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**Ball State University
Muncie, Indiana
Spring 2005, Building Design**

BACKGROUND

Campus Profile

Ball State University (BSU), which is situated on 940 acres in Muncie, Indiana, serves approximately 19,000 students (45 percent male, 55 percent female). Seven academic colleges offer 120 undergraduate programs, 80 master's programs and 20 doctoral programs in 46 departments and schools. The employee base comprises some 750 faculty, 550 professional staff, and 1,500 support personnel.

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GOALS AND ACCOMPLISHMENTS

Goals

To assist BSU in securing Leadership in Energy and Environmental Design (LEED)[™] certification of new buildings on campus, BSU will develop opportunities for faculty and students to conduct applied research in the area of interior luminance, daylight control, and occupant response. Another goal is to grow this program, over time by facilitating faculty and student participation in this applied research.

Accomplishments

The Council on the Environment (COTE) passed a resolution recommending that the university seek LEED certification on all new buildings on campus (a copy of the resolution has been included at the end of this document).

The university administration has responded positively. Two new projects, one under construction (an addition to the College of Communication and Information Media) and the other in design (a new resident hall), have been registered with the U. S. Green Building Council (USGBC) and will become LEED certified. For more information on the registration with the USGBC visit the following:

http://www.usgbc.org/LEED/Project/project_detail_step_1.asp?PROJECT_ID=3147

http://www.usgbc.org/LEED/Project/project_detail_step_1.asp?PROJECT_ID=2711

As a compliment to the design of the addition to the College of Communication and Information Media, a day lighting study was conducted by faculty members and students using the BSU Center for Energy Research/Education/Service (CERES) lighting lab.

Challenges and Responses

Although it took some time for the university and its consulting architects to respond to the opportunities presented in the formal resolution passed by COTE and the applied research opportunities available through the CERES lighting lab, faculty and students were eventually invited to conduct a day lighting model study of the hard light beam radiation and its effect on the character of atrium space being designed for the new facility.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

Key individuals involved in promoting this idea included Kevin Kenyon, associate vice president for facilities planning and management, members of the architectural firm of MSKTD Incorporated; Frisbie-Fulton, director of facilities planning; and staff members in the CERES including Robert Fisher, resident fellow; Jeff Culp, operations manager; and Zach Benedict, graduate research assistant.

Funding and Resources

No costs were associated with the actual passage of the COTE resolution calling for LEED certification for all new buildings on campus. However, once the resolution was acted upon, the incidental costs of the day lighting model studies (student labor, model materials, and faculty and staff time) amounted to less than \$1,000. The incremental cost of USGBC certification, which will be paid back over time in operational savings resulting from the meeting of LEED criteria, have yet to be determined. The rule-of-thumb, however, is that base certification can typically be achieved at no marginal increase in construction cost other than the fees associated with the project registration and build-out commissioning.

Community Outreach and Education

Findings from the day lighting study have been published in report form and shared with the architects and members of the university community and additional publication in academic venues is anticipated. The success of this endeavor will continue to serve as a foundation for establishing a lighting research fellowship program for practitioners in the state of Indiana to work in collaboration with faculty members and students in conducting further day lighting studies.

Climate Change

This effort has an indirect effect on global climate change in that the degree to which the new building addition is successfully day lit will yield a corresponding reduction in the need for electrical lighting. This will contribute to reduced electrical energy demand and a reduced effect on the environment from the generation and distribution of that electrical power.

Though it is nearly impossible to measure an absolute value in reduction of carbon dioxide emissions or other green house gas contribution, it is important to note that typically electrical power production and distribution is achieved at approximate by 30 percent efficiency; the other

two-thirds of the energy wasted consists of distribution line losses and atmospheric effect of waste heat and pollution production.

National Wildlife Federation's Campus Ecology® Program

General reference to various Campus Ecology publications was helpful in establishing the importance of this initiative. Most important, the university's ongoing membership in the program and the routine interaction with staff members at the program was essential, as we developed this program. Having this project set as a goal for the year and for submission into the 2005 *Campus Ecology Yearbook* gave great leverage to our arguments that we needed to follow through on this work.

CLOSING COMMENT

We are continuing to share this initiative in public presentations and through the membership of the BSU Council on the Environment. In addition to citation in national publications and conference venues, articles will be developed for the campus newspaper as the new building addition nears completion.

Referenced above:

LEED™ Certification Resolution, Adopted September 15, 2003

Resolved:

That Ball State University adopt a policy requiring that:

- All future new building construction be required to meet LEED™ Certification,
- These buildings achieve the highest possible LEED™ ratings,
- All consulting professionals, including architects, engineers, interior designers, and other allied practitioners meet the qualifications needed to help the university achieve the highest feasible LEED™ ratings.

Costs:

LEED™ certification will not necessarily add to upfront costs of the professional design or construction fees and typically results in cost/savings trade-offs which can be tracked and accounted for during the "whole building" integrated design process.

Benefits:

LEED™ certified buildings, as a rule:

- Cost less to operate,
- Cause less environmental damage during construction,
- Cause less environmental damage during their lifetime of use,
- Reduce the demand for energy use in operation,
- Provide healthier user environments,
- Yield benefit through reduced absenteeism,
- Affect very productive user behavior,
- Yield highly effective cost-benefit paybacks ranging from a few months to multiple years depending on the design initiatives selected.

