



photo: Terri Meyer Boake

Laval University will throw its gates wide open to SBSEers this June.

## LAVAL WELCOMES PLEA AND SBSE THIS JUNE

### COUNTDOWN TO PLEA2009

We are preparing the final program for PLEA2009, 21–24 June, which will be posted soon at <<http://www.PLEA2009.arc.ulaval.ca>>. This 26th PLEA conference will feature outstanding keynotes—Ray Cole, leader of the UBC Centre for Integrative Research on Sustainability, presenting the inhabitants’ current and future energy challenges; our venerable G. Z. Brown (UO) and Peter Busby (Busby Perkins and Will, a leading green Canadian architect) presenting state-of-the-art passive strategies; and the Manitoba Hydro project triumvirate of Bruce Kuwabara (architect), Thomas Auer (engineer), and Tom Gouldsbrough (developer) demonstrating the power of an integrated energy design process in shaping the newest, greenest Canadian building.

All papers have been peer-reviewed by the International Technical Committee whose encouraging feedback praised the high quality of work submitted. No doubt SBSEers’ participation has been noticed! Prepare yourself for a great PLEA venue. We’ve done everything possible to keep registration fees affordable, so you all can gather in our remote corner of the continent despite the ongoing economic turmoil. Honor the memory of Jeffrey Cook and drop by for PLEA’s return to North America after more than 19 years! See you in historic Québec City at this historic moment when more than ever economy and ecology are the key to a brighter future!

—Claude Demers and André Potvin

### TAKE THE LEAP! JOIN SBSE RETREAT 2009

Plans are well underway for the upcoming SBSE Retreat, June 25–27, in Québec City. We have an interesting lineup of presenters and presentations to help us make that leap from “mere” sustainability to ZED without falling through the gap! Perhaps as a result of the first SBSE Retreat/PLEA pairing, many submissions are from folks new to SBSE.

• continued page 4

## SBSE CALENDAR

### 2009

- Apr 15–18 ARCC Conf/San Antonio, TX
- Apr 16–17 St. John Intl Conf/Torino, IT
- May 11–16 ASES Conf/Buffalo, NY
- Jun 21–24 PLEA 2009/Québec City, QB
- Jun 25–27 SBSE Retreat/Québec City, QB
- Jul 27–30 SimBuild 2009/Glasgow, UK
- Aug 6–8 BTES 2009/Albuquerque, NM
- Sep 20–23 Greening VIII/Indianapolis, IN
- Nov 25–27 ANZASca/Launceston, TAS

### 2010

- May tba ASES Conf/Phoenix, AZ 🖐

*It is incumbent on SBSE to develop and present a collective response to the NAAB draft. SBSE is the preeminent professional organization in this arena, and we should not remain silent ...*

—Grondzik

[See article on page 2.—ed.]

## LETTERS TO THE EDITOR

Really, really, really big news! Read the stimulus bill starting at the bottom of page 1315. Essentially, if states would like to unlock additional stimulus funding, they need to bring their residential and commercial building codes up to the IECC and ASHRAE 90.1–2007 levels. It's the first time we've seen the federal government mandate minimum efficiency levels in buildings [*Bravo Obama! Good first step.—ed.*], albeit through enticing states rather than enforcing a national code.

—Nicholas Rajkovich, PGE

[*Okay, where did you get the time to read more than 1315 pages of legislation?—ed.*]



Last year I replaced all the windows in the Dahl house with those expensive double-pane, energy-efficient kind, and today I got a call from the contractor who installed them. He was complaining that the work had been completed a whole year ago, and I still hadn't paid for them. I told him just what his fast-talking sales guy had told me last year—in **one year** these windows would pay for themselves! I told him, hey, it's been a year! There was only silence at the other end of the line, so I finally just hung up. He never called back. And with the new IRS provisions I reckon I can deduct them from my income taxes, too. Am I wrong?

—Barbara Dahl, Mattel

[*We all love energy-efficiency measures with a short payback and government incentives. I think you've tapped the pulse of the nation.—ed.*] 🐾

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## HELP SHAPE THE NAAB CRITERIA

NAAB has published the draft of the 2009 *Conditions for Accreditation* on their web site. There is a 90-day public comment period. It is a reorganized document, with much the same content as the 2004 Conditions. Please note that only the content, not the format, is open for discussion.

In my brief review this morning, it seems that some, but not all, of the Student Performance Criteria (SPC) recommendations from the ACSA task group on sustainability (comprised almost exclusively of SBSEers and chaired by Walter Grondzik) made it into the document: These additions should be scrutinized. Some of the softer issues, like physical resources addressing sustainability through recycling and other “cultural” sustainability strategies, seem not to have made it (though I very well could have missed them, it is a long document, as you all know).

I would recommend that, if possible, the ACSA topics group reconvene formally or informally to review the document, in particular the SPCs, to measure whether the changes in language fully embrace the recommendations of your group. I have one last meeting on the ACSA board, in March at the annual conference in Portland, and would be happy to advocate to the board one final time through my service as chair of its architecture education committee. I'm sure we will craft a response to the draft at our board meeting that immediately follows the annual conference.

It would also be strategic for SBSE (and other groups and individuals) to provide a collective response to the draft if at all possible. Yet, the turnaround time is very constraining, and establishing a venue for such response might be a challenge. Is there time in the schedule of any of the spring conferences to have ad hoc groups work on our group response? I'm only able to attend the first half of the the ARCC conference, but would happily help lead a discussion on the subject on that Wednesday or Thursday. I know there are other meetings this spring where we might also convene a comments workshop.

For the greatest effect, any substantial change to this document will have to be in the hands of NAAB within 45–60 days. It's unclear whether they will produce a second draft or not (I have asked for clarification). I assume they will not, given their published timelines.

—Keelan Kaiser

Thanks to Keelan for the heads-up on the draft 2009 NAAB accreditation requirements. Believing this topic to be of substantial interest to many SBSEers, I've posted a web page with links to key documents and resources that may help members evaluate the proposed accreditation requirements and also to compare them to the recommendations submitted by the ACSA “sustainability” topic group. See <<http://www101.pair.com/gzik/naab2009/naab2009.htm>>.

There has been a lot of discussion on the listserve about the accreditation requirements. It is not at all clear that there is unanimity of opinion within SBSE. Individuals may surely petition NAAB with their own viewpoints. Nevertheless, I believe it is incumbent on SBSE to develop and present a collective response to the NAAB draft. SBSE is the preeminent professional organization in this arena, and we should not remain silent in the face of this substantial opportunity to address a major societal concern.

—Walter Grondzik

When asked if we have enough time to prevent catastrophe, she'd always say that we have exactly enough time—starting now. 🐾

—Amory Lovins' eulogy for Donella Meadows



How well do “green” projects like Foster's Gateshead Sage in Newcastle-on-Tyne measure up as exemplars for Mazria's 2010 Imperative?

## SOCIETY NEWS

### CND PROJECT PROGRESS

The Carbon Neutral Design Project is racing towards the roll-out of its resource-rich web site at the National AIA Convention at the end of April. You can preview it as a work-in-progress at [http://www.architecture.uwaterloo.ca/faculty\\_projects/terri/carbon-sbse/index.html](http://www.architecture.uwaterloo.ca/faculty_projects/terri/carbon-sbse/index.html). This resource will include two groups of case studies—one of high-performance buildings and one of design studio pedagogy for the design of such buildings. It will also include several web-based tools:

- A “Carbon Target Finder,” developed by Harvey Bryan (Arizona State), will allow architects to determine appropriate target energy consumption values given various regional fuel source considerations in order for projects to meet the 2030 Challenge.
- The CND Case Study Protocol, developed by Mike Utzinger (Wisconsin–Milwaukee), allows architects to benchmark the design metrics of their built work or projects on the boards against a growing body of case studies.
- An analysis of existing web-based carbon calculator tools, by Pablo LaRoche (Cal Poly Pomona), will expose the relative merits and pitfalls of many different tools.
- An annotated bibliography will identify software tools useful in pondering CND issues.

In the interim we’re printing a draft booklet of CND Studio Profiles for the Beginning Design Conference as a means of recruiting new SBSE members and future participants. More important, this booklet will also be distributed at a meeting we are putting together at the ASHRAE Net Zero Energy Buildings Conference (in San Francisco, March 29–31) for Department of Energy folks and other potential funders of future CND project activities.

Dennis Andrejko has arranged for the CND project to have a 90-minute forum at the ASES Conference in Buffalo from 10:30am–Noon, Wednesday, May 13. I am assembling a panel of CND Faculty. Volunteers?

—Jim Wasley

### SBSE STUDENT SCHOLARSHIP OPPORTUNITIES

*[The newly created scholarship committee has been actively engaged in its role of supporting student involvement in SBSE activities. The following opportunities were publicized earlier via both the SBSE web site and list server. Though deadlines for the scholarships have passed, nominations for Best Paper Awards are still being accepted. The breadth of the committee work is presented here as a report of their activity.—ed.]*

**Retreat Scholarships.** SBSE will provide up to six scholarships (valued at \$400 each) to qualified students to help defray the cost of attending the 2009 SBSE Summer Retreat. Each scholarship will allay most of the on-site retreat costs including lodging, breakfasts, and retreat materials. Scholarship students pay SBSE Student Membership Dues (\$15), a registration fee (\$25), and are responsible for their travel expenses. See [http://www.sbse.org/awards/sbse\\_retreat\\_scholarship.htm](http://www.sbse.org/awards/sbse_retreat_scholarship.htm) for details. The application deadline was March 5, 2009, 5:00 pm PST; contact scholarship coordinator Leonard Bachman at [LBachman@mail.UH.edu](mailto:LBachman@mail.UH.edu).

**ASES Travel Scholarship.** These scholarships are intended to provide travel support for students who will present papers at or otherwise actively contribute to the American Solar Energy Society (ASES) annual conference in Buffalo, NY. Thanks to generous targeted donations from John Reynolds and from Fuller and Jane Moore—along with funding derived from sales of the Sun Angle Calculator—SBSE will offer several \$500 travel scholarships. See [http://www.sbse.org/awards/ases\\_travel.htm](http://www.sbse.org/awards/ases_travel.htm) for application details and eligibility. The application deadline was March 16, 2009.

**SBSE–ASES Student Best Paper Awards.** Every year an SBSE awards committee recognizes a few exemplary student papers presented at the ASES solar conference. Recipients receive notoriety, cash, and a book. This year, papers may be self-nominated (by the author) or nominated by a third-party (such as an advisor). Nominations must be made on the form (or a replica thereof) provided on our web site [http://www.sbse.org/awards/student\\_paper\\_presentation.htm](http://www.sbse.org/awards/student_paper_presentation.htm). The nomination deadline is one week beyond the due date for paper submissions established by ASES—this year, March 23. 📄

—Alison Kwok

## STUFF FOR YOU

### NEW RELEASE OF HEED

The new release of HEED (Home Energy Efficient Design), Build 39, has been posted on <http://www.aud.ucla.edu/heed>. When you download and install it, all your existing project data will be preserved. Just click on “Recalculate” for each scheme to update the results. Recently completed validation tests show 96% agreement. The summary report is now posted on the HEED web site as *HEED Validated Using HERS BESTEST Tier 1 and 2: 2008*.

Windows Vista users tell us that HEED runs for some and not for others. This new version of HEED has been compiled for both 16- and 32-bit machines, but not yet for 64-bit machines. If you have any problems with this new version, e-mail [energy.design.tools@ucla.edu](mailto:energy.design.tools@ucla.edu).

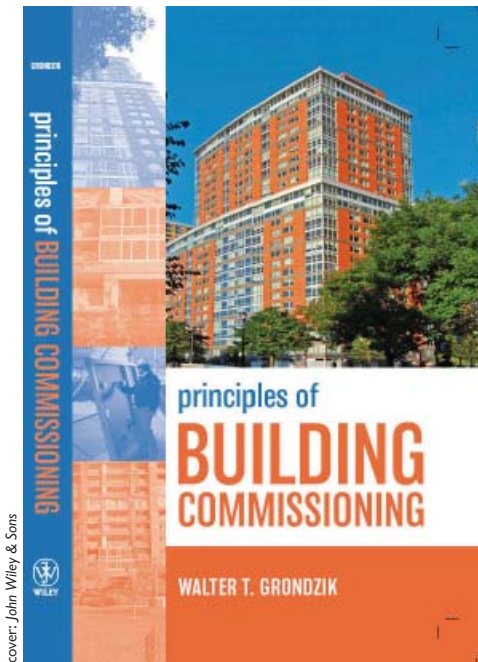
—Murray Milne

### OPENSTUDIO V 1.0

*OpenStudio* (formerly known as the *Energy Design Plugin*) is a free, recently-released, DOE plugin for Google’s *SketchUp* a 3D drawing program). *OpenStudio* can be downloaded from <http://www.energyplus.gov>. It provides access to all the standard *SketchUp* tools and capabilities while creating and editing *EnergyPlus* input files and facilitates simulations run directly within *SketchUp*. Users can add as much extra detail as needed to zones and surfaces, view the building geometry from any vantage point, apply different rendering styles, and perform accurate shadow studies. Users also can mix *EnergyPlus* simulation content with decorative content such as background images, landscaping, people, and architectural finish details in their *SketchUp* model.

*EnergyPlus* Version 3.0 is available for Windows, Linux, and Macintosh operating systems. The *OpenStudio* plugin is compatible with both the Free and the Pro versions of Google *SketchUp* 6 & 7 for Windows. A version for Mac OS–X is currently in development. *OpenStudio* will have full access to all the plugin functionality once both *EnergyPlus* and *SketchUp* are installed on your computer. More information, along with a form to register for a free download of the *OpenStudio* plugin and *EnergyPlus*, is available at <http://www.energyplus.gov>. 📄

—Dru Crawley



cover: John Wiley &amp; Sons

📖 *Principles of Building Commissioning*, by **Walter Grondzik**, has just been released by John Wiley & Sons. The book outlines and explains core characteristics of the commissioning process as well as the documents and procedures associated with a successful commissioning effort.

🏠 ARTECH House, <<http://www.artech-house.com/>> (Boston & London), and series editor **Richard Lorch** have launched the *Built Environment* book series, which addresses the challenges now facing the built environment and those responsible for its policy and strategy, procurement, design, operation, and maintenance. Your book proposals are welcomed. Authors are encouraged to provide holistic views to engage different disciplines and perspectives. Benefits to Artech House authors include a constructive working relationship with a dedicated and experienced series editor in addition to an editorial team that provides a fast response to proposals and rapidly brings manuscripts to publication. Artech House is a well-established publisher with a strong track record in engineering and technology. The move into the Built Environment sector brings a fresh, dynamic approach; a knowledgeable series editor; and a commitment to quality design and production values. 🙌

The Retreat will include follow-up sessions from work and ideas launched at IslandWood, carried through to the New Forest Retreat, and making their way into SBSE's curriculum-intensive online web resource, "The Carbon Neutral Design Project." Mike Utzinger will wow us with the inner workings of the amazing CND calculation spreadsheet he developed for the Aldo Leopold Legacy Center. Bruce Haglund plans to seek your aid in shaping a carbon-focused version of the now famous SBSE update of Wells' Wilderness-Based Checklist for Design and Construction, launched at our 1999 Québec Retreat at Tadoussac.

André Potvin and Claude Demers are arranging the site logistics for both PLEA and the Retreat, including food and beverages. I have no doubt we'll be treated to delicious French cuisine, as well as fabulous Québécois hospitality! If you haven't traveled to Québec, you're in for a treat. It's a little bit of Europe (of which we Canadians are fiercely proud) and encumbers much less carbon debt than a jaunt across the Atlantic. The Clarendon Hotel is an historic building in the quaint Ancient Quarter, a short stroll from our sessions at Laval University, with lots of nice places to grab a café au lait, croissant, or crêpe. Or if you don't want to stroll, take a horse-drawn carriage.

Most should be pleased to know that the Canadian dollar, briefly above par with the U.S. dollar last year, has an exchange rate that is about 20% in favor of greenbacks. [*Even better Terri, I just checked today and found a Canadian dollar to be worth \$0.78 US.—ed.*] For more info on the Retreat, registration, and lodging, please visit our web site <[http://www.architecture.uwaterloo.ca/faculty\\_projects/terri/zero2009/index.html](http://www.architecture.uwaterloo.ca/faculty_projects/terri/zero2009/index.html)>. Accommodation is being held at reduced rates until April 1, 2009. Be sure to pay your SBSE annual dues when completing your Retreat registration so this great newsletter keeps coming your way! Dues are due on the summer solstice each year!

Come join us in Québec! 🙌

—Terri Meyer Boake



André Potvin demonstrates proper Québécois hospitality.



The ancient heart of Québec City is a multilayered delight of walks, stairs, shops, and restaurants sure to enthrall SBSEers.

photos: Terri Meyer Boake

## MORE OPS—FUTURE CONFERENCE LINEUP

### BTES CONFERENCE ABSTRACTS DUE MARCH 27

Many of you will be interested in the 2009 BTES Conference, “Assembling Architecture,” to be held in Albuquerque, NM, August 6–8, 2009. BTES, a new sister organization of SBSE, is striving to address issues related to teaching the technology of building design, structures, and construction. Visit our conference web site <<http://www.uiweb.uidaho.edu/btes2/Index.htm>> to learn more about the conference and to submit an abstract by March 27. BTES 2009 should be a great opportunity to extend to a broader audience of technology educators the ongoing discussions and debate that are part of the SBSE tradition. Come, join us!

—Diane Armpriest

### GREENING OF THE CAMPUS VIII ABSTRACTS DUE MARCH 30

Presented by Ball State University in partnership with the Association for the Advancement of Sustainability in Higher Education, Greening of the Campus VIII, “Embracing Change: Bridging the culture and practices that support the commitment of colleges and universities to education for sustainability,” will be held September 20–23, 2009 at Indianapolis, IN.

We’re accepting abstracts for conference papers, posters, workshops, panels, fora, special activities, and pre- or post-conference events until March 30, 2009. An abstract submission form and guidelines are available online at <<http://www.bsu.edu/greening>>.

—Bob Koester

### ANZASCA ABSTRACTS DUE APRIL 14

ANZAScA 2009, “Performative Ecologies in the Built Environment: Sustainability Research across Disciplines,” the 43rd Annual Conference of the Australian and New Zealand Architectural Science Association, invites submission of original research papers from all areas of architectural science. The conference will be hosted by the School of Architecture & Design, University of Tasmania, Launceston, Australia, November 25–27, 2009. See <<http://oak.arch.utas.edu.au/anzasca2009>> for details. Deadline for abstracts is April 14, 2009, and notifications of abstract acceptance will be by May 11, 2009.

—Gregory Nolan

### ST. JOHN INTERNATIONAL CONFERENCE TO BE HELD APRIL 16–17

International Conference on “Sustainability and Renovation/Restoration of Buildings,” organized by the St. John International University, will be held at its campus in Vinovo (Turin, Italy) on April 16–17. The conference is supported by AIA–NH and professional participants will earn continuing education credits. For full conference info see <<http://www.sjiu.it>>. 🖐

—Mario Grosso



St. John International University's Della Rovere Castle Campus.

photo: Mario Grosso

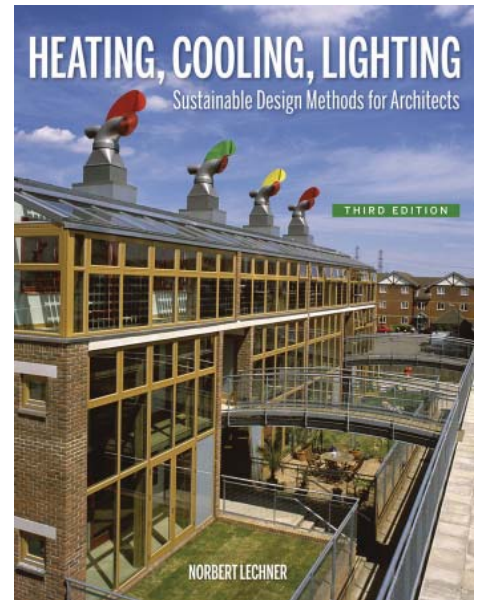


photo: Bruce Haglund

2008 student scholarship winners enjoyed the SBSE Retreat at the New Forest.

## BOOK REVIEW

### HEATING COOLING LIGHTING



Cover: John Wiley & Sons

The third edition of *Heating, Cooling, Lighting*, by Norbert Lechner, covers the basics of environmental control systems from a low-energy point-of-view. It also includes chapters on sustainable design, thermal comfort, climate, solar geometry, active solar, site design, community planning, and landscaping. It’s very easy to read and well laid out, which students appreciate. The first chapter stresses the importance of good design and how it influences energy use and the environment. Good design leads to low-energy and low-impact buildings. Throughout the book a three-tier design approach is taken for all the major subjects, prioritizing basic building design, then passive systems, and finally mechanical equipment. Basic building design has the greatest effect on the building’s ability to be low energy. The third edition has added a few sections to most chapters, notably about green roofs and instructions for building and using a water table to model airflow through and around buildings. Norbert has followed his own advice by lowering the energy used for the tabletop Heliodon by changing the recommended light source from a 75W or 150W indoor reflector to a 50W MR 16. Overall, the third edition is a solid update, though the case studies seem a bit dated. It also lacks chapters on two essential topics—water conservation and acoustics. I’ve selected this book for the first ECS class at Cal Poly. 🖐

—Troy Peters

## JOB OPS

### BUILDINGGREEN

We seek an editorial intern at our Brattleboro, VT, office. BuildingGreen has a staff of thirty knowledgeable, dedicated employees whose work advances the cutting edge of sustainable building design and construction. E-mail résumé and letter of interest to Jerelyn Wilson, Director of Human Resources, at <jobs@buildinggreen.com>.

### GEORGIA INST. OF TECHNOLOGY

One or more tenured/tenure-track faculty positions jointly appointed in architecture and in mechanical engineering to advance the design of high performance buildings. Consideration of applications began on February 15, but will continue until the position is filled. Submit a letter of application, cv, and contact details of three references to: Russell Gentry, Search Committee Chair, Office of the Dean, College of Architecture, Georgia Institute of Technology, Atlanta, GA 30332-0155.

### KIERANTIMBERLAKE

Our internationally recognized, Philadelphia architecture firm seeks a building performance specialist to join the KieranTimberlake Research Group, a trans-disciplinary team interrogating and advancing building design practices through material-, system-, process-, and environment-driven questions. See <[http://www.kierantimberlake.com/contact/employment\\_1.html](http://www.kierantimberlake.com/contact/employment_1.html)>.

### LAWRENCE BERKELEY LAB

LBNL seeks a scientist to develop energy-efficient glazing, window, daylighting, and façade technologies and to increase their market adoption. For more information see <<http://cjo.lbl.gov/LBNLCareers/details.asp?jid=22585&p=1>>.

### US GREEN BUILDING COUNCIL

USGBC seeks a building performance research manager for a variety of projects contributing to USGBC's goal to increase collaboration and to build on existing research related to green building and LEED. Required: master's degree in building science, architecture, or engineering; research experience on green building topics; 2-5 years' work experience, which may include PhD work; and knowledge of current research and sources related to green buildings. Please e-mail résumé, letter of interest with salary requirements, and title of position applying for to <jobs@usgbc.org> or fax 202.478.5046, attn: E. Tarring. 🙋

## GREENING THE GREENING CAMPUS

### BSU OK'S \$66 MILLION GEOTHERMAL PROJECT

The day after commencement on May 9, Ball State University hopes to start drilling the first of 3,750 geothermal wells, each 400 feet deep, for a project that could meet the university's heating and cooling needs. Approved by the university's board of trustees, the project would eliminate four air-polluting, coal-fired boilers built in the 1940s and 1950s (which produce 85,000 tons of carbon dioxide annually) and greatly enhance Ball State's reputation as a role model for green campuses. Several years ago the state legislature appropriated more than \$40 million for the university to replace the obsolete boilers with a circulating, fluidized bed boiler to burn coal cleaner and more efficiently. However, not a single boiler manufacturer anywhere in the world submitted a bid for the project, whose estimated cost has risen to more than \$60 million. For a variety of reasons, the university will ask the state budget committee for authorization to abandon the boiler replacement plan and to earmark the \$40 million for conversion to geothermal energy.

According to Tom Kinghorn, vice president of business affairs and treasurer of the university, the geothermal conversion would reduce operating costs, avoid the volatility of costs associated with coal and natural gas, shrink the university's carbon footprint, eliminate other air pollutants, advance the university's sustainability agenda, and allow the university to sell carbon credits. Additionally, the project would create an estimated 870 jobs. "We think we are positioned to take advantage of economic stimulus money," Kinghorn said. If that happens, the project could be completed in 5 years. Without federal aid, completion could take 10 to 12 years.

Below the frost line the earth in this region maintains a nearly constant temperature of about 55°F, warmer than the air above it in the winter and cooler than the air in summer. Geothermal heat pumps take advantage of this resource to heat and cool buildings. While numerous schools, nursing homes, hospitals, prisons, and other buildings throughout the country use geothermal energy, Ball State's may be the largest geothermal project in the country, according to President Jo Ann Gora, a signer of the American College and University Presidents Climate Commitment. Schools who have signed the commitment are deeply concerned about the unprecedented scale and speed of global warming and its potential for adverse health, social, economic, and ecological effects.

The geothermal system will include three energy centers, water pipes, heat pump chillers, and bore holes or well fields in open places like soccer fields, band practice fields, and residence hall lawns. Water will be circulated into the earth in a closed-loop piping system before being returned to the surface and used by the energy centers' heat exchangers. The bore holes are not water wells, and ground water is not used in any part of the process. The system will use the earth's constant heat as an energy bank. For example, heat will be pulled out of buildings in the summer and stored in the ground for use the following winter.

Robert Koester, director of BSU's Center for Energy Research, Education, and Service, called the trustees' decision "ground breaking." [*No pun intended?—ed.*] Trustee Frank Hancock expects federal support for the project because "we are going to be leaders in something recognized nationally. It's the right climate [*No pun intended?—ed.*], the right time to do this. It's great to be seen as somebody leading (the way)." 🙋

—The Star Press

## ANOTHER SAD LOSS—GREG FRANTA

Greg Franta has passed away. Missing for about a month without a trace, he was found in his car in a ravine somewhere between Boulder and Golden on March 10. What a really sad moment for the green building community, especially coming so soon after the passing of Gail Lindsey [*from cancer—ed.*]. Greg was a wonderful human being and a remarkable force for green building. I'll miss him terribly. Nadav Malin and Alex Wilson have posted their remembrances at <<http://www.buildinggreen.com/live/index.cfm/2009/3/11/Greg-Franta-Body-Found>>. 🙋

—Vikram Sami



# UNIVERSITY RESEARCH

## DAYLECTRIC LIGHTING DESIGN STUDIO

Ball State's Daylectric Lighting Design Studio, initially supported by a grant from the Nuckolls Fund for Lighting Education, was featured in *Lighting Design and Application Magazine* (Nov 2008, pp 64–68). The course is underway again this spring, and our visitors will include Jim Benya, Gary Steffy, and Paul Zaferiou (past scholars include David Eijadi and Joel Loveland).

This course evokes an approach that differs from the studio experience. It consists of five, three-week modules with three internationally recognized lighting designers serving as visiting scholars to enrich content and to participate in face-to-face and virtual juries.

**Module 1** provides introduction, preparation, and warm-up—coverage of basic principles of the physics of light, the physics of seeing/visual acuity/visual accommodation, distinction of full-spectrum daylighting and its hard light and soft light components, generic electric light sources, the measurement of illuminance and luminance, and categorization of light quantitatively (the ages of necessity, abundance, design) as well as qualitatively (light as paint, light as object).

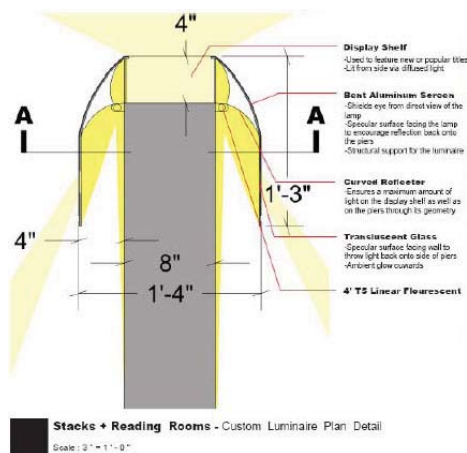
**Module 2** introduces lighting intent for facility design; how to identify objectives, invoke concepts, understand the significance of systems integration, and apply basic design strategies with citation of case studies. The first of the visiting scholars builds on the foundations laid by the preparatory work of the CERES faculty.

**Module 3** immerses students in the complexities of daylighting design, the significance of the operational parameters of hard light and soft light, and the passive and/or active control of the top-lighting and side-lighting systems.

**Module 4** expands each student's experiences by focusing the third cycle of the semester-end project on design development; engages the intricacies of electrical lighting parametrics, the significance of source selection, fixture design, tactical controls, and integration of electric light into daylighting strategies. It culminates in the each student's design and fabrication of an electrical lighting fixture.

**Module 5** pushes students to develop the project schemes to final form and to thoroughly document the coursework and encourages production of a high-quality, professional final report.

—Bob Koester



Integrated electric and daylight models and fixture design developed for BSU's Daylectric Studio.

## "CLICKERS" AT HOUSTON

The UHouston architecture technology faculty adopted the clicker format for use in our six, large, fall 2008 lecture classes. We'll likely follow suit next semester. To evaluate the outcome we conducted a series of focus group and anonymous surveys in one class (our third-year undergraduate Architectural Research Methods course) now in its fifth year as a required class. This hybrid format course is taught as Monday interactive lecture, Wednesday on-line activity, and Friday team meetings. The main element of the course is to collaboratively produce a team research proposal through a series of weekly steps in the process. The text is Groat and Wang's *Architectural Research Methods*. The E-Instruction clicker hardware uses interfaces directly with the course WebCT grade book.

Clickers were used on Mondays to take on-time attendance and then to ask questions periodically throughout the lecture. After the 30 seconds or so allowed for submitting answers, the frequency distribution of responses was displayed and the material discussed before moving on.

We have submitted a full report as an article for publication, but here are the encouraging highlights. Our findings show statistically significant improvement in test scores, attendance, and grades compared to the web-enhanced non-clicker versions of the same class as a face-to-face format in 2006 and in 2007. Students generally found clickers to be fun, increased their participation, enhanced learning, and reinforced a positive sense of mental engagement and academic accountability. Several students thought clickers gave them a voice without requiring them to risk embarrassment. They also commented on a newfound sense of urgency about their textbook readings. Similar to most of the relevant literature on clicker response classrooms, the overall improvements were dramatic. We would be happy to share our validated survey instrument. Currently we are doing a similar study of this semester's ES2 Quantitative Design and Simulation course. Please write <LBachman@UH.edu> with questions and comments. 📧

—Leonard Bachman and Christine Bachman



photo: Anna Maria Orru

Alison Kwok and Walter Grondzik (co-authors of *The Green Studio Handbook*) demonstrate their street cred and occupy (temporarily) London's green chair during London's 2008 celebration of architecture.



photos: Nick Pine

Nick's 188-year-old home demonstrates the progress made from October 24 (left) to December 5, 2008 (right).

Compression springs didn't work well in dewrinkling a double-glazed, 10 mil, HP92W polycarbonate 4'x16' panel. There was occasional condensation inside the unsealed panel, but inflating an airtight version with 2 layers of 1/32" 3M 4432 double-sided vinyl tape over a flat 1x3 perimeter under 1/8" steel cap strips to about 0.5" (2.6 psf) of water with an \$8, 12V Harbor Freight compressor sitting in a box full of clay desiccant bags and a \$36 Dwyer HVAC diaphragm pressure regulator seems to work fine. *[I love how Nick is all about aesthetics!—ed.]*

The steep south roof above the sunspace is a single layer of 0.020" corrugated Dynaglas polycarbonate. The attic gets up to 125°F in December. *[That should take care of any snow build-up as well as provide pineapple habitat!—ed.]* The kitchen has a new concrete floor, after 188 years, and Marcus Sadler and crew are replacing an 8"x10"x32' beam in the basement and excavating the floor about one foot. The loader pulls a chain welded to a mortar box full of soil up a roller conveyor to grade. We could use more diggers. Volunteers? 🖐

—Nick Pine

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