

# SUSTAINABLE DESIGN: FROM LEED TO LIVING BUILDINGS

The 2010 Integrated Design/Integrated Development Conference (IDID VI)

**April 16-17, 2010**

**Hanover, NH**



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*A list of Conference Attendees is available by logging in to the registration website.*

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## *Participants Pre-Conference Homework*

- (1) Read the one page set of terms to “start us on the same page.” See page 3
- (2) Read the excerpt from Bill Gates on 15 Feb 2010. See page 4
- (3) Take Ecological Footprint quiz: Link to Redefining Progress quiz at [http://www.myfootprint.org/en/visitor\\_information/](http://www.myfootprint.org/en/visitor_information/)
- (4) Note down the results of your survey. When you register at the event, there will be a flip chart to write down your score anonymously.
- (5) Remember your number! We'll give some details about the range of results at the Reception and Awards Ceremony, 5:45 pm.



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## Sponsorship

Lead sponsorship for the event is provided to Dartmouth College by Dr. Mary Finegan – Class of 1986

The George Link Jr. Environmental Awareness Lecture is sponsored by the Dartmouth College Environmental Studies Program, [www.dartmouth.edu/~envs/](http://www.dartmouth.edu/~envs/)

### Platinum Sponsors:

The Neukom Institute for Computational Science at Dartmouth, [www.dartmouth.edu/~neukom](http://www.dartmouth.edu/~neukom)  
Public Service of NH (six time IDID sponsor), [www.psnh.com](http://www.psnh.com)

### Gold Sponsors:

Loewen Window Center of Vermont and New Hampshire, <http://loewenvtnh.com/cms/index.php>

### Silver Sponsors

Bond  
Secondwind Water Systems, Inc.  
Wright-Ryan Construction Inc.



### Bronze Sponsors

AW Hastings/Marvin and Integrity Windows and Doors  
Bruss Construction, Inc.  
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Daniel O'Connell's Sons  
Engelberth Construction, Inc.  
IBEA, Integrated Building Energy Associates, LLC  
MacMillin Company  
North Branch Construction, Inc.



**Public Service  
of New Hampshire**

### Friends of IDID

Alteris Renewables  
The Ethics Institute at Dartmouth College  
Building Energy Technologies, LLC  
Petersen Engineering, Inc.  
PlanNH  
Trumbull-Nelson Construction Company, Inc.



The Sustainable Design: From LEED to Living Buildings Conference is presented by the **Dartmouth College Sustainability Initiative** and the **Integrated Design/Integrated Development (IDID)** program of the Environmental Guild, **New Hampshire Chapter, American Institute of Architects**

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## ***Symposium Format, Audiences, Themes:***

### ***Sustainable Design: From LEED to Living Buildings***

is a joint symposium hosted by the Dartmouth College Sustainability Initiative and the Environmental Guild of the New Hampshire Chapter of the American Institute of Architects. This is the 6<sup>th</sup> NH Integrated Design/Integrated Development conference, a series begun in 2003.

Through lectures, panels and workshops this symposium is bringing together students, architects, engineers, interested citizens and leading thinkers in the field to explore the following four themes as they cut across scales from buildings & grounds to communities and landscapes:

- the global imperative for more sustainable design
- advances toward zero net energy design and retrofits
- lessons from biology and the importance of regenerative design
- the benefits and challenges of moving from LEED to living buildings

Thank you for joining us on April 16-17, 2010!

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## *Some Terms to Start Us on the Same Page:*

**Biomimicry:** a discipline that studies nature's best ideas and then imitates these designs, processes, and systems to solve human design challenges in ways that are well-adapted to promote healthy abundance and diversity for all life on earth.

**Ecosystem, or ecological services:** the conditions and processes of natural cycles of the biosphere that sustain and fulfill human life, such as clean air and water, climate moderation, food and fiber, and waste decomposition. The services all are driven by solar energy, including:

- Air quality, purification
- Shade/sunlight to moderate micro climates
- Absorb flood, retain storm, recharge ground water
- Surface water quality, purification
- Pollination and seed dispersal
- Supply food and fiber
- Decompose wastes
- Sequester carbon
- Control insect populations
- Reduce noise
- Recreational experience
- Spiritual connection
- Aesthetics and visual screening

**Ecoregion:** a relatively large area of land or water that contains characteristic, geographically distinct, natural communities and species, comprised of associated flora, fauna, and biodiversity.

**Integrated Design/Integrated Development (IDID):** the multidisciplinary design, construction, and operation practices that protect and maximize use of ecological services, resulting in healthy, efficient, cost-effective, and delightful buildings & grounds, communities, and landscapes.

**US Green Building Council "Leadership in Energy and Environmental Design" (LEED):** an internationally recognized green building certification program for commercial and resi-

dential buildings, grounds, and the neighborhoods around them. A 3rd party verifies the use of practices meant to improve performance by saving energy and water, reducing CO2 emissions, creating a healthier indoor environment, and stewarding resources.

**Living building:** a structure informed by the characteristics of the ecoregion, that generates all of its own energy with renewable resources, captures and treats all of its water, and operates efficiently and for maximum beauty.

**Net zero energy building** generates as much energy as it consumes by first, minimizing demand through energy efficiency practices, and then generating needed power on-site.

**Regenerative:** processes and designs that embody and engage people in a connection to place and community and integrate ecologically sustainable buildings, grounds, and communities as part of a living, evolving ecosystem at the landscape scale.

**Restorative:** a return to designs based on living systems that renew natural processes such as water flow and recharge, soil health, or biodegradation, and further a physical and mental reconnection with the environment in healthy, sustainable ways.

**Sustainability:** a holistic way of systems thinking and acting that recognizes the realities of a finite planet and a globally powerful human race, and motivates human behaviors that are as responsible as possible to all those affected in the present and to future generations.

**Triple bottom line:** adds measurement of the health of (a) human capital (people, equity) and (b) natural capital (planet, ecology) to (c) financial (profit, economic) returns to capture an expanded spectrum of values and criteria for organizational and societal success.

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***When We Talk Zero, We Sound Crazy. When Bill Gates Does It, Bankers Pick Up the Phone.***

Alex Steffen, 15 Feb 10

<http://www.worldchanging.com/archives/010976.html>

***Bill Gates: the Most Important Climate Speech of the Year  
Prosperity Without Planetary Impact***

*Excerpt:*

Bright green advocates understand that we need **prosperity without planetary impact**. In many of the circles I run in, this is an uncontroversial idea, and, indeed, the conversation has moved on, to discussing how we decouple better lives from **ecological footprints** (or even go beyond, and build a society that **restores the ecosystems on which it depends**).

We can reinvent what prosperity means and how it works, and, in the process both reduce the ecological demands of that prosperity and improve the quality of our lives. In most cases, this is a smarter approach than simply improving efficiency.

The answer to the problem of cars and automotive emissions, for instance, **isn't designing a better car, it's designing a better city**. The answer to the problem of overconsumption isn't recycling cans or green shopping, it's changing our relationship to stuff, so that everything we use and live with is designed for *zero waste*, and either meant to last ("heirloom design" and "durability") or to be shared ("product service systems") or both. The best living we've ever had is waiting beyond zero. What looks like a wall to many people from this side of zero, looks to like a trellis from the other side, a foundation on which **new thinking** can flourish.

Cities are the tools we need for reinventing prosperity. **We can build zero-impact cities**, and we need to. Any answer to the problem of climate change needs to be as focused on reinventing the future as powering it.

***IDID Footnote:***

***Let's expand this to zero-impact communities, not just cities....***

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## *The Most Important Numbers on Earth*

**350/300** —“the most important numbers on Earth” and **the red line for human beings**. Scientists with the Nobel prize winning Intergovernmental Panel on Climate Change (IPCC), including NASA's James Hansen, tell us that we must rapidly lower the level of CO<sub>2</sub> in our atmosphere from the high 300's to below 350 ppm, “if we wish to preserve a planet similar to that on which civilization developed,” and to 300 ppm if we wish to preserve summer Arctic sea ice. ([www.350.org](http://www.350.org) and [www.target300.org](http://www.target300.org)).

**2030** —Stepping up to the 2030 Challenge of all new buildings and major renovations reducing energy use (and carbon emissions) by 50% immediately, and progressing to carbon neutral by 2030 ([www.architecture2030.org](http://www.architecture2030.org))

## *2030 Update — Spring 2010*

Architecture 2030 is leading a campaign to ensure Congress amends Section 241 of the Senate Energy Bill (S. 1462) to provide building energy reduction target dates equivalent to the 2030 Challenge. In a rally for support, Architecture 2030 has drafted a letter to Congress, asking that S. 1462 reflect the same target dates provided in Section 201 of the American Clean Energy and Security Act of 2009 (H.R. 2454).

Architecture 2030 released an in-depth analysis of Sec. 201 earlier this year. The Senate Bill, passed by the Committee on Energy and Natural Resources, currently includes building energy code updates. To be effective, however, the timeline for these targets must be amended to be:

- 30% below the baseline energy code in 2010,
- 50% below the baseline energy code in 2014-2015, and
- 5% additional reduction every three years to 2029-2030.

These targets and the timeline are achievable, cost effective, and will dramatically reduce the energy consumption and greenhouse gas emissions of our nation's buildings.

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## *Architecture 2030: The 2030 Challenge*

(1) The fossil fuel reduction standard for all *new* buildings shall be increased to:

- 50% in 2007
- 60% in 2010
- 70% in 2015
- 80% in 2020
- 90% in 2025
- **Carbon-neutral in 2030**

(using no fossil fuel GHG emitting energy to operate)

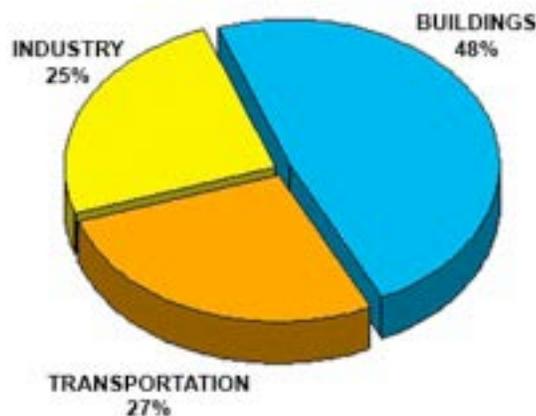
(2) At a minimum, an equal amount of existing building area shall be **renovated annually** to the same standard.

These targets may be accomplished by a combination of:

- (1) Design, planning, innovation (integrated design/development to reduce demand by 60%)
- (2) Adding on-site renewable power supply (20%)
- (3) Purchasing green renewable energy (20%)

See *Meeting the 2030 Challenge through Building Codes* (June 2008) at [www.architecture2030.org](http://www.architecture2030.org) for more information.

Graphic below by Architecture 2030 (data from US Energy Information Administration)



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## *Summary of Attendee Occupations (as of April 14)*

Architect	107	37.02%
Building Contractor	23	7.96%
Building Owner	4	1.38%
Building Scientist	4	1.38%
Dartmouth Staff/Faculty	16	5.54%
Developer	2	0.69%
Educator (not Dartmouth)	14	4.84%
Engineer	16	5.54%
Landscape Architect/Designer	9	3.11%
Other: Designer	1	0.35%
Other: Administration - Higher Education	1	0.35%
Other: AIANH Executive Director	1	0.35%
Other: Anthropologist and Researcher	1	0.35%
Other: Biomimicry	1	0.35%
Other: citizen activist	1	0.35%
Other: consultant	1	0.35%
Other: Designer	1	0.35%
Other: Designer/Administrator	1	0.35%
Other: Early Childhood Educator	1	0.35%
Other: environmental professional	1	0.35%
Other: Event coordinator	1	0.35%
Other: Exhibit Designer	1	0.35%
Other: Green Building Consultant	1	0.35%
Other: green building advocate	1	0.35%
Other: Green Building Consultant	2	0.69%
Other: Historic Preservation specialist	1	0.35%
Other: involved in a green energy co-housing plan	1	0.35%
Other: Journalist	1	0.35%
Other: Keynote	1	0.35%
Other: LEED Consultant	1	0.35%
Other: local sustainability leader	1	0.35%
Other: Materials Consultant	1	0.35%
Other: media	1	0.35%
Other: not-for-profit	1	0.35%
Other: Parent	1	0.35%
Other: Physician	1	0.35%
Other: Project Manager	1	0.35%
Other: Project Manager, Owner's Representative	1	0.35%
Other: project mgr	1	0.35%
Other: Psychologist	1	0.35%
Other: Retired Dartmouth Staff, Sustainability Activist	1	0.35%
Other: scientist	1	0.35%
Other: Speaker	6	2.08%
Other: State Legislator	1	0.35%
Other: Sustainability Professional	1	0.35%
Other: water specialist	1	0.35%
Other: water treatment specialist	1	0.35%
Other: watershed restoration	1	0.35%
Planner	5	1.73%
Product Rep	5	1.73%
Real Estate Broker	1	0.35%
Student (Dartmouth)	31	10.73%
Student (Other)	7	2.42%



## AIA/CES Form

**Provider:** AIA New Hampshire  
**Provider Number:** A084  
**Event:** IDID VI — Sustainable Design: From LEED to Living Buildings  
**Date:** April 16-17, 2010  
**Location:** Hanover, NH

Participant Name: \_\_\_\_\_

AIA# \_\_\_\_\_

### APRIL 16 SESSIONS

- 12:15-1:00 pm  
Plenary: The Lotus and the Peacock: Biomimicry as a Path to Sustainability  
Dayna Baumeister, PhD 1.0 AIA HSW/SD CEUs
- 1:30-3:30 pm  
The Science, Art and Business of Zero Net Energy 2.5 AIA HSW/SD CEUs
- 3:50-5:45 pm  
Emerging Practices in Sustainable Landscapes and Living Buildings 1.5 AIA HSW/SD CEUs
- 7:30-9:00 pm  
Keynote: Design & Applied Hope: Building Durable & Decent Communities  
David Orr Ph.D 1.5 AIA HSW/SD CEUs

### APRIL 17 WORKSHOPS

- 9 am - 3 pm  
Dartmouth College Campus — Sustainable Living Center Design Charrette 5.0 AIA HSW/SD CEUs
- 10 am - 2 pm  
High Performance Buildings Tour — Dartmouth College 2.5 AIA HSW/SD CEUs

Total CEUS \_\_\_\_\_

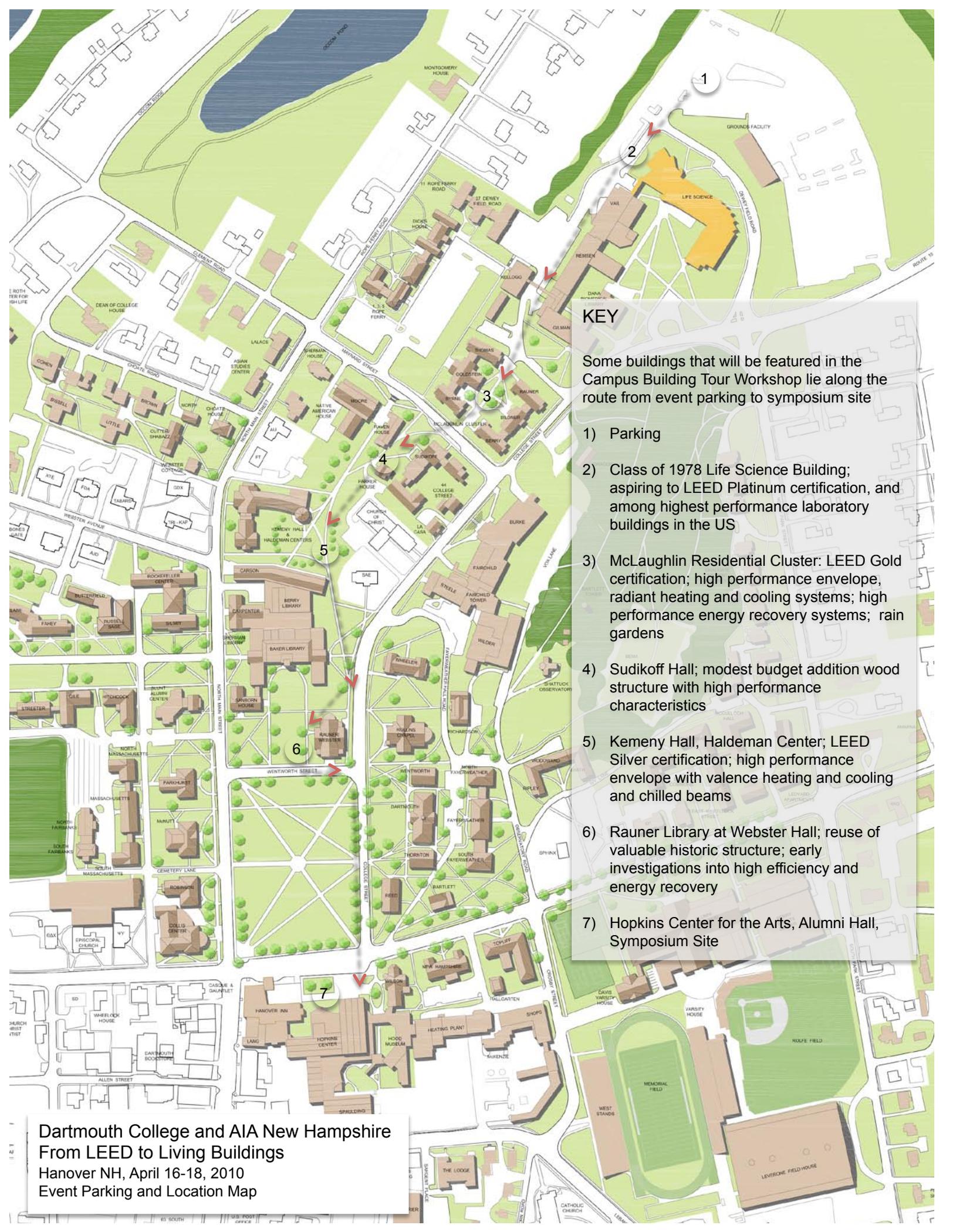
Signature: \_\_\_\_\_

Date \_\_\_\_\_

### Instructions:

Fill in your name and AIA member number.  
 Check off each session attended in the first column.  
 Total your hours in the bottom line.  
 Sign and date.  
 Return to Conference Coordinator at the close of the conference or fax to 603-357-0835.

NOTE: Other professionals who need CEUs should contact the AIANH office for a certificate of attendance.  
 CEUs are available for those people who requested and paid for CEU credits at the time of registration. If you did not request them at registration, but have since changed your mind, please contact the AIANH office, 603-357-2863.



**KEY**

Some buildings that will be featured in the Campus Building Tour Workshop lie along the route from event parking to symposium site

- 1) Parking
- 2) Class of 1978 Life Science Building; aspiring to LEED Platinum certification, and among highest performance laboratory buildings in the US
- 3) McLaughlin Residential Cluster: LEED Gold certification; high performance envelope, radiant heating and cooling systems; high performance energy recovery systems; rain gardens
- 4) Sudikoff Hall; modest budget addition wood structure with high performance characteristics
- 5) Kemeny Hall, Haldeman Center; LEED Silver certification; high performance envelope with valence heating and cooling and chilled beams
- 6) Rauner Library at Webster Hall; reuse of valuable historic structure; early investigations into high efficiency and energy recovery
- 7) Hopkins Center for the Arts, Alumni Hall, Symposium Site

**Dartmouth College and AIA New Hampshire**  
**From LEED to Living Buildings**  
 Hanover NH, April 16-18, 2010  
 Event Parking and Location Map

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*Below is a brief schedule for your convenience.  
Details about each session and biographies of the speakers are  
available on the website: [www.sustainabledesignsymposium.com](http://www.sustainabledesignsymposium.com)*

## **Conference Schedule**

All meals and events take place in Alumni Hall unless otherwise noted.

### **Friday, April 16th**

10-11:30 Registration  
11:30 Lunch served  
11:45 Welcome, Purpose, and Introductions  
12:15 Plenary – Dayna Baumeister, PhD  
1:00 Session 1 – The Science and Art of Zero Net Energy  
2:00 Break  
2:20 Session 1 continued - The Science and Art of Zero Net Energy  
3:30 Break  
3:50 Session 2 – Emerging Practices in Sustainable Landscapes and Living Buildings  
5:45 Reception – near Alumni Hall at the Top of the Hop  
6:00 AIANH IDID Awards - Top of the Hop  
6:30 Dinner  
7:30 Keynote Address by David Orr, PhD, Paul Sears Distinguished Professor of Environmental Studies and Politics at Oberlin College  
*The George Link Jr. Environmental Awareness Lecture is sponsored by the Environmental Studies Program at Dartmouth College*

### **Saturday, April 17**

Workshop 1: Sustainable Living Center Design Charrette  
10:00 am - 4:00 pm (meet in the lobby of the Kemeny/Haldeman building)

Workshop 2: High Performance Buildings Tour and Discussion  
9:00 am - 3:00 pm (meet in the lobby of the Kemeny/Haldeman building)

Workshop 3: The Naked Table Project  
9:30 am - 5:00 pm, and 1:00 pm - 3:00 pm Sunday luncheon  
*Participants will hear directly from the Nated Table Project*

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## *Directions and Details*

### **Symposium events**

Alumni Hall, The Hopkins Center, 2 East Wheelock St, Hanover, NH, 03755

### **Directions:**

From the intersection of North Park St and College St, in Hanover, NH (easily mapped on the Internet): continue straight on North Park St (turns in to Dewey Field Rd) and parking will be on your right. This is approximately a 10 minute walk from the event, and there will be informational signs about the high performance buildings along the way.

There is also a free shuttle than runs regularly from Dewey Lot to Alumni Hall.

### **Parking on campus**

Parking for this event will be located in the Dewey Lots.