Do so by implementing Best Management Practices (BMPs) outlined in Chapter 4, Part 2 (Urban Runoff), of the United States Environmental Protection Agency's (EPA's) *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, January 1993 (Document No. EPA-840-B-92-002) or the local government's BMP document (whichever is more stringent).

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the civil engineer or responsible party, declaring that the design complies with or exceeds EPA or local government Best Management Practices (whichever set is more stringent) for removal of total suspended solids and total phosphorous.

#### Potential Technologies & Strategies

Design mechanical or natural treatment systems such as constructed wetlands, rain gardens, vegetated filter strips and bioswales to treat the site's stormwater.

# Sustainable Sites

## SS C7.1

### Heat Island Effect: Non-Roof

#### Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

#### Requirements

Provide shade (within 5 years) and/or use light-colored/high-albedo materials (reflectance of at least 0.3) and/or open grid pavement for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the civil engineer or responsible party, referencing the site plan to demonstrate areas of paving, landscaping (list species) and building footprint, and declaring that:

A minimum of 30% of non-roof impervious surfaces areas are constructed with high-albedo materials and/or open grid pavement and/or will be shaded within five years

OR a minimum of 50% of parking spaces have been placed underground or are covered by structured parking

OR an open-grid pavement system (less than 50% impervious) has been used for a minimum of 50% of the parking lot area.

#### Potential Technologies & Strategies

Shade constructed surfaces on the site with landscape features and minimize the overall building footprint. Consider replacing constructed surfaces (i.e. roof, roads, sidewalks, etc.) with vegetated surfaces such as garden roofs and open grid paving or specify high-albedo materials to reduce the heat absorption.



# Sustainable Sites

## SS C8

### Light Pollution Reduction

#### Intent

Eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environments.

#### Requirements

Meet or provide lower light levels and uniformity ratios than those recommended by the Illuminating Engineering Society of North America (IESNA) *Recommended Practice Manual: Lighting for Exterior Environments* (RP-33-99). Design exterior lighting such that all exterior luminaires with more than 1000 initial lamp lumens are shielded and all luminaires with more than 3500 initial lamp lumens meet the Full Cutoff IESNA Classification. The maximum candela value of all interior lighting shall fall within the building (not out through windows) and the maximum candela value of all exterior lighting shall fall within the property. Any luminaire within a distance of 2.5 times its mounting height from the property boundary shall have shielding such that no light from that luminaire crosses the property boundary.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by an appropriate party, declaring that the requirements have been met.

#### Potential Technologies & Strategies

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and lowangle spotlights.

# Water Efficiency

## WE C1.2

### Water Efficient Landscaping: No Potable Use or No Irrigation

#### Intent

Limit or eliminate the use of potable water for landscape irrigation.

#### Requirements

Use only captured rain or recycled site water to eliminate all potable water use for site irrigation (except for initial watering to establish plants), OR do not install permanent landscape irrigation systems.

Maximize use native plantings that do not require additional irrigation in dry spells

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the responsible architect and/or engineer, declaring that the project site will not use potable water for irrigation. Include a narrative describing the captured rain system, the recycled site water system, and their holding capacity. List all the plant species used. Include calculations demonstrating that irrigation requirements can be met from captured rain or recycled site water.

OR

Provide a letter, signed by the landscape architect or responsible party, declaring that the project site does not have a permanent landscape irrigation system. Include a narrative describing how the landscape design allows for this.

#### Potential Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements.

Consider using stormwater and/or greywater for irrigation.

# Water Efficiency

## WE C3.1

### Water Use Reduction: 20% Reduction

#### Intent

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

#### Requirements

Employ strategies that in aggregate use at least 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the MEP engineer or responsible party, declaring that the project uses at least 20% less water than the baseline fixture performance requirements of the Energy Policy Act of 1992.

Provide the spreadsheet calculation demonstrating that water-consuming fixtures specified for the stated occupancy and use of the building reduce occupancy-based potable water consumption by at least 20% compared to baseline conditions.

#### Potential Technologies & Strategies

Estimate the potable and non-potable water needs for the building. Use high efficiency fixtures, dry fixtures such as composting toilets and waterless urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and greywater for non-potable applications such as toilet and urinal flushing.

# Energy & Atmosphere

## EA P1 Building Systems Commissioning

### Intent

Verify that the building's energy related systems are designed, installed, calibrated, and perform according to DSF's project requirements, basis of design, and construction documents.

### Requirements

Implement or have a contract in place to implement the following fundamental best practice commissioning procedures.

- \_ Engage a commissioning team that is independent of the project design and construction teams.
- \_ Review DSF's project requirements, (documented by DSF), and the basis of design documentation, (documented by the design team).
- \_ Incorporate commissioning requirements into the construction documents.
- \_ Develop and utilize a commissioning plan.
- \_ Verify installation, functional performance, training and operation and maintenance documentation.
- \_ Complete a commissioning report.

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the owner or commissioning authority(s), confirming that the fundamental commissioning requirements have been successfully executed or will be provided under existing contract(s).

### Potential Technologies & Strategies:

Engage a commissioning authority and adopt a commissioning plan. Include commissioning requirements in bid documents and task the commissioning authority to produce a commissioning report once commissioning activities are completed.

# Energy & Atmosphere

## EA P2 Minimum Energy Performance

### Intent

Establish the minimum level of energy efficiency for the base building and systems.

### Requirements

Design the building to comply with ASHRAE/IESNA Standard 90.1-2004 (without amendments) or the local energy code, whichever is more stringent. Follow the requirements of the DSF Energy Design Guidelines and Lighting Design Guidelines available at:

[www.doa.state.wi.us/pagesubtext\\_detail.asp?linksubcatid=170&linkcatid=125&linkid=](http://www.doa.state.wi.us/pagesubtext_detail.asp?linksubcatid=170&linkcatid=125&linkid=)

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by a licensed professional engineer or architect, stating that the building complies with ASHRAE/IESNA 90.1-2004 or local energy codes and DSF Energy Design Guidelines and Lighting Design Guidelines. If local energy codes were applied, demonstrate that the local code is equivalent to, or more stringent than, ASHRAE/IESNA 90.1-2004 (without amendments).

### Potential Technologies & Strategies:

Design the building envelope and systems to optimize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy measures. Lifecycle cost analysis is required to determine the most cost effective measures. Quantify energy performance compared to the baseline building.

Design buildings with different occupancy zones and patterns, office wing separate from laboratory wing for example.

# Energy & Atmosphere

## EA P3

### CFC and HCFC Reduction in HVAC&R Equipment

#### Intent

Reduce ozone depletion.

#### Requirements

Zero use of Halons, CFC and HCFC. When reusing existing building HVAC equipment, complete a comprehensive CFC and HCFC phase-out conversion.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or engineer, declaring that the building's systems do not use Halons, CFC or HCFC.

#### Potential Technologies & Strategies:

When reusing buildings, inventory existing building systems using refrigerants and fire suppression chemicals and replace those that contain CFC, HCFCs or Halons. For new buildings, specify refrigeration and fire suppression systems that use no CFC, HCFCs or Halons.

# Energy & Atmosphere

## EA C1 For Projects >\$2million Optimize Energy Performance

### Intent

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

### Requirements

Reduce design energy cost compared to the energy cost budget for energy systems regulated by ASHRAE/IESNA Standard 90.1-2004 (without amendments), as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11 of the Standard.

New Bldgs.	Existing Bldgs.
30%	20%

Regulated energy systems include HVAC (heating, cooling, fans and pumps), service hot water and interior lighting. Non-regulated systems include plugloads, exterior lighting, garage ventilation and elevators (vertical transportation). Two methods may be used to separate energy consumption for regulated systems. The energy consumption for each fuel may be prorated according to the fraction of energy used by regulated and non-regulated energy. Alternatively, separate meters (accounting) may be created in the energy simulation program for regulated and non-regulated energy uses.

If an analysis has been made comparing the proposed design to local energy standards and a defensible equivalency (at minimum) to ASHRAE/IESNA Standard 90.1-2004 has been established, then the comparison against the local code may be used in lieu of the ASHRAE Standard.

### Submittals

Reference in Design Report or written documentation.

Complete a letter incorporating a quantitative summary table showing the energy saving strategies incorporated in the building design.

Demonstrate via summary printout from energy simulation software that the design energy cost is less than the energy cost budget as defined in ASHRAE/IESNA 90.1-2004, Section 11.

### Potential Technologies & Strategies

Design the building envelope and building systems to optimize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Lifecycle cost analysis is required to determine the most cost effective measures. Quantify energy performance as compared to a baseline building. Include active and passive energy conservations systems, including occupancy sensors and zone controls.

Design buildings with different occupancy zones and patterns, office wing separate from laboratory wing for example.

# Energy & Atmosphere

## EA C2 Renewable Energy

### Intent

Encourage and recognize increasing levels of on-site renewable energy self supply in order to reduce environmental impacts associated with fossil fuel energy use.

### Requirements

Supply some of the building's total energy use (as expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or responsible party, declaring how much of the building's energy is provided by on-site renewable energy. Include a narrative describing onsite renewable energy systems installed in the building and calculations demonstrating the percentage of total energy costs are supplied by the renewable energy system(s).

### Potential Technologies & Strategies

Assess the project for non-polluting and renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.



# Energy & Atmosphere

## EA C3 Commissioning

### Intent

DSF will employ commissioning practices that enhance the quality of the processes and outcomes associated with the delivery of capital projects, from project inception through facility operations.

To integrate commissioning practices into all procedures and documents used in planning, design, construction, closeout, and operations of state facilities.

To work inclusively with customers, partners, contractors, and other stakeholders to optimize quality in the planning, design, construction, closeout, and operations of state facilities, through the application of commissioning practices.

To recognize, measure, and report on the long term value and eventual cost savings achieved by applying commissioning practices to the planning, design, construction, closeout, and operations of state facilities.

### Requirements

In executing A/E contract documents, emphasis will be placed on ensuring that A/Es fulfill their contract obligations for preparing complete and well coordinated bid documents and witnessing performance testing on building components and/or systems during the construction phase.

Emphasis will be placed on DSF field staff providing an appropriate level of inspection and reporting during the construction phase. This also includes assurance for contractor quality control as described in Article 15 of the General Conditions and in the technical sections of the specifications.

### Level 1 Commissioning

#### [Level 1 Commissioning Front End Master Specification 01 91 01](#)

Level 1 Commissioning will be employed as a minimum on DSF projects. This will include most Small Projects, most All Agency projects, and on limited enumerated projects that are simple or utilitarian in nature.

Level 1 Commissioning will be based on Specification Section 01 91 01, technical sections in the DSF Master Specifications, Construction Verification Checklists, and Functional Performance Test Forms. There will be a Commissioned Systems List, and an enhanced construction schedule to include Commissioning milestones. Additional requirements have been added for Operation and Maintenance Manual Data and Owner Training to complete the commissioning process.

## **Level 2 Commissioning**

### **Level 2 Commissioning Front End Master Specification 01 91 02**

Level 2 Commissioning will be employed on projects as requested by the Agency and determined by DSF, on projects that are high profile or complicated and where critical systems and components present the need for a higher level of Commissioning.

Level 2 Commissioning will be based on Specification Section 01 91 02 which includes all of the components of Level 1 Commissioning and may include the addition of a Commissioning Plan, Commissioning Meetings, Lessons Learned Meeting, Commissioning Report and Tracking Reports for Construction Verification Checklists and Functional Performance Test Forms. Level 2 Commissioning could be used to meet the LEED® prerequisite with some modification.

The Commissioning Agent for a Level 2 project may be a member of the AE Design Team, or may be a member of DSF Staff.

## **Level 3 Commissioning**

### **Level 3 Commissioning Front End Master Specification 01 91 03**

Level 3 Commissioning will be employed on projects as requested by the Agency, on projects that are high profile or complex and where other requirements indicate the necessity of an independent 3<sup>rd</sup> party commissioning agent. Level 3 Commissioning with some modification can be used to comply with LEED® Enhanced Commissioning. The Commissioning Agent will be responsible for developing the Commissioning Plan, completing many of the commissioning tasks and activities, and coordinating tasks and activities performed by the A/E design team, the construction contractors, DSF staff, and the agency's operating personnel.

The Commissioning Agent for a Level 3 project must be an independent Consultant.

### **Submittals**

Specific submittal and documentation requirements are identified in each of the above three levels of commissioning to be incorporated into the project

### **Potential Technologies & Strategies**

Engage all stakeholders, including customers, partners and contractors early in the programming phase, design phase, construction phase, closeout and operations phase of state facilities in order to deliver a successful project meeting all project requirements.

# Energy & Atmosphere

## EA C5

### Measurement and Verification

#### Intent

Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

#### Requirements

Meters shall meet the requirements of sections 23 05 15, 23 09 14, or 26 27 13 of the State's Master Specifications.

Install continuous metering equipment connected to a data gathering system such as a building automation system for the following end-uses:

- Total building electrical energy consumption,
- Total building steam or hot water energy consumption,
- Total building chilled water consumption,
- Total building domestic water consumption,
- Total building natural gas consumption,

Sub-metering or monitoring similar to the following is encouraged for buildings where staff resources are employed to actively manage energy consuming systems:

- \_ Lighting systems and controls
- \_ Appropriate motor loads
- \_ Chiller energy use
- \_ Cooling loads
- \_ Air and water economizer analysis
- \_ Air distribution static pressures and ventilation air volumes
- \_ Building-related process energy systems and equipment
- \_ Domestic water not returned to sanitary

Develop a Measurement and Verification plan, for all buildings, that incorporates the monitoring information from the above end-uses and is consistent with Option B, C or D of the 2001 *International Performance Measurement & Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy and Water Savings*.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the licensed engineer or other responsible party, indicating that metering equipment has been installed for each end-use and declaring the option to be followed under IPMVP version 2001.

Provide a copy of the M&V plan following IPMVP, 2001 version, including an executive summary.

After one full year of occupancy provide a comparative analysis of the success of the M&V plan

#### Potential Technologies & Strategies

Model the energy and water systems to predict savings. Design the building with equipment to measure energy and water performance. Draft a Measurement & Verification Plan to apply during building operation that compares predicted savings to those actually achieved in the field.

# Energy & Atmosphere

## EA C6 Green Power

### Intent

Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

### Requirements

Provide at least 35% of the building's electricity from renewable sources by engaging in at least a two-year renewable energy contract. Renewable sources are as defined by the Wisconsin Statute 196.374.

#### DETERMINE THE BASELINE ELECTRICITY USE

Use the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use.

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the owner or other responsible party, documenting that the supplied renewable power is equal to 35% of the project's energy consumption and the sources meet the WisStat 196.374 definition of renewable energy.

Provide a copy of the two-year electric utility purchase contract for power generated from renewable sources.

### Potential Technologies & Strategies

Determine the energy needs of the building and investigate opportunities to engage in a green power contract. Green power is derived from solar, wind, water, geothermal, biomass, tidal or wave action or fuel cell technology using a renewable fuel. Renewable energy certificates (RECs), tradable renewable certificates (TRCs), green tags and other forms of green power that comply with Center for Resource Solutions (CRS) Green-e's technical requirements can be used to document compliance with requirements.

# Materials & Resources

## MR P1

### Storage & Collection of Recyclables

#### Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

#### Requirements

Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, compostable food wastes, plastics and metals.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or owner, declaring that the area dedicated to recycling is easily accessible and accommodates the building's recycling needs.

Provide a plan showing the area(s) dedicated to recycled material collection and storage.

#### Potential Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard and organic wastes. Instruct occupants on building recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes, composting containers, and other waste management technologies to further enhance the recycling program. Consider employing clearly identified recycling stations available to employees throughout the facility.

# Materials & Resources

## MR C1.1

### **Building Reuse:** Maintain Shell/Structure and Non-Shell/Non-Structure

#### **Intent**

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

#### **Requirements**

Maintain existing building structure and shell (exterior skin and framing, excluding window assemblies and non-structural roofing material) AND non-shell areas (interior walls, doors, floor coverings and ceiling systems).

#### **Submittals**

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or other responsible party, documenting % of Shell/Structure and % of Non-Shell/Non-Structure maintained. List the retained elements.

#### **Potential Technologies & Strategies**

Consider reuse of existing buildings, including structure, shell and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems and plumbing fixtures. Quantify the extent of building reuse.

# Materials & Resources

## MR C2.1

### Construction Waste Management: Divert From Landfill

#### Intent

Divert construction, demolition and land clearing debris from landfill disposal. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

#### Requirements

Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage construction, demolition and land clearing waste. Calculations can be done by weight or volume, but must be consistent throughout.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or other responsible party, tabulating the total waste material, quantities diverted and the means by which diverted, and declaring that the requirements have been met.

#### Potential Technologies & Strategies

Establish goals for landfill diversion and adopt a construction waste management plan to achieve these goals. Consider recycling land clearing debris, cardboard, metal, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area on the construction site for recycling and track recycling efforts throughout the construction process.

Identify construction haulers and recyclers to handle the designated materials. Note that salvage may include donation of materials to charitable organizations such as Habitat for Humanity.

# Materials & Resources

## MR C3.1

### Resource Reuse: 10%

#### Intent

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

#### Requirements

Use salvaged, refurbished or reused materials, products and furnishings for at least 10% of building materials.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or other responsible party, declaring that the requirements have been met and listing each material or product used. Include details demonstrating that the project incorporates the required percentage of reused materials and products and showing their costs and the total cost of all materials for the project.

#### Potential Technologies & Strategies

Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.



# Materials & Resources

## MR C4.1

**Recycled Content:** 10-20% (post-consumer + 1/2 post-industrial)

### Intent

Increase demand for building products that incorporate recycled content materials, therefore reducing the impacts resulting from extraction and processing of new virgin materials.

### Requirements

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10-20% of the total value of the materials in the project.

The value of the recycled content portion of a material or furnishing shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total value of the item.

Mechanical and electrical components shall not be included in this calculation. Recycled content materials shall be defined in accordance with the Federal Trade Commission document, *Guides for the Use of Environmental Marketing Claims*, 16 CFR 260.7 (e), available at

[www.ftc.gov/bcp/gnrule/guides980427.htm](http://www.ftc.gov/bcp/gnrule/guides980427.htm).

### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or other responsible party, declaring that the requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their cost and percentage(s) of post-consumer and/or post-industrial content, and the total cost of all materials for the project.

### Potential Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

# Materials & Resources

## MR C5.1

### **Regional Materials:** 20% manufactured regionally

#### **Intent**

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

#### **Requirements**

Use a minimum of 20% of building materials and products that are manufactured\* regionally within a radius of 500 miles.

\* Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesmen. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia, and the joist is assembled in Kent, Washington; then the location of the final assembly is Kent, Washington.

#### **Submittals**

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, declaring that the requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, percentage of regional components, distance from project to manufacturer, and the total cost of all materials for the project.

#### **Potential Technologies & Strategies**

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

# Materials & Resources

## MR C6

### Renewable Materials

#### Intent

Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with renewable materials.

#### Requirements

Use renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) for 5% of the total value of all building materials and products used in the project.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, declaring that the requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of renewable products. Show their cost and percentage of renewable components, and the total cost of all materials for the project.

#### Potential Technologies & Strategies

Establish a project goal for renewable materials and identify materials and suppliers that can achieve this goal. Consider materials such as, wool carpets, straw board, linoleum flooring, poplar OSB, sunflower seed board, wheatgrass cabinetry and others. During construction, ensure that the specified renewable materials are installed.

# Materials & Resources

## MR C7

### Certified Wood

#### Intent

Encourage environmentally responsible forest management and use of local forest products

#### Requirements

70% of wood-based materials and products, must be obtained from forests certified in accordance with Wisconsin State, County or Managed Forest Law certification program and certain national certification programs listed below, for wood building components including, but not limited to, structural framing and general dimensional framing, flooring, finishes, furnishings, and non-vented temporary construction applications such as bracing, concrete form work and pedestrian barriers.

- WI MFL Tree Farm Group Record #007 Certificate #NSF-ISR 1Y544-T1
- WI County Forest Certificate #NSF-SFIS-1Y943-S1
- WI County Forest Certificate #SCS-FM/COC-083G-
- WI State Forest Certificate #SCS-FM/COC-0007N
- WI State Forest Certificate #NSF-SFIS-1Y941-S1
- American Tree Farm System (ATFS)
- Forest Stewardship Council (FSC)
- Sustainable Forest Initiative (SFI)

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, owner or responsible party, declaring that 70% of wood based materials and products were obtained from Wisconsin Certified Forests and listing the materials and products used.

Provide the location and ownership of the certified woodlot for each material/product used to meet the requirement.

#### Potential Technologies & Strategies

Establish a project goal for Wisconsin Certified Forest wood products and national certifications and identify suppliers that can achieve this goal. During construction, ensure that Wisconsin Certified Forest wood products are installed. Encourage Wisconsin Certified Foresters to work with the Sawmill Industry to pursue Green Tier and the development of an industry specific Environmental Management System.

# Materials & Resources

## MR W1

### Durable Building

#### Intent

Minimize materials use and construction waste over a building's life resulting from premature failure of the building and its constituent components and assemblies.

#### Requirements

Develop and implement a Building Durability Plan, in accordance with the principles in *CSA S478-95 (R2001) Guideline on Durability in Buildings*, for the components within the scope of the Guideline, for the construction and preoccupancy phases of the building as follows:

- Design and construct the building to ensure that the predicted service life exceeds the design service life established in *Table 2* in *CSA S478-95 (R2001) Guideline on Durability in Buildings*.
- Where component and assembly design service lives are shorter than the design service life of the building, design and construct those components and assemblies so that they can be readily replaced, and use a design service life in accordance with *Table 3* in *CSA S478-95 (R2001) Guideline on Durability in Buildings*, as follows:
  - For components and assemblies whose Categories of Failure are 6, 7 or 8 in *Table 3*, use a design service life equal to the design service life of the building.
  - For components and assemblies whose Categories of Failure are 4 or 5 in *Table 3*, use a design service life equal to at least half of the design service life of the building.
- Demonstrate the predicted service life of chosen components or assemblies by documenting demonstrated effectiveness, modeling of the deterioration process or by testing in accordance with *Clause 73, 7.4 or 7.5* and by completing *Tables A1, A2 & A3* from *CSA S478-95 (R2001) — Guideline on Durability in Buildings*.
- Document the elements of quality assurance activities to be carried out to ensure the predicted service life is achieved, in the format contained in *Table I, Quality Assurance and the Building Process*, of *CSA S478-95 (R2001) - Guideline on Durability in Buildings*
- Develop and document the quality management program for the project that ensures the quality assurance activities are carried out, in accordance with the elements identified in *Clause 53, Elements of Quality Management, CSA S478-95 (R2001) — Guideline on Durability in Buildings*.

#### Submittals

Provide a letter, signed by the architect, owner or responsible party, and the general contractor declaring that a Building Durability Plan has been developed and implemented.

Document the building science qualification certification or training qualifications of the professional(s) responsible for the building envelope design of the building.

#### Potential Technologies & Strategies

Design strategies specifically included to minimize premature deterioration of the walls and roof and which are appropriate to the region. e.g., shading screens, eaves, overhangs, scuppers, etc., surface materials appropriate to exterior conditions, use of drained walls and continuous air-barrier systems of appropriate strength.

# Indoor Environmental Quality

## EQ P1

### Minimum IAQ Performance

#### Intent

Establish minimum indoor air quality (IAQ) performance to prevent the development of indoor air quality problems in buildings, thus contributing to the comfort and well-being of the occupants.

#### Requirements

Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality, and approved Addenda using the Ventilation Rate Procedure.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the mechanical engineer or responsible party, declaring that the project is fully compliant with ASHRAE 62.1-2004 and all published Addenda and describing the procedure employed in the IAQ analysis (Ventilation Rate Procedure).

#### Potential Technologies & Strategies

Design the HVAC system to meet the ventilation requirements of the referenced standard. Identify potential IAQ problems on the site and locate air intakes away from contaminant sources.

# Indoor Environmental Quality

## EQ P2

### Environmental Tobacco Smoke (ETS) Control

#### Intent

Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).

#### Requirements

Zero exposure of building occupants and systems to ETS by prohibiting smoking in the building and locating any exterior designated smoking areas away from entries and operable windows.

#### Strategy

Smoking is prohibited in state owned facilities.

# Indoor Environmental Quality

## EQ C3.1

### Construction IAQ Management Plan: During Construction

#### Intent

Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

#### Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

- \_ During construction meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.
- \_ Protect stored on-site or installed absorptive materials from moisture damage.
- \_ If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.
- \_ Replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13, as determined by ASHRAE 52.2-1999 for media installed at the end of construction.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the general contractor or responsible party, declaring that a Construction IAQ Management Plan has been developed and implemented, and listing each air filter used during construction and at the end of construction. Include the MERV value, manufacturer name and model number.

AND EITHER

Provide 18 photographs—six photographs taken on three different occasions during construction—along with identification of the SMACNA approach featured by each photograph, in order to show consistent adherence to the requirements

OR

Declare the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3, which were used during building construction. Include a brief description of some of the important design approaches employed.

#### Potential Technologies & Strategies

Adopt an IAQ management plan to protect the HVAC system during construction, control pollutant sources and interrupt contamination pathways.

Sequence the installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wall board.



# Indoor Environmental Quality

## Required EQ C3.2

### Construction IAQ Management Plan: Before Occupancy

#### Intent

Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

#### Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

\_ After construction ends and prior to occupancy conduct a minimum two-week building flush-out with new Minimum Efficiency Reporting Value (MERV) 13 filtration media at 100% outside air or during the winter the greatest percentage of outside air the system is capable of heating while preventing freezing building conditions. After the flushout, replace the filtration media with new MERV 13 filtration media, except the filters solely processing outside air.

OR

\_ Conduct a baseline indoor air quality testing procedure consistent with the United States Environmental Protection Agency's current *Protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445*.

\_ Prior to occupancy, vacuum and clean all surfaces of systems and equipment after construction/renovations process and flushout

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect, general contractor or responsible party, describing the building flush-out procedures and dates.

OR

Provide a letter, signed by the architect or responsible party, declaring that the referenced standard's IAQ testing protocol has been followed. Include a copy of the testing results.

#### Potential Technologies & Strategies

Prior to occupancy, perform a two week building flush-out or test the contaminant levels in the building.

# Indoor Environmental Quality

## Required EQ C4.1

### Low-Emitting Materials: Adhesives & Sealants

#### Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

#### Requirements

The VOC content of adhesives and sealants used must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, AND all sealants used as fillers must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, listing the adhesives and sealants used in the building and declaring that they meet the noted requirements.

#### Potential Technologies & Strategies

Specify Low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section where adhesives and sealants are addressed.

# Indoor Environmental Quality

## Required EQ C4.2

### Low-Emitting Materials: Paints and Coatings

#### Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

#### Requirements

VOC emissions from paints and coatings must not exceed the VOC and chemical component limits of Green Seal's Standard GS-11 requirements.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, listing all the interior paints and coatings used in the building that are addressed by Green Seal Standard GS-11 and stating that they comply with the current VOC and chemical component limits of the standard.

#### Potential Technologies & Strategies

Specify Low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section where paints are addressed.

# Indoor Environmental Quality

## Required EQ C4.3

### Low-Emitting Materials: Carpet

#### Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

#### Requirements

Carpet systems must meet or exceed the requirements of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, listing all the carpet systems used in the building and stating that they comply with the current VOC limits of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.

#### Potential Technologies & Strategies

Specify Low-VOC carpet products and systems in construction documents.

Ensure that VOC limits are clearly stated where carpet systems are addressed.

# Indoor Environmental Quality

## EQ C4.4

### Low-Emitting Materials: Composite Wood

#### Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

#### Requirements

Composite wood and agrifiber products must contain no added urea-formaldehyde resins.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, listing all the composite wood products used in the building and stating that they contain no added urea-formaldehyde resins.

#### Potential Technologies & Strategies

Specify wood and agrifiber products that contain no added urea-formaldehyde resins.

# Indoor Environmental Quality

## EQ C5

### Indoor Chemical & Pollutant Source Control

#### Intent

Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

#### Requirements

Design to minimize pollutant cross-contamination of regularly occupied areas:

- \_ Employ permanent entryway systems (grills, grates, etc.) to capture dirt, particulates, etc. from entering the building at all high volume entryways.
- \_ Where chemical use occurs (including housekeeping areas and copying/printing rooms), provide segregated areas with deck to deck partitions with separate outside exhaust at a rate of at least 0.50 cubic feet per minute per square foot, no air re-circulation and maintaining a negative pressure of at least 7 PA (0.03 inches of water gauge).
- \_ Provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.

#### Submittals

Reference in Design Report or written documentation.

Provide a letter, signed by the architect or responsible party, declaring that:

- \_ Permanent entryway systems (grilles, grates, etc.) to capture dirt, particulates, etc. are provided at all high volume entryways.
- \_ Chemical use areas and copy rooms have been physically separated with deck-to-deck partitions; independent exhaust ventilation has been installed at 0.50 cfm/square foot and that a negative pressure differential of 7 PA has been achieved.
- \_ In spaces where water and chemical concentrate mixing occurs, drains are plumbed for environmentally appropriate disposal of liquid waste.

#### Potential Technologies & Strategies

Design separate exhaust and plumbing systems for rooms with contaminants to achieve physical isolation from the rest of the building. Install permanent architectural entryway systems such as grills or grates to prevent occupantborne contaminants from entering the building.

# Indoor Environmental Quality

## EQ C8.1 Daylight and Views

### Intent

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

### Requirements

Comply with DSF's "[Daylighting Standards for State Facilities](#)".

Find a link to those Standards at

[http://www.doa.state.wi.us/pagesubtext\\_detail.asp?linksubcatid=252&linkcatid=125&linkid=](http://www.doa.state.wi.us/pagesubtext_detail.asp?linksubcatid=252&linkcatid=125&linkid=)

### Submittals

Reference in Design Report or written documentation.

Provide a letter signed by the architect or responsible party. Provide area calculations that define the daylight zone and provide prediction calculations or daylight simulation.

### Potential Technologies & Strategies

Design the building to optimize interior daylighting. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, permanent shading features, high performance glazing and photo-integrated light sensors. Predict daylighting via calculations and model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved.

# Operation & Maintenance

## Intent

Sustainable design and construction is successful only if the building systems and sitescape are properly maintained and operated in accordance with the designed performance. Both operation and maintenance depend on ready access to equipment and systems requiring maintenance and having reliable, easy-to-use records of the building systems at the time of occupancy and keeping those records updated and accessible. Staff training also needs to be addressed, particularly for stormwater treatment features, low water, no-mow landscapes, and building mechanical/electrical/plumbing/fire suppression systems.

## Requirements

Building management, operations staff and tenants shall reference the DOA/DSF Energy Use Policy for guidance in building operations, temperature setpoints and maintenance activities recommended for reducing building energy consumption. The policy can be found at:

[www.doa.state.wi.us/pagesubtext\\_detail.asp?linksubcatid=170&linkcatid=125&linkid=](http://www.doa.state.wi.us/pagesubtext_detail.asp?linksubcatid=170&linkcatid=125&linkid=)  
Prepare operation procedures and maintenance checklists for the major energy consuming building systems.

## Submittals

O&M manuals.

## Potential Technologies & Strategies

Develop site-specific record-keeping system

Train new staff hires on building and site features (as needed)

Offer existing staff refresher training including proper recordkeeping (once a year)



# Purchasing of Furniture, Fixtures and Equipment

## Intent

To enable building tenants to perform their jobs well and maintain good health, it's important to source furniture, fixtures and equipment that will not offgas or otherwise cause deteriorating health for the chemically sensitive.

## Requirements

Purchase Energy Star approved equipment and products with ECO-labels or ECO-label certifications.

Preference for recycled content, used equipment, locally manufactured  
No PVC content

## Submittals

MSDS sheets for products being considered as part of bid process  
Eco-label certifications

## Potential Technologies & Strategies

Conduct research on greener furniture, fixtures and equipment, then select among the top 3 vendors in each category.

Printers:

- default to duplex printing at all printers
- reminders, pamphlet about benefits; make it easy
- purchase only printers capable of duplex printing
- replace all old printers
- demonstrate how to use printers

Network copy machines.

Quit requiring office furniture to “match” (we waste perfectly good furniture)

Purchase only energy efficient fixtures and equipment. Promote use of motion sensors for room lighting.

Purchasing/Leasing

- Promote recycled paper/green office supplies purchasing and evaluate the impact
- Purchase only Energy Star, duplex printers
- Promote recyclable, compostable or reusable dishware & utensils
- Purchase only flat LCD monitors
- Purchase only Energy Star PCs
- Purchase only 4 stroke engines

# Accountability, Verification, and Reporting on Results

## AR 1

### Accountability for Sustainability

#### Intent

The Division of State Facilities is accountable for implementing the sustainability policies of the State of Wisconsin Building Commission and for reporting on the results of these policies. Capital project and capital project portfolio performance information will be provided at least two times each year to the Commission.

#### Requirements

Reports at least twice per year on capital projects and the results of the sustainability policies of the Building Commission.

#### Submittals

Reporting templates  
Occupant comfort surveys

#### Potential Technologies & Strategies

Develop comparative performance matrix across overall portfolio  
Employee energy savings suggestion program with incentives

# Accountability, Verification, and Reporting on Results

## AR 2

### Verification during Project Design

#### Intent

Meeting the sustainability guidelines of the Building Commission requires verification at several steps in the process of preparing and implementing capital projects. The division will include reporting information in design reports regarding the sustainability of capital projects using the reporting templates approved by the Commission. For projects that do not require design reports, verification will take place through the approved reporting templates approved by the Commission for such projects. The division will also report on overall portfolio performance.

#### Requirements

The department will publish information on the sustainability of capital projects in the manner approved by the Commission.

Provide owner/occupant with anticipated monthly/annual costs for operation/maintenance of new/enhanced energy savings technologies.

The A/E will include reporting information in design reports regarding the sustainability of capital projects using the reporting templates approved by the Commission. For projects that do not require design reports, verification will take place through the approved reporting templates approved by the Commission for such projects. The division will also report on overall portfolio performance

#### Submittals

#### Potential Technologies & Strategies

Assist in locating training and certification for contractors and subcontractors on sustainable building policy, LEED™ and Green Globes™. Work with Wisconsin Green Building Alliance and UW Extension.

Require qualified bidders,

Test to assure bidders understand what they are bidding on.

# Accountability, Verification, and Reporting on Results

## AR 3 Verification during Project Construction

### Intent

Meeting the sustainability guidelines of the Building Commission requires verification at several steps in the process of preparing and implementing capital projects. The division will measure and include reporting information regarding the sustainability of capital projects achieved during construction using the reporting templates approved by the Commission. The division will also report on overall portfolio performance.

### Requirements

### Submittals

### Potential Technologies & Strategies

Complete understanding of integrated building construction. Assurances that subcontractors follow sustainable design specifications throughout the process.

# Accountability, Verification, and Reporting on Results

## AR 4

### Verification following Construction

#### Intent

Meeting the sustainability guidelines of the Building Commission requires verification at several steps in the process of preparing and implementing capital projects. The division will include data collected and verified from commissioning, post occupancy, and operation periods year 1, year 2, then transition to operating reporting using the reporting templates approved by the Commission. The division will also report on overall portfolio performance.

#### Requirements

Provide sufficient training to Owner/occupant.

#### Submittals

#### Potential Technologies & Strategies

# Accountability, Verification, and Reporting on Results

## AR 5 Reporting on Construction Results

### Intent

Meeting the sustainability guidelines of the Building Commission requires verification at several steps in the process of preparing and implementing capital projects. The division will include data and information on construction related items, such as recycling, avoidance of waste, and use of materials using the reporting templates approved by the Commission. The division will also report on overall portfolio performance.

### Requirements

#### Submittals

Construction “as-built” report for each DOA project: Itemized listing of materials, quantities, sources, recycled content, materials recycled/reused, tons diverted from landfilling, project contractors/subcontractors, instruction manuals, etc

### Potential Technologies & Strategies

# Accountability, Verification, and Reporting on Results

## AR 6

### Reporting on Operational Results

#### Intent

To verify that sustainable design and subsequent operational criteria are achievable and do not pose undue burden on owners.

#### Requirements

Set aside 1% of the project budget for one year after occupancy to allow the architect to work with the owner/occupant to prepare a report on the operational results.

Install an easy-to-use system to monitor and report energy and water use and waste generation on a regular monthly basis, in order to know if the building is living up to the standards.

#### Submittals

Operational Results Report: evaluation of contractor work effort, ease of use of equipment/technologies, level of cooperation from contractors/subcontractors to resolve problems, adjustments made and why, unaccounted for costs, energy savings observed, occupant satisfaction, suggested changes.

#### Potential Technologies & Strategies