

# 01 05 00 Environmental Standards

Revision 09/23/2015

## Purpose:

The Architect and/or Engineer shall incorporate the Rice specific requirements indicated in this standard's section into their design. The Architect and/or Engineer shall further produce project specifications consistent with industry standards that are updated to reflect these Rice specific requirements.

## **1. General Comments**

- a. Environmentally, projects shall be categorized as follows:
  - i. Tier 1A: New building with anticipated design life of 30 years or more.
  - ii. Tier 1B: New building with anticipated design life of less than 30 years as well as off-campus buildings.
  - iii. Tier 2: Major Renovation – constituting at least an entire floor of a building, or more than 25 percent of the building's square footage, or more than 25 percent of the building's replacement cost (excluding infrastructure more than five feet beyond the building's perimeter).
  - iv. Tier 3: Energy System Project – A project exclusively focused on changes to energy systems, such as lighting replacements, controls upgrades, or AHU replacements.
  - v. Tier 4: Limited Scope Project
    1. Tier 4A: Projects not meeting the criteria of Tier 2 or Tier 3, but with an energy impact.
    2. Tier 4B: Projects not meeting the criteria of Tier 2 or Tier 3 and with no energy impact (e.g. re-carpeting a classroom).
- b. At the start of Tier 1 and Tier 2 projects the Architect/Engineer will participate in an environmental design charrette.

## **2. LEED Requirements**

- a. Tier 1A shall meet a minimum LEED "Silver".
- b. Tier 1B shall meet a minimum LEED "Certified".
- c. Tier 2 shall meet a minimum LEED "Certified" unless otherwise designated by Rice Project Manager and the Vice President of Administration.
- d. Exceptions: Tier 1 and Tier 2 projects that are incompatible with LEED may be exempted at the discretion of the Vice President of Administration. Exempted buildings shall adhere with Rice environmental standards.
- e. Tier 3 and Tier 4 projects are not required to pursue LEED certification, but shall adhere with Rice environmental standards.
- f. The designated LEED consultant must provide the Rice Project Manager and Rice Sustainability Director with a LEED scorecard demonstrating the projected achievement

of Rice LEED requirements at 100% Schematic Design (SD), 50% and 100% Design Development (DD), and 50% and 100% Construction Documents (CD).

- g. The designated LEED consultant must provide the Rice Project Manager and the Rice Sustainability Director with the final approved LEED credit documentation and final LEED checklist following the achievement of certification.

### **3. Energy Planning**

- a. Prior to 100% Schematic Design, all Tier 1 projects must present the feasibility of pursuing a net zero energy goal to the Rice Project Manager and the Rice Sustainability Director.
- b. At initial design charrette,
  - i. Tier 1 projects will consider an evaluation of on-site renewable energy generation potential and in particular photovoltaics to the Rice Project Manager and the Rice Sustainability Director.
  - ii. Tier 1 projects will consider an evaluation of the applicability of Energy Star building certification for the project to the Rice Project Manager and the Rice Sustainability Director.
  - iii. The project team shall develop an energy target in kBtu per square foot per year for all Tier 1 and Tier 2 projects prior to 100% Schematic Design.
  - iv. All Tier 1, Tier 2, Tier 3, and Tier 4A projects will consider an evaluation of opportunities for easily aggregating and remotely controlling discretionary loads for inclusion in campus load-shedding, demand response, and peak-shaving programs.
  - v. The project team will consider generators for possible inclusion in load-shedding/demand response programs as deemed emergencies by the Electricity Reliability Council of Texas (ERCOT).
  - vi. Project team will determine which building equipment is to have life cycle costing shall be performed to quantify the 20-year impacts on energy and maintenance costs. This life cycle costing shall be presented to the Rice Project Manager and Rice Energy Manager for consideration when choosing systems.

### **4. Energy Modeling**

- a. All Tier 1 and Tier 2 projects pursuing LEED certification at any level must conduct building energy modeling with the following milestones at a minimum:
  - i. Schematic Design (SD): Preliminary energy modeling using SD documents, including building massing, orientation, and major HVAC systems. Modeler shall make recommendations to the project team for energy efficiency measures.
  - ii. Design Development (DD): Multiple runs comparing systems options and strategies.
  - iii. Construction Documents (CD): Complete LEED Design and Base Case models for submittal as well as City of Houston energy simulation for code compliance as necessary.
  - iv. Close-out/Turnover: Provide the digital as-built energy model, with a summary of inputs and outputs, to the Rice Project Manager.

- b. For Energy Modeling purposes the standard operating hours for the particular building will be determined on a case by case basis. Coordinate with Rice Project Manager prior to 50% schematic design.

**5. Water Planning**

- a. At initial design charrette,
  - i. For Tier 1 projects, the charrette shall establish project water goals and strategies. All potential water sources (including potable water from the City of Houston, rainwater, HVAC condensate, groundwater from dewatering operations, on-site treated wastewater, etc.) shall be considered to create strategies to economically minimize the use of purchased water and to maximize the use and/or re-use of free water sources.
- b. All projects with irrigated landscaping shall reduce potable water consumption for irrigation by at least 50% from the calculated baseline for the site's peak watering month as calculated in the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.
- c. All LEED projects shall employ strategies that use at least 30% less indoor potable water than the water use baseline calculated for the building (excluding irrigation). Projects not pursuing LEED certification are also encouraged to meet this performance metric.
- d. All projects with stormwater detention requirements shall investigate the applicability of low impact development (LID) stormwater management strategies (such as bioswales) within the project boundary or elsewhere on campus as part of the project's overall stormwater management plan.
- e. All projects with stormwater detention requirements are encouraged but not required to achieve the performance threshold set by LEED for improving the water quality of stormwater runoff.

**6. Utility Metering**

- a. Separately meter all utilities entering the building.
- b. Architect /Engineer shall meet with the Rice Project Manager, University Engineer, and Rice Sustainability Director prior to 50% Design Development, to decide if or how campus auxiliaries within building shall be sub-metered.
- c. Irrigation water must be metered separately from building domestic water.
- d. Architect/Engineer shall meet with the Rice Project Manager prior to 50% Design Development, to decide if or how sub-metering utilities by end use, such as separate plug loads from lighting loads will be accomplished.

**7. Construction and Demolition Waste Recycling**

- a. All projects, regardless of size or type, shall seek to minimize construction and demolition waste.
- b. All Tier 1 and Tier 2 projects pursuing LEED certification at any level must divert at least 75 percent of construction and demolition waste (as measured by weight or by volume) from the waste stream for recycling or reuse.
- c. All Tier 3 and 4 projects shall divert at least 50 percent of construction and demolition waste (as measured by weight or by volume) from the waste stream for recycling or reuse.
- d. Verification of compliance shall be provided to the Rice Project Manager and the Rice Sustainability Director.
- e. Architect/Engineer shall meet with the Rice Project Manager prior to 100% Construction Documents to determine if exceptions to some Tier 3 and Tier 4 projects might generate little construction and demolition waste, and thus may be exempted from this requirement.

**8. Recycling**

- a. Indoor: All campus classrooms, offices, break rooms, and copier rooms shall be equipped with a recycling bin adjacent to each trash receptacle. All indoor public areas shall be equipped with recycling bins to a level deemed appropriate by the Rice Project Manager, Rice Sustainability Director, and the Director of Custodial and Grounds.
- b. Outdoor: An outdoor recycling bin shall be provided adjacent to each outdoor trash receptacle.

**9. Commissioning**

- a. All LEED projects shall meet the requirements for Enhanced Commissioning.
- b. If the project involves a new or substantially renovated façade, project teams are encouraged to pursue commissioning for building envelopes as part of the scope for commissioning.

**10. Indoor Environmental Quality**

- a. Building furnishings and finishes shall be selected with the intent of contributing toward healthful indoor environmental quality and minimizing waste.
- b. All LEED projects shall meet requirements for credits related to low-emitting materials.
- c. All LEED projects shall meet the requirements for the credit for a Construction Indoor Air Quality Management Plan – During Construction.
- d. All LEED projects shall meet the requirements for the credit for Indoor Chemical and Pollutant Source Control.

**11. Bicycle Facilities**

- a. All Tier 1 projects shall be designed for ease of access by pedestrians and bicyclists.
- b. At initial design charrette,
  - i. All Tier 1 projects shall consider the requirements for bicycle storage and changing rooms in accordance with the appropriate LEED credit.

**12. Education**

- a. All LEED projects are expected to achieve the innovation credit for Green Building Education. The LEED consultant shall lead the creation of a case study and the completion/installation of educational components required for the successful completion of this requirement.
- b. At initial design charrette,
  - i. The project team shall evaluate the applicability of web-based and kiosk-based building dashboard products such as LUCID as part of the educational component of the project.

**13. Rice University Building Temperature Design points**

- a. The following indoor temperature and humidity design ranges for occupied spaces shall be maintained on campus:

	Temperature Range	Relative Humidity
Air conditioning	74 – 78 degrees	40% minimum 65% maximum
Heating	68 – 72 degrees	40% minimum 65% maximum

- b. Certain specialized areas such as laboratories, library collections, the Data Center and galleries are exempt from these guidelines but will be expected to be maintained within recognized efficient ranges for their type of use.
- c. Systems will be designed to allow for scheduled off-hours setback.