

SUSTAINABLE GUIDELINES FOR RENOVATIONS

I. INTRODUCTION

The University intends to be a leader and champion of environmentally sensitive design, seeking innovation and creativity from our design consultants and helping to educate our community. The University is committed to creating a campus environment that moves beyond merely sustainable, to one that actively improves the quality of life and the environment for its users.

The intent of these guidelines is to guide environmental practices for new construction and renovation projects across campus that are not LEED certifiable. During project initiation, the design consultant in collaboration with the Office of the University Architect (OUA) and the project team, will evaluate if LEED certification can be achieved. Capital projects and Operations and Maintenance Small Projects that are deemed ineligible for LEED certification will follow Penn's Sustainable Guidelines for Renovations (Guidelines).

II. CLIMATE AND SUSTAINABILITY ACTION PLAN

Penn's Climate and Sustainability Action Plan (CSAP) represents a vision for the University's sustainable future. In accordance with this vision, Penn continues to advance its holistic approach to a sustainable campus by addressing design, construction, and maintenance of our built environment. The focus is on reducing Penn's environmental footprint by adopting best practices for renovations, new construction, and ecological landscapes as well as by expanding awareness of sustainable design.

Since the launch of Penn's sustainability efforts in 2009, Penn has worked to expand environmental building and landscape design and currently requires LEED Silver minimum certification for all new construction or major renovation capital projects. However, smaller renovations, often many capital projects in a given year, may not qualify for LEED Certification.

III. WHEN TO USE SUSTAINABLE GUIDELINES FOR RENOVATION VS. LEED

These Sustainable Guidelines for Renovation seek to improve green building practices for non-LEED certifiable small projects. Guidelines apply to projects on the main campus, Real Estate projects and those located at the Morris Arboretum, New Bolton Center, and Pennovation. Using the following matrix, the Project Team will jointly determine whether the project shall pursue LEED Certification or follow Penn's Sustainable Guidelines for Renovation.

SUSTAINABLE GUIDELINES EVALUATION MATRIX

Yes No

1. Is the total project construction budget greater than \$5 million?		
2. Is the total renovated project area greater than 10,000 sq ft?		
3. Does the renovation project involve more than one building system (HVAC, roofing, plumbing, lighting, etc.)?		
4. Does the renovation involve more than 3 specification divisions? (for example, Section 06 Wood, 09 finishes, 12 furnishings, etc.)		
5. Will an outside design professional be hired?		
6. Does the project meet the USGBC’s Minimum Program Requirements		

- a) If the Project Team answers “Yes” to all six of these, the policy is to design, construct, and certify the renovation project to at least the LEED Silver level under the applicable rating system.
- b) For projects not answering “Yes” to all the questions outlined above, the project is to follow the Sustainable Guidelines for Renovation outlined on the following pages.
- c) For projects where furniture is the sole scope, please reference [Penn’s Sustainable Furniture Purchasing Guidance](#).

IV. SUSTAINABLE GUIDELINES FOR RENOVATIONS

a) Policy Statement

- i. Project shall follow these Guidelines unless budget or schedule would be severely and adversely affected. If unable to follow these Guidelines, this must be justified by the School/Center project representative in a written document forwarded to the FRES project manager and OUA at the earliest possible time.
- ii. When deviations from the Guidelines are identified, they must be justified by the School/Center project representative in a written document forwarded to the FRES project manager and OUA at the earliest possible time. The FRES project manager in consultation with OUA is responsible for confirming whether any deviations from the Guidelines are acceptable.
- iii. Some Schools within the University have developed specific standards for design, engineering, and product selection that should align with these University-wide Guidelines. The School-specific design standards are intended to be complementary to these Guidelines. In the event of any misalignment, the School/Center should review the issue with the Project Team at the earliest opportunity.
- iv. For projects that contain matching of existing materials, finishes, or furnishings, the project team should review the environmental performance of those existing

materials for compliance with these Guidelines. When existing materials do not meet these Guidelines, the Project Team will determine if a wholesale replacement of the materials is justified, and/or if there is an alternate material that could be used to meet the Guidelines.

b) Responsibility

- i. These Guidelines are referenced as part of the *Penn Instructions to Design Professionals*, and as implementation of these Guidelines is the responsibility of all parties identified in Project contracts, including design consultants and sub-consultants, contractors and construction managers, and project trades and service providers.
- ii. The primary consultants for design and construction are responsible for ensuring that all sub-consultants comply with the Guidelines in terms of reporting, submittals, and providing the documentation required.
- iii. The FRES Project Manager is responsible for ensuring that the design consultants and construction/construction management team are apprised of and comply with these Guidelines.
- iv. Any fees required for compliance with these Guidelines should be identified by the design consultant and construction team and should be included in the project budget. AE team shall include fees in their base proposal and break out as an Add-alternate such that the cost can be assessed.

c) Sustainable Guidelines for Renovation Reporting

- i. The project shall include review milestones during the design process with the FRES project manager, School/Center staff, and construction manager to monitor and review compliance with these Guidelines as design progresses.
- ii. The design consultant will provide a Sustainable Guidelines Checklist to be monitored and updated throughout design and construction process and present a completed document to the FRES project manager by the end of the project. The checklist's intent is to track and document whether the Project is on track to meet these Guidelines. If not, indicate the reasons why so that the Schools/Centers and FRES project managers can assess. The FRES PM is responsible for verifying the checklist as filled out by the AE team and submitted in close out documents.

V. DESIGN AND CONSTRUCTION CRITERIA

The below criteria address sustainable and healthy material selection, energy and water conservation, indoor air quality, and construction waste management. Projects shall review each for applicability to their specific scope.

a) Water Efficiency

- i) Plumbing Fixtures: Refer to [Penn Design Standards](#).

- ii) Use [EPA WaterSense](#) listed fixtures where available and feasible. WaterSense fixtures include: tank-type water closet, water-using urinals, private lavatory faucets, and showerheads.

b) Energy and Atmosphere

i) Energy Performance

- (1) Ensure that the design consultants follow the requirements for building MEP systems set out in [Penn's Design Standards](#).
- (2) All new appliances, office and lab equipment, mechanical equipment, windows, ceiling and exhaust fans, and other items shall be [ENERGY STAR](#) labeled when such ratings exist.
- (3) Coordinate the goals for commissioning and energy performance with the project team at the start of the project, in consultation with the Penn Director of Engineering and Energy Planning. If a consulting commissioning agent is part of the project team, this consultant is to be managed by the FRES Project Manager.

c) Indoor Air Quality

- i) Projects shall follow the recommended control measures from Penn's Design Standards.
- ii) Protect new and existing materials from moisture damage during construction.

d) Construction Waste Management Plan

- i) Coordinate construction waste removal with a construction waste hauler who will provide quarterly waste diversion reports.

e) Materials and Resources

- i) The material guidelines below provide certification recommendations for each type of material. Because different certificates and attributes cover different aspects of the product's health and environmental impacts, it's best to look for a mixture of different types of attributes. Overall, what the material is made of, where the materials come from, how it was produced, and how the manufacturer plans to address environmental sustainability are key aspects to consider during selection.
- ii) For each type of material, there are two categories to consider for all material selection: "Should be" and "Look for." The traits listed under "Should be" are common amongst the specified material and should act as a baseline for sustainable attributes. Traits listed under "Look for" are less common and should be prioritized. Some products might not be officially certified but still possess the same qualities required for certification. In these cases, ask the representative for documentation of the equivalent qualities. It should be noted that when looking at recycled content, it is more common to see high amounts of pre-consumer recycled content, but post-consumer recycled content is preferred.
- iii) When looking for material options that address sustainable best practices, within cost and schedule, prioritize products with:

- (1) Declare label indicating that the product is Red List Free (or another form of Material Health Transparency documentation, including Health Product Declarations (HPD) or Manufacturer's Inventory.)
- (2) Environmental Product Declaration (EPD). Products that have an EPD require rigorous documentation of the life cycle impacts of the product and allow greater transparency of factors that contribute to a materials sustainability and human health.
- (3) Indoor air quality certification, such as Scientific Certification Systems (SCS) indoor Advantage Gold, UL GREENGUARD, and Intertek's Clean Air certification
- (4) High percentage of recycled and/or bio-based content
- (5) Forest Stewardship Council (FSC) certification (for wood products)

06 Wood and Plastics

Should be:

- FSC Certified
- Adhesives to be low-emitting with max VOC content of 50 g/L.

Look for:

- Products that are GREENGUARD Indoor Air Quality Certified or whose emissions are less than the full Levels listed in GREENGUARD Indoor Air Quality Standard for Building Materials, Finishes and Furnishings.

07 Thermal and Moisture Protection

Should be:

- Interior Sealants: max VOC of 250 g/L. (as required to meet South Coast Air Quality Management District (SCAQMD) Rule 1168)

08 Doors

Should be:

- Evaluate existing doors for potential reuse.
- FSC Certified (for wood products)

09 Finishes

GYPSUM BOARD

Should be:

- Made from Recycled Content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation
- GREENGUARD Indoor Air Quality Certification

ACOUSTICAL CEILING TILE

Should be:

- Made from Recycled Content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation
- GREENGUARD Indoor Air Quality Certification

WOOD FLOORING

Should be:

- FSC Certified (for wood products)
- Adhesives to be low-emitting with max VOC content of 50 g/L.
- Cork Flooring products should be GREENGUARD Indoor Air Quality Certified.

CERAMIC TILE

Should be:

- Made from Recycled Content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation
- GREENGUARD Indoor Air Quality Certification

RESILIENT FLOORING

Should be:

- Made from Recycled Content
- Meet requirements of the FloorScore standard
- Adhesives with low VOC content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation
- GREENGUARD Indoor Air Quality Certification

CARPET

Should be:

- Made from Recycled Content
- Adhesives to be low-emitting with max VOC content of 50 g/L

Look for:

- CRI GreenLabel Plus
- NSF 140 Platinum
- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation
- GREENGUARD Indoor Air Quality Certification

CARPET BACKING

Should be:

- Made from Recycled Content

Look for:

- CRI GreenLabel Plus
- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation

ADHESIVES

Should be:

- GREENGUARD Indoor Air Quality Certified
- Adhesives with low VOC content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation

PAINT

Should be:

- GREENGUARD Indoor Air Quality Certified
- Adhesives with low VOC content

Look for:

- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation

12 Furnishings

Refer to Penn's [Sustainable Furniture Purchasing Guidance](#)

WINDOW ROLLER SHADES

Should be:

- PVC Free
- Made from Recycled Content
- Shade Fabric Opacity of 3% Openness

Look for:

- GREENGUARD Indoor Air Quality Certified
- Environmental Product Declaration
- Declare or other Material Health Transparency Documentation

VI. DESIGN AND CONSTRUCTION CRITERIA

a) Resources

- i. [CDPH Standard Method Version 1.2 2017](#): for testing and evaluating volatile organic chemical emissions from indoor sources.
- ii. [CRI Green Label Plus](#): The Green Label Plus program from the Carpet and Rug Institute (CRI), a California-based consortium, maintains a list of products with pollutant emission rates that meet the standard.
- iii. [ENERGY STAR](#): a program which provides certification to buildings and consumer products which meet certain standards of energy efficiency.
- iv. [EPA WaterSense](#): a program designed to encourage water efficiency in the United States through the use of a special label on consumer products.
- v. [FloorScore](#): FloorScore was developed by the Resilient Floor Covering Institute (RFCI) together with Scientific Certification Program lists products that meet strict chemical emissions limits, which contribute to the creation of healthier interiors.
- vi. [Forest Stewardship Council](#): FSC is an international non-profit organization that promotes responsible management of the world's forests via timber certification.
- vii. [GREENGUARD Indoor Air Quality Certification Program](#): The GREENGUARD Indoor Air Quality Certification Program lists products that meet strict chemical emissions limits, which contribute to the creation of healthier interiors.
- viii. LEED ID+C: USGBC's [Leadership in Energy and Environmental Design for Commercial Interiors](#): Reference to LEED ID+C in this document means that most current, applicable version.
- ix. [NSF 140 Platinum](#): a rating system with varying levels of certification to define sustainable carpet.
- x. [Penn Design Standards](#): These standards have been prepared to familiarize the project team with the University's design requirements and procedures, preferred systems and materials, utility operating characteristics, and energy available on campus.
- xi. [South Coast Air Quality Management District Rule 1168](#): for coatings, adhesives, sealants, and primers.
- xii. Penn's [Recycling Website](#)
- xiii. USGBC's [Minimum Program Requirements](#): MPRs are the minimum criteria used to determine whether a given project is eligible for LEED certification.