

Vol. 29, No. 1 | spring 2011

NORTHEAST **SUN**

THE MAGAZINE OF THE NORTHEAST SUSTAINABLE ENERGY ASSOCIATION



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On the cover

BE11 planning committee members at a May meeting in Providence. In the foreground is Dana Mosher, professor and program coordinator for Building Construction Technology at Manchester Community College, NH. Looking on is Jess Lerner of Providence-based Green on the Inside. *Photograph by Jamie Wolf.*

About NESEA and the *Northeast Sun*

The Northeast Sustainable Energy Association (NESEA) is the region's leading organization of professionals working in sustainable energy, whole systems thinking, and clean technology. We advance the adoption of sustainable energy in the built environment through this magazine (distributed to NESEA members), our annual BuildingEnergy conference and trade show, professional workshops, K-12 resources, our annual Green Buildings Open House, and more. A *Northeast Sun* subscription is \$55/year, which includes NESEA membership.

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Welcome to a Work in Progress



“He who rejects change is the architect of decay. The only human institution which rejects progress is the cemetery.”

I discovered that quote from Harold Wilson as I was preparing to write this letter. My last two letters have focused on all the things that are changing with respect to this publication and NESEA itself. It really is true that change is the only constant.

So what’s changed since we last published the *Northeast Sun*? Here’s a quick rundown:

We are delighted to welcome two new contributors to our *Northeast Sun* editorial team. Laura MacKay is serving as an editor, copy editor, and production manager, and Susan Lapointe as graphic designer and production manager. Over the last 20-plus years, Laura has been an award-winning journalist, a freelance writer, an editor and copy editor of books, magazines, and websites, and a copywriter for marketing. Most relevant to the *Northeast Sun* is her last “real” job, as copy chief for Disney Publishing Worldwide’s *FamilyFun* magazine. Susan has been in the graphic design industry for more than 25 years, rising through the ranks at Spalding Sports to the position of creative director. She is excited to bring a clean, consistent, fresh look to the *Northeast Sun*—one that will continue to build the NESEA brand and pique the interest of the reader.

To serve you better as NESEA members, we have also shifted the focus of the magazine. In this and future issues, we will focus more on the projects you have completed and celebrate your successes.

We’ve accelerated the publication schedule by four to six weeks for both the spring and fall issues. Historically, our spring issue was made available at the BuildingEnergy Conference, and the fall issue during the Green Buildings Open House tour. The earlier release means we can use the magazine to promote these signature events and, more important, to bring greater visibility to the work of our members relative to these events.

Finally, the disclaimer: The *Northeast Sun* is a work in progress. There are more changes ahead as we evaluate what’s working and what’s not. As always, we want your feedback. So let us know what you think. What do you like about the new format? What still needs improving? How can we make the magazine a more useful tool for you in your professional practice? How can we use it more effectively to connect you to other professionals, to ideas, and to consumers so that you can advance the adoption of sustainable energy solutions in the built environment? Feel free to contact me at jmarrapese@nesea.org or at 413-774-6051, ext. 23, with your thoughts.

— Jennifer J. Marrapese, executive director

K-12 Education

The Junior Solar Sprint

This year, NESEA joins forces with several partners, including Virginia Tech, which is the lead organization in a consortium that will administer several army-sponsored science, technology, engineering, and mathematics (STEM) activities. We will still administer and coordinate the program. This change will, however, allow the Army Education Outreach Program to better coordinate and cross-promote STEM programs so that our JSS graduates can more readily learn about high school STEM projects.

Throughout the spring, NESEA staff and our JSS area/state coordinators will facilitate free workshops for teachers and nonformal educators on applications in solar energy with hands-on experience building a mini solar car. Coordinators will also be gearing up for area and state contests later in the spring. Top winners are invited to NESEA's annual championship on Sunday, June 12. For more information on JSS resources and upcoming workshops throughout the Northeast, visit JSS at www.nesea.org/k-12/juniorsolarsprint/. For volunteer opportunities or to exhibit your business's products or services at the Northeast championship (free of charge to NESEA members), contact Education Director Arianna Grindrod at 413-774-6051, ext. 21, or agrindrod@nesea.org.

Solar Sails New York

Sponsored by the New York State Energy Research and Development Authority (NYSERDA), *Solar Sails New York: expansion of solar and wind energy education for school power ... naturally*, is a professional development project for K-12

New York State teachers. Attend a workshop and receive a free educational kit! Test out the experiments and give your students the tools they need to understand solar and wind technologies.

"A Solar Kit for the Classroom" is suitable for teachers who work with grades 3-12. Solar energy lessons support NYSERDA's *School Power ... Naturally* "15 Solar Kit Lessons." Free downloads of lessons are available at www.SchoolPowerNaturally.org.

"Wind Wisdom" is suitable for teachers who work with grades K-6. Hands-on activities support the accompanying curricular units, "Wind Wisdom for School Power ... Naturally" (K-4 and 5-6).

Free downloads of the units are also available at www.nesea.org/k-12/solarsailsnewyork/. For a listing of workshops, go to www.nesea.org/k-12/events/. To request a workshop in your area within NYSERDA's service territory, e-mail agrindrod@nesea.org.

Solar Sense this spring

We have put to good use the \$14,900 in grant funds we received from the Western Massachusetts Electric Company (WMECO) earlier this year to support educator training workshops on renewable energy. Science educator Susan Reyes, with the assistance of beloved NESEA members Janice and Steve Kurkoski, have put together a stellar teacher workshop that will focus on understanding solar energy principles and applications.

If you are a formal or nonformal educator and a WMECO customer, you are eligible to receive free training through the Clean Energy for a Clean Environment (CECE) program. Learn how solar and wind energy work, how to integrate renewable energy concepts into your STEM programs, and about local

field trip opportunities and member speakers. CECE curricular units are aligned with the Massachusetts State Frameworks for kindergarten through grade 12. NESEA provides complimentary educational kits to participants.

If you are interested in participating in and/or scheduling a workshop, or if you are a NESEA member interested in participating in this program as a guest speaker or field trip site, please call NESEA at 413-774-6051, ext. 21, or e-mail agrindrod@nesea.org.

We appreciate WMECO's sustained support of this program.

— Arianna Grindrod, education director

VOLUNTEER SPOTLIGHT

Congratulations to longtime volunteer Carlos Reyes on his upcoming graduation from high school. We appreciate your hard work and dedication to NESEA.



A high-fiving team excited over the speediness of their JSS car. NESEA members, join in the festivities—come exhibit, volunteer, or just cheer.

Green Buildings Open House

Register your building as a host site!

I would like to take this opportunity to invite one and all to participate in the 2011 Green Buildings Open House tour. GBOH provides an excellent opportunity for home, business, school, and farm owners to inspire others to live sustainably. By sharing what you have done, how you did it, and how it has improved your lives, you can educate others about the ins and outs of sustainable energy solutions.

In 2010, some 12,000 visitors toured 483 host sites throughout the Northeast, ranging from newly constructed homes and businesses to deep energy retrofit multifamily buildings. This year, we are planning changes that will make the tour better than ever, but we need your help! To enhance the tour overall and provide information about sustainable energy practices in a wider variety of buildings, we are reaching out to a broader spectrum of property owners. You'll see more schools and large commercial buildings on the tour. I am also working closely with NESEA's K-12 education department to reach out to educators, as this event offers wonderful educational opportunities for learners of all ages.

The time is ripe to make change happen. Register your building as a host site at www.nesea.org/greenbuildings/addedit. You can make a difference!

— Michelle Rose, GBOH program manager

BuildingEnergy

David Orr at BE11 on March 9

This distinguished environmental studies professor from Oberlin College is able to connect people across disciplines. He will deliver the BuildingEnergy keynote address on March 9. See the BE program in the center of this magazine. We also recommend his new book, *Hope Is an Imperative* (see a review on page 43).

New at BE: Educators' Summit

Wednesday, March 9
Seaport World Trade Center
Boston, MA

BuildingEnergy attendees often ask how to present their materials and expertise in a classroom setting. So this year we have taken the obvious step of inviting science teachers and administrators to a BE Educators' Summit. Next to parents, other adults involved with K-12 kids are the biggest influence of all when it comes to getting them on board with renewable energy, energy efficiency, and building science.

Teachers can not only partake of stimulating, hands-on STEM workshops with a focus on teaching energy efficiency and renewable energy in the classroom, but also network, connect with potential guest speakers, and learn direct applications of sustainable energy

science and technologies for their personal and professional development. Meanwhile, other attendees can receive sound counsel from the educators who are calling upon them for their expertise.

Connect with emerging professionals at BE11

Over the past year we've sought to link NESEA's programs together and offer better opportunities for the NESEA community to get involved. Toward that end, at BE11 we'll hold our first Educators' Summit (see "New at BE," left). We'll also continue to welcome emerging professionals. We'll connect them with our members via special networking events, via the NESEA mentor booth at the trade show, and by prescreening résumés they've submitted to us, which will be made available to businesses at the trade show that are hiring.

Always on my mind is the fact that we could not make any of this possible without the generous commitment of our sponsors and our volunteers. To all of you who support us financially or with your valuable time, my deepest and most sincere gratitude. I promise to continue to do my best to make the BuildingEnergy Conference the LED beacon that cheerfully and efficiently lights up your second week of March every year!

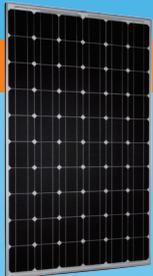
— Mary Biddle, director,
BuildingEnergy Conference

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Zero Net Building Energy Award

A record six entries

In 2007, the first year NESEA ran the Zero Net Energy Building Award competition, the concept of “net zero” was so new and we set the bar so high that we didn’t receive a single qualifying entry. Now, just four years later, the program has drawn a record six entries. On March 9, at BuildingEnergy11, we will announce the winner—the best example of a building in the Northeast that produces more energy than it consumes—and hand out the \$10,000 cash prize.

As the organization known best for its “show me the numbers” motto, NESEA offers builders and developers the opportunity to distinguish their work with an award based on the most rigorous industry standards. For the past 36 years, NESEA’s members have been pushing the industry envelope. The applications we receive are the real deal!

We celebrate all of our 2011 applicants for helping us raise the stakes in energy efficiency, and we wish you all luck in the competition!

Eligibility

The competition is open to occupied buildings in the six New England states plus New York, New Jersey, Pennsylvania, Delaware, and Maryland. To be eligible for the award, buildings must be fully occupied and must document net-zero energy use for one year.

The following additional factors



The Charlotte, VT, home of entrant James Brian Thompson.



In Williamstown, MA, Bill and Margot Moomaw’s kitchen.

Facts and Figures

- This year’s entries: one from NY, two from MA, one from PA, and two from VT.
- Of those, four were new construction and two were deep energy retrofits.
- Together, these six applicants claim to have returned more than 156,000 kWh to the grid between 2009 and 2010.
- Over the four years we have run the program, we have received applications from the following states: MA (5), ME (1), NJ (3), NY (3), PA (1), and VT (3), plus inquiries from OH and Hungary, neither of

which is in NESEA territory! We have yet to receive applications from CT, DE, NH, or RI.

- We have been able to confer the award only twice: in 2009 for the Pill-Maharam residence in Charlotte, VT, and in 2010 for the Montague Urban Homestead in Turners Falls, MA.
- We have received six residential and six commercial building applications over the years. Eight of these were new construction and three were retrofits.
- In 2007, the only application we received was from a Williamstown, MA, campground. While it was designed to be energy self-sufficient, the judges disqualified it in part because the model used was not easily replicable.

are considered in the judging:

No brute-force solutions. Judges favor more efficient buildings with smaller renewable energy conversion systems over those that rely principally on solar arrays or wind turbines to overcome conventional building loads.

Replicability. Projects that are more readily replicable will be scored higher.

Idiosyncrasy. While we

encourage building occupants to conserve energy, judges will not reward behaviors that are purely idiosyncratic. For example, unduly low thermostat settings, dietary regimens that dispense with refrigerators, perpetual candlelight reading ...

— Jennifer Marrapese, executive director

Our Chapter Structure Evolves

Last November, NESEA's board of directors unanimously approved some changes to our chapter structure and invited the chapters to participate in building it. We shared our belief that the ideal chapter would have these attributes:

Consistent branding, such that the relationship between NESEA and the chapter is clear

Minimum activity level of quarterly meetings to advance our mutual missions and recruit members

Frequent communication with NESEA on what programs the chapter is offering, who is attending, what feedback they've received

The same mission and strategic focus as NESEA, although different strategies may be used to achieve that mission

Overlapping membership with NESEA (all chapter members would be NESEA members)

Over the next few months, we'll be working with the chapters to further define each of these attributes, figure out how best to roll them out, and determine what resources we'll need in place to do so. You can learn much more about our work so far on the NESEA blog, at www.nesea.org. We look forward to reporting our progress to you!

SASEA

Educating the public on sustainability

With its Sustainable Speakers Forum, held every other month, the Springfield Area Sustainable Energy Association (SASEA) continues to educate the public on sustainable practices old and new.

Recently, Stuart Fearn of SAFCO spray foam insulation highlighted the efficiencies of spray foam insulation and the differences in the multiple types of foam used throughout the construction industry. Ibrahim Ali, the youth coordinator for Gardening the Community, presented on how a local grassroots organization is turning vacant land into sustainable community gardens. The food is grown by youths and transported via bicycles. Tom Konrad, editor of AltEnergyStocks.com, gave an investment strategy lesson on how to select sustainable energy companies and a snapshot of their performance over the past few years. He will also be presenting a workshop at BuildingEnergy11. Andreas Schmid of Alteris Renewables explained the rebates available for residential and commercial PV systems.

We've also reached out to the City of Springfield to help introduce a computer and electronics recycling program.

Solar cooking kicks off series of how-to workshops

Thanks to the volunteer help of our vast member support base, SASEA has also initiated a series of hands-on how-to workshops. In November we tapped member Bill Bradley to conduct a workshop on building a solar cooker. The former professor of solar engineering studies at Western New England College taught a group of middle, high school, and college kids the fundamentals of solar energy and how to build a cooker that harnesses it.

Get involved We've got many more ideas and projects to pursue, so give us a call at 413-883-3144 to find out how you can help make western Massachusetts a more sustainable place.

GreenHomeNYC

First DIY green block party a success

The first annual New New York DIY Green Block Party in Carroll Gardens, Brooklyn, drew more than 1,500 people on October 2. The stellar weather didn't hurt, but it was really the 55 incredible vendors, our GreenHomeNYC volunteers, the support of our sponsors, and the dozen-plus tours, lectures, and activities that made the event a success.

This day of action complemented the fall 2010 NYC Green Buildings Open House. The hundreds of DIY activities included learning how to install and plant a green roof, watching worms wiggle and transform organic matter into dirt, completing an energy audit, and learning how to prune street trees. Exhibitors brought new environmental products and technologies, and The Hudson Companies Inc. offered tours of Third + Bond, newly built to LEED Gold and EnergyStar standards.

Get involved Join us in making our buildings and our lives greener! Go to www.greenhomenyc.org to learn more.



NHSEA Program Director Madeline McElaney, third from left, working with volunteers to bring solar to Anse a Pitre, Haiti.



More than 1,500 people turned out for GreenHomeNYC's first New New York DIY Green Block Party.

NHSEA

Annual Home Energy Conference grows

The New Hampshire Sustainable Energy Association's (NHSEA) Fourth Annual Home Energy Conference was held at the Grappone Conference Center in Concord, NH. The all-day event included an opening plenary session led by Amy Quinton from New Hampshire Public Radio, 12 workshops, and 25 exhibitors from across the state's sustainable energy business/educational sector.

As one exhibitor remarked, the November event "is fast becoming an industry standard for sustainable energy in New Hampshire."

Bringing solar to Haiti

NHSEA Program Director Madeline McElaney traveled to Anse a Pitre, Haiti, to help bring solar to the people there. On October 28, two technicians from a company called Retecsa met volunteers from Sadhana Forest Haiti at a spot known as *la puerta* at the Haiti/Dominican Republic border. Everyone carried panels, batteries, and other pieces

of a 2.5 kW photovoltaic system for the 20-minute walk over the border and into the village of Anse a Pitre. Over the next four hours, Retecsa technicians and volunteers worked together to install enough solar electricity to power lights, a well pump, a water purifier, and a custom multiport charging station for cell phones, laptops, cameras, and other small electronic devices. Thanks to a fundraising effort led by McElaney, the PV system, its installation, and the educational workshop were fully funded by donations.

And in other news ...

This year, NHSEA participated in the October GBOH with 68 homes across New Hampshire. Our annual meeting, on November 6, featured Jim O'Brien, executive director of Conservation NH. He discussed the renewable energy debate in the state: who's at the table, who isn't, and who needs to be. Newly elected to the board of directors were Ted Vansant of Alteris Renewables and Christopher G. Aslin, Esq. Also, we recently announced one of several new online tools developed

cooperatively with Clean Air-Cool Planet and the New England Carbon Challenge. Myenergyplan.net allows the user to create a personal sustainable energy plan and produces a report that lists the best tools and resources for their needs. More tools are in development.

Get involved Go to www.nhsea.org to learn more.

MeSEA

Nonstop solar workshops at home and abroad

The Maine Solar Energy Association (MeSEA) had a productive summer and fall of solar workshop programs in the US and internationally.

Working with folks in the US who realize that our lifestyles have to change to ensure basic survival for our grandchildren, we're spreading the hands-on, DIY solar PV and solar thermal experience from community to community.

In Maine, MeSEA facilitators held summer workshops in Stockton Springs and Owls Head, focusing on "homemade" PV and solar thermal installations. Rich Komp, Soni Biehl, Charles Ewing, and Walter Wefel presented these workshops in conjunction with SEADS of Truth Inc., a sister nonprofit organization with a similar educational focus. In New York City, John Burke, working under the MeSEA banner, held two cooperative ASES chapter PV workshops in July and August.

The New York Solar Energy Society (NYSES) hosted the well-attended 60W module assembly gatherings at the Bronx home of NYSES President Wyldon Fishman. We are scheduling additional workshops with interested New York-based groups. A USDA-sponsored, solar-powered, "microdrip" irrigation conference in Ft. Meyers, FL, was part of the fall agenda.

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Assembly of this St. George, ME, farmhouse's hot water system started at a MeSEA workshop. It incorporates eight solar thermal collectors handmade from recycled glass and all local materials.

Abroad, Dr. Richard Komp was off to Nicaragua in August to present a weeklong course at the National Engineering University (UNI), Managua. Mid-September found him in Niger, Africa, presenting solar PV workshops for a large group of nomads from the Sahara desert. October brought a solar conference in Lima, Peru. In line with the 10-10-10 International Climate Change work action of www.350.org, the group assembled a solar-powered refrigeration unit for the local co-op. Dr. Komp was invited back by the Ministry of Energy and Mines for November's Fourth International Solar Energy Society Latin America Conference at the university in Cuzco, Peru.

Get involved MeSEA hopes to network with other NESEA chapters and train others in our simple, low-tech, hands-on approach, which liberates solar technology and raises funds for work with the less fortunate. Please contact MeSEA at www.mainesolar.org, www.seadsoftruth.webs.com, or www.dadsolar.com for opportunities for cooperative solar workshops. Let's get the general public interested in a solar lifestyle!

CIRenew

Going for zero-waste solutions

Over the summer, advocacy groups came together through Cape & Islands Renewable Energy Collaborative (CIRenew) to focus public discussion and local and regional decision making on zero-waste solutions that cut disposal costs, create jobs, and reduce greenhouse gas emissions and other adverse impacts. A key goal is to decrease the Cape's reliance on incineration, an energy source that, while recognized by some as renewable, has questionable credentials.

Two forums highlighted the problems with current "bury and burn" disposal practices, the opportunities associated with more informed resource management strategies, and the importance of avoiding "put or pay" provisions—which create disincentives to waste reduction, reuse, and recycling—in any contract extensions with SEMASS. In August, "Transforming the Cape's Throwaway Society" featured Neil Seldman, president of the Institute for Local Self-reliance in Washington, DC. In the

fall, CIRenew participants worked with stakeholders to outline a comprehensive zero-waste study, "Zero Waste and Economic Development," and conducted a second forum, "The True Costs of Relying on the SEMASS Incinerator," featuring Lynne Pledger of Clean Water Action.

Goal: Cut fossil fuel use in half

Other forums in September and November focused on CIRenew's 50 Percent Fossil Fuel Reduction goal. A "Regional Stretch Code Forum" was held to aid local adoption of a tighter building code and to help towns achieve the state's Green Communities designation. Speakers included Ian Finlayson (a NESEA board member) and Seth Pickering, both from the Massachusetts Department

energy sustainability, describing the potential of electric vehicles to decarbonize transportation.

Southeast MA steps up renewable energy

Consistent with CIRenew's 100 Percent Green Power Production goal, communities in southeastern Massachusetts continued to see growth in renewable energy deployment throughout 2010. Over the fall and winter, two more commercial-scale wind installations powered up. Both residential and large-scale commercial photovoltaic projects continue to multiply. In the face of growing opposition to land-based wind, CIRenew participants were busy countering misinformation, educating both the public and policy makers,



A Cape Air Plane soars over Cape Air's 258kW rooftop PV installation. Inset is the newly installed Northwind 100 turbine at the Cape Cod Regional Transit Authority.

of Energy Resources, and Bruce Torrey of Building Diagnostics. Andy Chu of A123 Systems headlined "Plugging In: Electric Vehicles and Advanced Batteries for Increased Independence, Improved Reliability." Given the region's abundant renewable resources, he tackled a particularly critical opportunity for

participating on municipal energy committees, working with private developers, and informing policy and permitting decisions.

Get involved For more information and upcoming CIRenew events, go to www.cirenw.org.

NAAEE 40th Anniversary Conference

Oct. 12-15, 2011



The Call for Presentations closes Feb. 1, 2011

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Director, Karen Beasley Sea Turtle Rescue & Rehabilitation Center, Topsail Island, NC



www.naaee.org

SEAC

Highlighting efficient homes

In September, the Solar Energy Association of Connecticut (SEAC) presented “A Solar, Low-Net-Energy Eco-Home.” Karann Brandt discussed a Connecticut house that was a finalist in the 2009–2010 CT Zero Energy Challenge and also won second place in the residential category in the 2010 SIPA Annual Building Excellence competition.

Our October workshop, “The Passiv Haus,” by Paul Eldrenkamp and Jamie Wolf, drew a large audience from around and beyond the state. Animated discussions added substantially to the value of the workshop.

Get involved Please visit our website at www.SolarEnergyOfCT.org to learn more about what we have planned for early 2011.

BSR-VT

After Vermont Yankee, power to spare

Vermont can shut down its Vermont Yankee nuclear power plant on schedule in 2012 and easily make up for it with a mix of new in-state renewable energy sources—wind, solar, biomass, methane recapture, and hydro. That’s according to James Moore of the Vermont Public Interest Research Group (VPIRG). Further, with slightly more aggressive development of these same sources, Vermont could ramp up its power generation to fully electrify its transportation sector as well—“every vehicle mile driven in Vermont”—and have power to spare to sell to the grid or to specific out-of-state customers.

Moore was one of four speakers at an October forum hosted by Building for Social Responsibility–Vermont (BSR–VT) and the Vermont



Participants in a BSR-VT solar hot water training, Manchester, VT.

Photograph by H. Hunter

Green Building Network. The forum, entitled “The Sustainability of Vermont’s Electrical Energy Future: Can we obtain the power we need without nuclear energy and without coal?” explored how Vermont could make up the loss in base load power

Vermont can shut down Vermont Yankee and easily make up for it with a mix of new in-state renewable energy sources.

that will occur if Vermont Yankee goes off-line in March of 2012, as currently scheduled.

Moore is the author of “Repowering Vermont: Replacing Vermont Yankee for a Clean Energy Future,” a report published by VPIRG in 2009. Vermont, like other states in the region, has been ramping up its renewable capacity—especially in solar sources—significantly faster than his report anticipated, Moore said. Surprisingly, it is on track to meet the more aggressive scenario of renewable growth mentioned above.

In response to concerns about increased consumer costs, Moore pointed out that the kWh cost of Vermont Yankee accounts for only 16 percent of our electric bills. In relicensing negotiations with the Public Service Board, Entergy Louisiana has offered to sell Vermont utilities only 40 percent of the power Vermont Yankee currently does, and at market rates with options for increases built into the contract. With this in mind, Vermont Yankee’s cost as relicensed is not any great bargain and would account for less than 7 percent of our electric bill. Any cost premium for replacing Vermont Yankee with renewable sources would be less than 1 percent of a typical monthly electric bill.

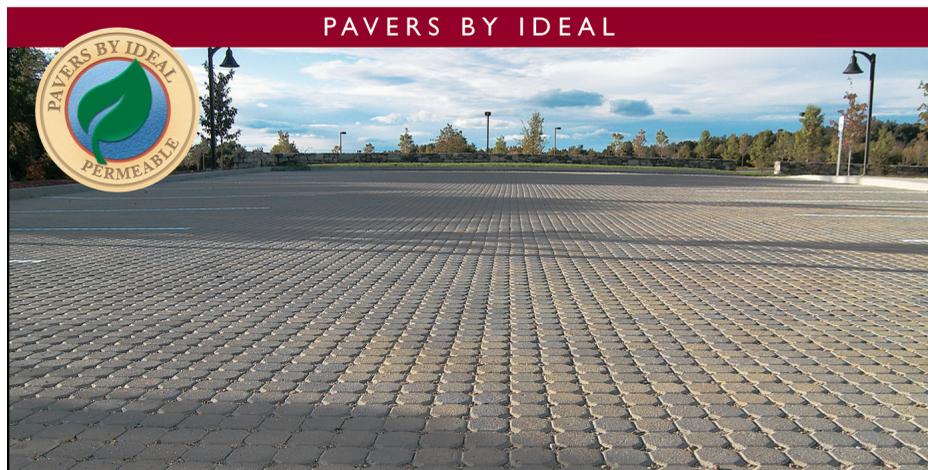
Other speakers at the forum tended to confirm Moore’s optimistic scenario, if cautiously.

Get involved Go to www.bsr-vt.org to learn more about this topic and BSR.

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Building BE

How to build a conference for the people who are making the built environment more sustainable

By Jennifer Marrapese and Mitch Anthony
Photographs by Jamie Wolf

1. Start with a commitment to listening to and learning from each other

NESEA's BuildingEnergy11 is the work of a unique group of people. And they work together, learn from each other, and cocreate in unique ways.

To get a sense of how unusual the BE planning process is, it helps to envision NESEA as a UN of building trades and design and planning disciplines, all of which are well represented on the BE planning committee. This year, architect Bruce Coldham, FAIA, serves as the conference chair, assisted by Robert Leaver of New Commons, a "Think and Do Tank." In all, 101 designers, developers, builders, manufacturers, installers, engineers, planners, teachers, and policy makers shared their views on the topics, themes, and concepts they feel are most important to the industry.

2. Have a big, collaborative meeting to set the direction

The planning process began with a May 2010 gathering of 55 planning committee members in Pawtucket, RI. Members shared and listened to uncover the questions that are defining the cutting edge of sustainability, the questions that should inform the content and direction of the conference. Robert Leaver is a master thought-catcher, and he has a highly evolved toolbox of processes for gathering them. His notes revealed to the group themes that ran the gamut from social norms to effectiveness to technical how-to (see "Asking the Right Questions").

During this daylong session the committee also identified the nine conference tracks (you can see them in the center section of this magazine), discussed criteria for selecting a keynote, and brainstormed whom the speaker might be. We also talked details: specific conference goals, number of attendees, how to diversify attendee mix, ways to better involve emerging professionals, how to better reflect the conference content on the trade show floor, the structure and content of the public forum, and whether we



The BE11 planning committee met for the first time in May 2010. The gathering was held at New Commons, Pawtucket, RI, and was facilitated by Robert Leaver. The primary agenda was to develop a list of burning questions to guide the content of the conference and to encourage committee members to volunteer for specific conference leadership roles.

should add a second, more provocative, plenary session.

In a significant first, during this meeting we also ratified job descriptions for each key volunteer associated with the conference: conference chair and vice chair, workshop coordinator, track chair, public forum coordinator, NESEA Night emcee, and session chairs. In the past, we've had no formal job descriptions.

This face-to-face was followed one month later by a virtual meeting during which we finalized track chairs and refined both track chair and session chair job descriptions. A couple of weeks later the group convened again in Hartford to finalize wild card tracks and articulate a strategy to reach out to emerging professionals.

3. Bring in the NESEA community at large for that "special sauce"

After the mid-June Hartford meeting the committee issued a call for session proposals to the NESEA community at large. This is essential to BE's special sauce. The reason BE serves so many with such good information is that it is a community of thoughtful professionals who want to learn from each other. The planning committee connects to ideas and to the people who are testing those ideas.



During the May planning meeting, committee members cast their votes for the questions that will drive the conference content.



Voted the planning committee member with the best-coordinated eyewear and socks, Bruce Coldham, FAIA, will chair BE11. By design, his vice chair, Robert Leaver, will chair BE12.



Bernice Radle, cochair of the Multifamily Buildings track, shares her session lineup with the committee. Each year, we strive to have two cochairs for each track, at least one of them an emerging professional—so we help build NESEA's bench strength.

Asking the right questions

- Beyond LEED buildings, how do we get “LEED people”? It is clear that modifying user attitudes, behaviors, and social norms have at least the load reduction potential as all technical conservation strategies combined—and maybe far more. How do we take this from an intellectual activity to a cellular understanding?
- What is our regional route to energy independence? What are the specific technologies involved and how does the whole evolve through time?

- How do we promote “open source” economy and sustainability?
- How do we build industry capability? Who is going to train our workforce to do this work?
- How can we best achieve measurement and disclosure of buildings’ resource consumption data? How can we ensure that the public policy imperatives of disclosure are in balance with reasonable privacy expectations of individual building users?
- How to equate a lower-energy society with an improvement in our quality of life? How do we best teach value/values of sustainability? What is—should be—the new normal? How to “light a fire” to get change burning through this culture?

It’s interesting to note that of the 101 members of the planning committee, only 6 are paid NESEA staff: 95 are volunteers. This year the committee received 159 proposals for sessions and workshops and accepted 88 of them (of which, 25 were for workshops).

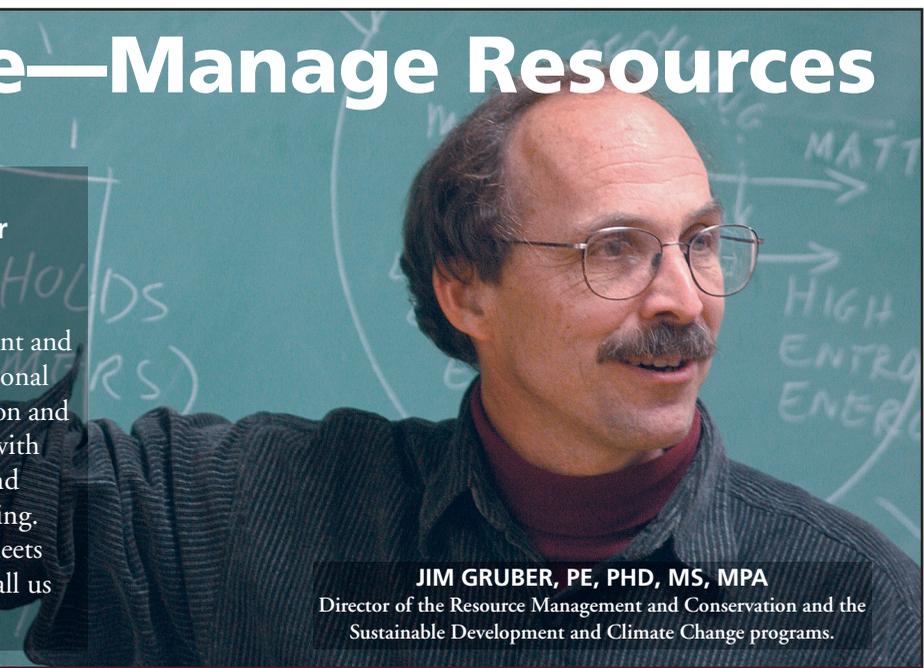
4. Work through the details on-site—and in the cloud

Following the Hartford meet-up, there was one more in-person meeting. In August the track chairs—about 30 people—gathered at the conference site at the Seaport in Boston to construct the final track and session grid. And

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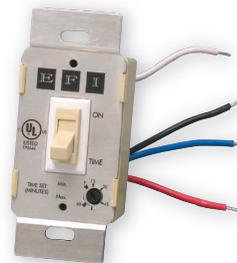
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In August 2010, the committee met at the Seaport World Trade Center in Boston. This time the group finalized the content within the nine BE11 tracks and the workshops.

traditionally there is one more rah-rah, get-out-the-troops meeting a couple of months before the conference. But aside from a few conference calls, since June most of the work has happened asynchronously, online, on the volunteers' own time. A big shout-out to Basecamp, the project planning/coordination tool by 37Signals. We've been using it since 2009, and it has proven invaluable for bringing the conference planning process to life. It makes the process transparent and easy to participate in, which has resulted in nuanced, informed, and often robust discussion about every issue, no matter how seemingly small.

For example, the topic "keynote" generated 56 separate postings with suggestions of both people to consider and the criteria to use to select them. "Women in Green" generated 28 posts, including discussion of whether we should even entertain such a session. "Would you buy this T-shirt?" generated 25 responses, including best place to purchase local, organic T-shirts. During the planning process NESEA central (the people in the office) began referring to BE as a "gathering of the tribes," which initiated a "NESEA-lively" debate on how it might be more exclusionary than inviting, and on how it might be interpreted by native peoples.

By the time BE11 starts, more than 3,000 volunteer hours will have been offered, shared, assimilated, and transformed into the experience that is BE. On-site, speakers and volunteers at registration, sessions, workshops, and so on will clock another 2,000 or so. Many people are starting to use the phrase "continuous improvement" to describe how a building learns and improves over time. It's a very apt description of how we build a conference too, given NESEA's 30-year tradition of listening to and learning from each other. Continuously improving. 

*Jennifer Marrapese is NESEA's executive director.
Mitch Anthony is a strategic consultant to NESEA.*

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Place and Sustainability

Beyond know-how and know-why to know-where: a preview of BE11's Whole Systems track

Photographs by Jamie Wolf

Each year at NESEA's BuildingEnergy conference, in a light-filled session room at the back of Boston's Seaport World Trade Center, the Whole Systems in Action (WSiA) collaborative invites the BE audience to do some whole-systems thinking together. In these sessions the questions are as important as the answers. No nuts. No bolts. Just deep observation.

Our BE track (one of nine—see the BE11 program in the center of this magazine) favors engaged inquiry over sage-on-the-stage PowerPoints. We take our inspiration from Amelia Amon's 2003 presentation "Aesthetics: Ignore at Our Peril" and NESEA's goal to create a multidisciplinary network guided by whole systems. So to plan the track each year, the collaborative convenes an online conversation that, over months, produces what we call nuggets: the ideas we are holding and the actions we're inspired to pursue. From these, a theme for the track emerges. We then construct settings and invite presenters who we hope will provoke conversation around our theme. Each BE session concludes with the documentation of its own nuggets.

This year the collaborative has chosen to organize the track around our understanding of place. We look beyond the qualities of know-how and know-why to know-where.

Here's a taste of what we are already learning. A chance encounter on the Martha's Vineyard ferry yielded a thoughtful dialog between session organizer Jess Lerner and John Abrams. It unpacks our theme very nicely. We are presenting John's thoughts alongside some of the WSiA collaborative's online nuggets (see page 23) from the past few months. Taken together they reveal something of the deep structure of wholeness that sustainability is helping us to rediscover.

— Jamie Wolf

Interview: John Abrams

The community building activist talks about the power of place

By Jess Lerner

On a recent ferry ride to Martha's Vineyard, I caught up with John Abrams, cofounder and CEO of the island's South Mountain Company (www.southmountain.com) and inspired community building activist. He recently published the book *Companies We Keep: Employee Ownership and the Business of Community and Place*, has helped contribute to a 50-year plan for the island, and chairs the advisory board of local energy cooperative Vineyard Power. He will also be part of our continuing dialogue on place during the Whole Systems in Action track at BE11. We spoke about place-based business, localization, the spark it takes for activism to happen, and how a connection to the land and community fuel vision, transformation, and possibility for the future.

Jess Lerner: How is South Mountain Company place-based, and what makes that unique and effective?

John Abrams: It's a small region, so our business is limited by the place. In order to achieve our goals, we have to change our community. So we become activists in those arenas where we have some expertise. We're able to change things by seeing the connection to community and making the commitment.

JL: Tell me how it works.

JA: Businesses usually provide a service or product. Here, it becomes broader, all the decisions are within a framework of a specific place. There's a sense of ownership. People live here, work here, raise families here. They become invested. That gives them a voice and power, and serves their interests. We've realized that although our client is the person or entity we serve, our client is also the neighborhood, the town, and the island.

JL: So what if someone lives somewhere that's not ideal, in suburban sprawl or in a very urban area where it's hard to make change? Is this sort of work still possible?

JA: Definitely. It can happen anywhere. You identify your issues, you figure out your locale. You could have a huge impact on one neighborhood block in Boston ... You divide it up. Someone else is doing that next block, someone else the next. Localization becomes powerful—where you are starts to define what you do. To those people who question where they are, I would ask, what can you do right here, instead of going over there?

JA: Exactly. People start to see that all it takes is the idea and the passion—and the sense that you can.

JL: How do you get people to see that and really understand that?

JA: First there's gotta be the sense that ... I want something to be different, and it's in my power to figure out how to make it different. It's about talking heart to heart ... giving inspiring examples. Sometimes all people need is that spark. To grind out all the really hard, backbreaking work year after year to make change ... there has to be that spark. And if it doesn't work with the first person, go to the next one.



Amelia Amon



Jess Lerner



John Abrams

“What can you do right here, instead of going over there?”

I was reading this article on Camden, New Jersey ... It's really a mess. It's the poorest city in this country. And I thought, what a place to fix! This is easy! It can't get worse!

JL: So it doesn't have to be a beautiful place. And if it's not, it's easier to work with and transform.

JL: We've talked a lot about place as where you live, make change, make community. Do you also have a deep connection to the land itself?

JA: I do feel connected to the land, but in my case it's surrounded by water—and I'm most at home in the mountains. But over time I have become incredibly connected to the land here. It's thirty-five years' worth of annual rhythms. Certain colors I see make me go, oh my god, we get to have that again? I can't believe it! Any human being in a place for a long period of time can't help but feel that magic. And every place has its own magic, right?

JL: So that fuels your investment. Do you think people need to feel that connection to make real environmental change happen?

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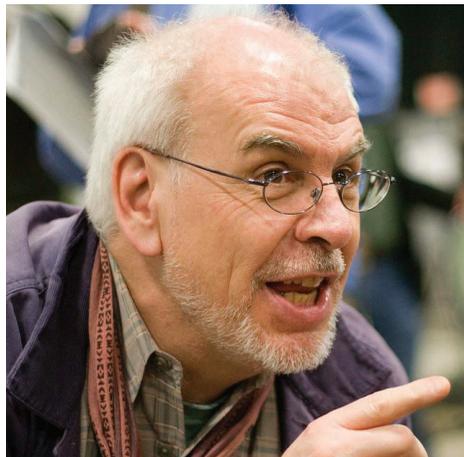
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JA: If you do something that's harmful to that land, it's not an intellectual exercise—it rips your heart out. That's the result of the long-term connection. You can't bear to do harm to that which you feel so strongly about and which you love so much. Being deeply connected to one place has always helped me see patterns in other places. I wonder if that's an experience not to be missed. That we need to be whole as humans. It's what I need.

“Where you are starts to define what you do.”

JL: You didn't plan to end up on Martha's Vineyard and said it wasn't your ideal place to live. What made it work for you?

JA: When we first got here, we couldn't stand it. We looked around and thought, oh no, we live here ... what are we going to do about that? And then we said, let's make it where we want to live!



Robert Leaver

We were always figuring out how to make community wherever we were. We gravitated to particular issues. It was always about housing and energy. And we're still working on the same damn project! In the sixties, we thought change would happen in a year or two, but it's taking fifty or a hundred! I've learned that everything doesn't have to happen tomorrow. Not only that, it won't happen tomorrow. Systems have to evolve ... if we can get something started here, pass it on to another generation, they will take it to places we haven't dreamed of. We're just getting started.

Jess Lerner, founder of Green on the Inside (www.greenontheinside.net), studied place and identity in grad school and is a member of the Whole Systems in Action collaborative.

From “Nuggets,” a BE11 Theme Emerges

Whole Systems in Action collaborative member Robert Leaver (pictured below) has, over a decades-long career, developed unique processes for eliciting and gathering input and insights from groups. One of these is the capture of “nuggets,” the themes and notices that emerge from group dialogue. The collaborative has come to embrace his nuggets approach. Here are some of the nuggets that emerged from their online discussions about the BuildingEnergy11 Whole Systems track.

It takes more than nuts and bolts to empower us for the deep, long work of sustainability. Place making demands rigor: craftsmanship, observation, patience, persistence, humility, passion.

The natural world fuses usefulness and beauty. Nature shows us, in infinite variety, systems cycling materials over and over, running on current solar income, at ambient temperature and pressure, constantly improving the fitness of the earth for life, enduring for eons—and which are staggeringly beautiful. Do we see any working model of sustainability that is not beautiful?



Sustainability involves a new constellation of relationships—to energy, hence to life: How to capture it better, store it better, value it better. The psychospiritual dimension to sustainability is: Where am I going to find the energy I need to fuel my creative adaptation to these challenges? Where do I find the energy to both pay my bills and reinvent how I live? When are ideas just ideas and when are they new sources of energy? These may require nonrational spiritual practices—meditation, health, community service—not more ideas or more analysis. It depends as surely on immersion in place as it does on ideas, expectations, and theories.

continued on page 45



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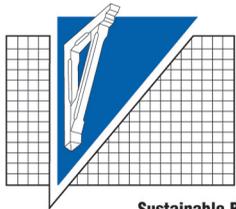
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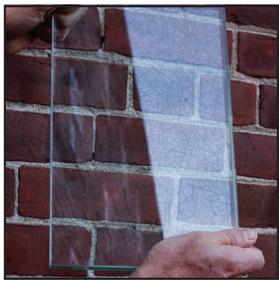
BuildingGreen's Top 10 Products for 2010

Bird-safe glass, museum-quality LED lighting, and more of the best green building products to hit the market last year

By Alex Wilson

For nine years running, BuildingGreen, publisher of the *GreenSpec Directory*, *Environmental Building News (EBN)*, and *LEED user.com*, has recognized what we consider to be the most exciting green building products of the year. Our "Top 10 Products for 2010" were selected, based on criteria we've developed over the past two decades, from the 200 listings added to *GreenSpec* last year. Manufacturers do not pay to be listed in *GreenSpec*, and BuildingGreen publications do not carry advertising. For more information, visit www.BuildingGreen.com.

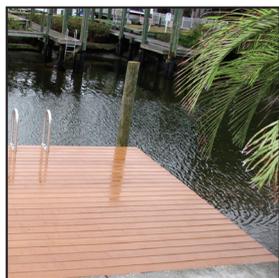
Ornilux bird-safe glass from Arnold Glas



More than 100 million birds are killed annually in the United States through

collisions with buildings. German company Arnold Glas's Ornilux glass has a random, sticklike pattern that reflects UV light, which is more visible to birds than to humans. It's available in two double-glazed, low-e, argon-filled configurations, as well as a triple-laminated configuration for outdoor displays and partitions. www.ornilux.com

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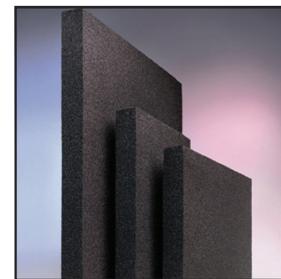


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www.foamglasinsulation.com

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Stealth toilet from Niagara Conservation Corp.



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toilet bowl, creating an air bubble. This bubble creates a vacuum during the flush to help evacuate waste. Unlike pressure-assist toilets, which also have a tank within a tank, the Stealth toilet is very quiet—even quieter than most gravity-flush toilets. www.niagaraconservation.com

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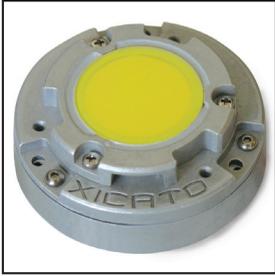
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Xicato LED Spot Module



The Xicato Spot Module (XSM) is an LED coupled with a separate heat sink, reflector,

and remote driver. Designed for use in place of MR16 halogen lamps, it uses “remote phosphor” technology to absorb off-color light from LEDs and produce high-quality white light with a color rendering index (CRI) of up to 98. Available with various light outputs and color temperatures, XSMs are used by several dozen light fixture manufacturers to produce the highest-quality LED lighting on the market today—suitable even for museums and art galleries. The efficacy is 45 to 55 lumens per watt for the standard module (with a CRI of 81) and 33 to 40 for the 98-CRI Artist Series. www.xicato.com

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Knoll Inc. produces a full line of commercial office furnishings in a wide range of styles,

materials, and finishes. Forest Stewardship Council (FSC)-certified wood is now standard in all of its standard wooden furniture lines. Knoll is the only furniture company—and perhaps the only company of its size in any market sector—that has made such a significant commitment to sustainable forestry and FSC. An environmental leader since the 1980s, Knoll has pioneered low-VOC powder

coatings, near-zero-waste manufacturing, and other green practices. www.knoll.com

Wilo variable-frequency-drive “smart” pumps



Pumping can account for as much as a fifth of electricity use in commercial buildings, and

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single-speed pumps. Using advanced circuitry logic, the pumps analyze their own rotational speed and current draw to compute where the unit is on its “pump curve” and then optimize pump speed accordingly. Manufactured in Germany, these pumps are used for hydronic heating and other water-circulation applications. Because they adapt to changing water-circulation demands by altering flow, they avoid the problem of pump oversizing—the primary reason so much energy is wasted in water pumping. www.wilo-usa.com

Alex Wilson, founder of BuildingGreen and executive editor of Environmental Building News and GreenSpec, is the 2010 recipient of the Hanley Award for Vision and Leadership in Sustainable Housing. He was NESEA’s executive director from 1980 to 1985.

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A Model Retrofit

In New Hampshire, an aging school achieves radical energy savings—and a more comfortable setting for learning

By Marc Rosenbaum
Photographs by Matthew Cavanaugh



Much of New England depends on oil for both transportation and heating, so we are doubly vulnerable to price instability and shortages. The 2008 oil price shock hit Plainfield, New Hampshire, where I lived for 31 years, especially hard as an overage in our K-8 school budget. That fall I worked with the elementary school's volunteer facilities committee to develop an integrated solution for the building: we wanted to simultaneously save energy and remediate serious deficiencies. In the summer of 2009, we did a deep energy retrofit on a single classroom. Our results were extraordinary—and completely replicable all across our region. Plainfield voters enthusiastically committed to upgrading more classrooms. So far, about a quarter of the school has been retrofitted.

This project is garnering attention due to its radical energy savings. But we shouldn't lose sight of the integrated solution. We've addressed not only energy, but also noise, air quality, moisture, durability, and comfort, all while bringing a community together, educating kids about sustainability, and raising awareness of what's possible.

Leaky building, subpar systems

Plainfield Elementary School was built in 1972 and enlarged in 1989 and 2000 for a total of 35,000 square feet. The 1972 building is a slab-on-grade single-story building with a flat roof. Much of its steel structure effectively bridges the little thermal insulation it has. Due to concerns about structural adequacy to meet current codes, insulation has not been added to the building during reroofs. The 1989 wing, also slab-on-grade and single-level, is wood-frame construction with pitched roof trusses. Significant ice dams prompted an attic air-sealing effort, and at that time cellulose was blown in. The 2000 wing's construction is similar to 1989's, although a somewhat more complex design contributes to air leakage. The gym, part of the original construction, is uninsulated block with a steel structure above. It is extremely leaky: my blower door was able to depressurize the space to only 13 pascals, a far cry from the standard 50 pascals. A few hours with the blower door and a theatrical fog machine showed a school with unacceptably high air leakage all over. The wall where it sat on the foundation was a consistent leakage zone.

Before the facilities committee became actively involved, the school was using about 21,000 gallons of fuel oil and 215,000 kWh

in electricity annually. The attic repair work in the 1989 wing, some mechanical and control system repairs, and operational and behavioral changes contributed to energy savings of 6,000 gallons of oil and 34,000 kWh annually. These gains cost little and built awareness that significant improvements were possible and desirable. However, in addition to high energy usage, the Plainfield School suffers from a plethora of other problems. The mechanical systems in the two older parts of the building are beyond their useful life and in any case have always functioned poorly while making a racket. A teacher can either have ventilation or be heard in the classroom—not both at the same time. The school experiences drafts and wide temperature variations. Some envelope issues resulted in water leakage and subsequent decay and mold. Many windows are in poor condition and even inoperable. The T-111 siding near grade has warped and delaminated.

To start: a prototype classroom

The facilities committee proposed to the school board a prototype classroom: a deep energy retrofit (DER) of one 900-square-foot corner classroom in the 1989 wing that would serve as a model of what we might achieve across the entire school in years ahead. We would disconnect it from the oil-fired heating system and remove the noisy ventilator, replacing these with an air-source minisplit heat pump to supply heating (and cooling occasionally) and a residential-scale energy recovery ventilator (ERV) to supply fresh air. We would also radically upgrade the insulation, adding 3 inches of foam to the foundation and 6½ inches to the walls, and installing quad-glazed windows with double the insulating value of typical new windows. The roof insulation had been previously addressed. In the process, we would also make this room far more airtight and install new, durable siding on the walls. In March 2009, the school district’s voters approved a warrant article to fund the project. The work was done that summer, and the classroom was ready when school reopened.

The perimeter of the foundation was dug out to a depth of 2 feet, and 3 inches of Type IX expanded polystyrene (EPS) treated with a borate compound to increase insect resistance were added down the foundation wall and out horizontally 2 feet. We stripped the bottom 2 feet of the T-111 from the frame wall and replaced it with new oriented strand board (OSB), and then sealed all joints with

either caulk or peel-and-stick tape to create an air barrier. Then we installed a layer of 3-inch polyisocyanurate foam insulation, with a layer of 3½ inch Nudura EPS with integral wood nailers on top. Over that was a layer of house wrap and polypropylene drainage mesh, then local pine tongue-and-groove horizontal siding.

Window rough openings were extended with 2x framed bucks fastened with long screws to the existing rough opening. We chose Serious Materials 925 series windows with an overall insulating value of about R-6 (Serious Materials donated the windows and provided shop drawings and technical support). A combination of fixed and operable sash, they are made from hollow fiberglass pultrusions filled with polyurethane foam insulation. The glazing suspends two layers of Heat Mirror low-e film inside two layers of clear glass, with krypton gas fill and warm edge spacers.

The new Mitsubishi Hyperheat air-source heat pump retains 75 percent of its rated capacity at -13°F and operates down to -30°F. No backup heat was installed. Minisplits are simpler, more reliable, and much less costly than ground-source heat pumps—which enabled us to spend more on the envelope. The ERV we used was a Renewaire EV200. It recovers both sensible heat and moisture from the exhaust air and transfers them to the fresh air. I measured 85 percent effectiveness from this unit: on a morning that was



The insulation was radically upgraded.



Quad-glazed, R-6 windows.



The prototype’s ERV can be seen in the background.

-3 degrees, the exhaust air was 70 degrees and the incoming air was slightly above 59 degrees. This worked without postheating because we used a soft fabric duct with many small holes to distribute the air with rapid entrainment of room air to prevent drafts.

At a Glance A Prototype Classroom

Where:

Plainfield Elementary School,
New Hampshire

What:

Deep energy retrofit of a
900-square-foot classroom

How:

Mitsubishi Hyperheat
air-source minisplit heat pump

Renewaire EV200
residential-scale ERV

Radically upgraded insulation
and air sealing

Quad-glazed Serious Materials
windows

Before:

Budget-busting fuel bills

Drafts

Wide temperature variations

Noisy, disruptive ventilation
system

After:

90 percent reduction in heating
costs

A more comfortable, quiet
classroom

Better air quality

Townwide commitment to
further improvements

Awareness of what is possible

A dramatic difference

The classroom was equipped with meters to measure the energy used by the ventilation system and the heat pump, and with Onset Computer Hobo data loggers to track classroom temperature, relative humidity, and, as a surrogate for indoor air quality, carbon dioxide levels. We also kept in close contact with the room's users.

The differences both measured and experienced were profound. The room was dramatically more comfortable, quieter, and better ventilated than its counterparts. Relative humidity was in the comfort zone of 30 to 35 percent, much higher than the rest of the school. Carbon dioxide levels during occupancy were usually 1,000 to 1,200 ppm. Because the prototype classroom was quiet and comfortable, after-hours teacher meetings tended to gravitate to it. Even though the temperature was set back over the weekends, the prototype classroom cooled much more slowly than other rooms.

The measured data showed that the heating cost per square foot for the prototype room was about 90 percent less than the rest of the school! From January 8 through June 18, the heat pump used 347 kWh over a period consisting of 3,576



The touchpad controller for the heat pump.



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Building on the success of the prototype classroom, the town renovated the balance of the 1989 wing. Its flat-roofed section is distinguished from the old by the fat trim.



School facilities director Bill Knight shows a visitor the AG-150 touchpad controller for the Mitsubishi heat pump that heats and cools the renovated wing.

heating degree days, slightly below half of a typical heating season. The lights averaged 25 to 26 hours on per week, and the ERV averaged 33 run hours weekly. Total annual energy usage for heating, cooling, ventilation, lighting, and plug loads was projected to be under 30 cents per square foot annually. It appeared that the prototype could achieve zero net energy—all energy use offset by on-site renewable energy—with a 2 kilowatt solar electric system. If we imagine extending these savings to the rest of the school, it's possible this school could achieve zero net energy with a 75- to 100-kilowatt solar electric system, costing perhaps \$450,000 to \$600,000. This seems like a big number, yet compare this to an annual energy cost of about \$80,000 for the school—a number that no one believes is likely to go down in the future.

into the building for 20 years. Because of the previous reluctance to add insulation to the flat roofs, we included funds to have a structural engineer review the entire steel structure and recommend needed upgrades. An additional steel plate had to be welded onto the bottoms of some beams. The portion of flat roof that was part of the 1989 wing upgrade received 12-inch-thick stress skin panels with an EPS core (which provided an overhang for the added wall thickness below) and a tapered foam layer above to properly pitch the roof to drains. The mechanical system for the rest of the wing was a roof-mounted 8-ton Mitsubishi Hyperheat with eleven indoor zones, plus a slightly larger ERV, the EV300, from Renewaire.

Plainfield voters: Onward

Based on our success, the facilities committee and the school board went back to the voters in March of 2010 for a \$275,000 bond to extend the prototype classroom approach to the balance of the 1989 building, about 8,000 square feet. The bond passed with 77 percent of the vote. This project included a portion of flat-roof building, providing an opportunity to remedy an improperly pitched roof that had leaked water



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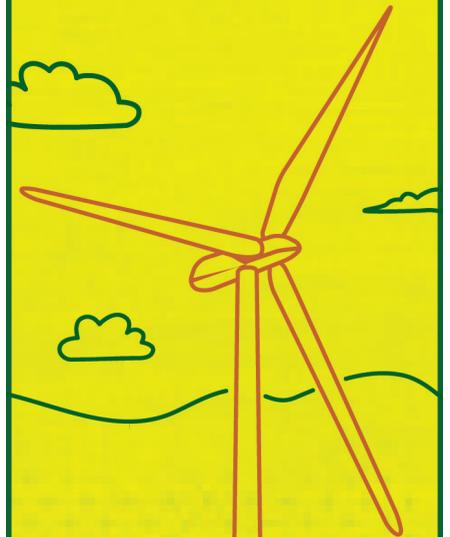
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At this point, roughly a quarter of the school has been retrofitted. And with this phased approach, further improvements can be accomplished as the town can afford it.

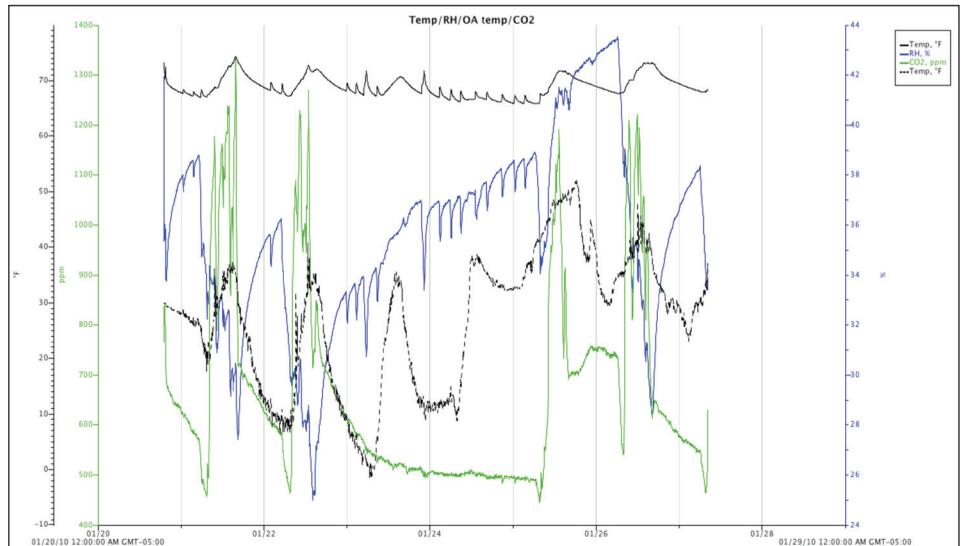
This has been a true community project. The school facilities director, Bill Knight, acted as the construction manager and hired local builders and tradesmen. This not only kept the spending local but also dispersed the skills, knowledge, and enthusiasm to do more DERs in our community. The educational value for the students has been immense. People's understanding of what is possible has been greatly expanded, and the performance of the building has become a source of pride in Plainfield. A community has come together to upgrade its school and secure its benefit for the future.



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Marc Rosenbaum, PE, works for South Mountain Company on Martha's Vineyard, Massachusetts.



The numbers confirmed what teachers and students already knew: the prototype classroom was dramatically more comfortable and better ventilated than its counterparts. Onset Computer Hobo data loggers were used to measure indoor (T) and outdoor temperatures and indoor relative humidity (RH) and carbon dioxide (CO2) levels. The data show all three within the comfort range over a wide variation in outdoor temperature.



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Perspective Drawing

How do an architect and an engineer learn to hear each other? They learn to listen

By Kate Goldstein

Photographs by Matthew Cavanaugh

If you were to ask a large group of people whether they could identify a familiar song if someone were tapping the rhythm, most would say yes. When the experiment is actually performed, however, one or two people at most can make out the rhythm. The tapper sits in disbelief: with the song ringing clear and true in his or her own mind, it seems impossible that the others can't hear it as well. In their book *Made to Stick*, Chip and Dan Heath call this phenomenon "the burden of knowledge."

And so it goes between architects, engineers, and the poor client caught somewhere in the middle. The engineer hears the logic of physics and mathematics while, as Jamie Wolf [of the WSiA collaborative and Wolfworks] says, "the architect hears shape and form." We so easily become entrenched in the language and rhythm of what we do and with whom we do it. We forget that our most important work, that which will be remembered and treasured, occurs when we dare to listen to someone else's tapping.

We often simply avoid explaining our work because of the energy it takes to deconstruct our logic and then build it back up in a way that makes sense to the other.

Spreadsheet versus tracing paper

I am an engineer (in training), and Oscar is an architect (in training). We are in a relationship. On any given night, you will find us tapping in parallel within our small apartment in Cambridge. On any given night, I have a spreadsheet open, and he sits with reams of tracing paper spread across what we once thought of as our kitchen table. Both of us listen to and are guided by our own sound track, and rarely do we hear or even dare to ask what the other is playing. We often simply avoid explaining our work because of the energy it takes to deconstruct our logic and then build it back up in a way that makes sense to the other. With a colleague in engineering, I would start at the end,



Oscar Anderson, architect, and Kate Goldstein, engineer, sometimes struggle to use their indoor voices as they learn to listen to, and hear, each other.

explaining the final product. But with Oscar, it is my challenge, my responsibility, and in my best interest to start back at the beginning of my thought process. It is his charge to do the same for me.

One night around one a.m., Oscar had just finished the final assignment for his perspective drawing class. It had come together in a flurry; something suddenly clicked for him, and four hours later, his page had come alive. Distracted by my own work, I had missed this magical albeit frenzied process. When I finally looked up, I was taken aback. "How did you do it?" I asked, needing to convince myself that it was not magic but method that created this work.

Gesturing toward the plan view, Oscar said, "I placed myself here in the plan." Then back to his drawing, "And that corresponded to my view from this back corner." Pointing to another spot on the plans, he said, "And I did the same thing here. This part of the plan is this part of the

perspective over here. I just looked out of the drawing.”

This was completely unsatisfactory for me; it sounded way too much like magic. “But the lines, how did you get this line right here, how did you know what angle to draw it at?” Slightly confused, he explained again, in more or less the same way. I was now defensive. “No, I just want to know how you knew to draw this angle, this one, right here. How did you figure that out?”

It has taken Oscar and me a little bit of time and practice to end our sharing sessions in our indoor voices.

He paused, cocked his head, and pointed to a series of small tick marks at the bottom of the page. “I used these.”

Method versus visualization

Now it made sense to me. All I wanted was angles. All I wanted was method—a method with which I could go back and reconstruct everything myself. But this wasn’t the way Oscar viewed the process. For him, it was about visualization. He thinks by turning, twisting, and playing with form in his mind, by using imagination to become a part of the dimensions on the page. I, on the other hand, think by referencing my understanding of the workings of the world. I find meaning in the rules that give order to my universe. To explain his process to me, Oscar had to rethink his methodology, highlighting the aspects that were simply details to him.

So Oscar and I have learned that when we do try to communicate our work to one another, we must integrate into our explanations an appreciation and understanding of the other’s work by building back up in the other’s vernacular. This is not only a dialectical vernacular but also one of thought processes, strengths, and ideas. It takes into account disparate training and different ways of placing meaning on the world. When we do this, we each gain the insight of a new world seen through the other’s eyes. Our own work gains strength, takes on new meaning, and becomes more cohesive.

How much would it really take for all of us to start tapping our fingers in time with our other halves and make their rhythms, their reality, our very own? To take ownership of what makes sense to them? Even after a long day (or career), when we feel like it’s just too much to relearn what we know through someone else’s eyes, we need to go back to why we started tapping our songs in the first place. When we do, we find that we have been tapping the very same song all along. We were just too busy listening to ourselves to hear one another.

While it has taken Oscar and me a little bit of time and practice to end our sharing sessions in our indoor voices, we’re getting a lot better at it. It was just too important not to. And if we can learn to hear each other, so can other engineers and architects. It’s just too important not to. 

Kate Goldstein is a PhD student in building technology at MIT. Oscar Anderson is both a student at the Boston Architectural College and an employee of PCA Inc.



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A New Tax Policy for the 21st Century

Let's revitalize the US economy by replacing all federal revenues with a simple energy tax

By Fred Unger

America needs new answers regarding energy, economics, and the environment. There are no real solutions on the table. And everybody knows it.

One radically simple proposal could work: replace all federal government revenue with a simple energy tax. That may sound impossible. But it is a far more realistic approach to the problems our country faces than the pseudo-solutions that make their way through Congress these days.

This idea could inspire and appeal to Americans across the political spectrum while igniting an unprecedented era of economic prosperity. Along with radically reducing energy waste and pollution, it could release our society from the burdens and economic distortions of our current tax system, make our economy vastly more efficient and our industries far more competitive internationally, and provide the security of greater energy independence.

The numbers work

According to the US Energy Information Agency, in 2009 our country consumed about 18.8 million (18,771,400) barrels of petroleum a day, the equivalent of more than 287 billion (287,765,562,000) gallons of petroleum a year.

The Congressional Budget Office reports that all federal revenues for fiscal year 2010 were about \$2.2 trillion (\$2,162,000,000,000). That includes all individual income tax, corporate income tax, investment taxes, social security tax, disability insurance, hospital insurance, unemployment insurance, excise taxes, fees, energy and transportation taxes, and every other form of federal government revenue other than debt.

Doing the math, if we replaced every source of government revenue with a tax on petroleum, that tax would be only \$7.51 per gallon. And if you add the average mid-December 2010 cost of premium gasoline of \$2.85 a gallon (before taxes), the total price on gasoline and other petroleum products would average about \$10.36 per gallon.

That isn't a whole lot more than average prices for premium gasoline in Europe in mid-December 2010, as reported by the US Energy Information Agency: Belgium, \$7.42; France, \$7.15; Germany, \$7.39; Italy, \$7.19; Netherlands, \$7.93; UK, \$7.31. And those countries are burdened with massive taxes on top of high energy prices.

Along with paying far more for petroleum, in 2009 Europeans paid about twice what Americans paid for natural gas and coal. If our federal energy taxes roughly doubled the price of both the billion-plus short tons of coal and the 23 trillion cubic feet of natural gas we consume each year, that could partially offset and reduce taxes on petroleum, leaving our overall level cost of energy around the same as Europeans currently pay—while replacing all other forms of government revenue completely.

Most sensible people would favor the opportunity to adopt a European level of energy prices in exchange for no government interference with business revenues and personal income.

To keep American industry competitive, the feds should also collect a tariff on goods from countries that don't implement similar levels of taxation on energy. That unilateral action would do far more to spur responsible energy policy worldwide than well-intentioned but unenforceable international treaties. At the same time it could further reduce energy taxes or help offset the federal budget deficit.

Most sensible people would favor the opportunity to adopt a European level of energy prices in exchange for no government interference with business revenues and personal income: no IRS, no income taxes, no payroll taxes, no business taxes, no inheritance taxes, no government fees.

The obvious pushback

Many will argue that high price signals will encourage energy conservation and alternative energy resources, thus putting government revenues at risk.

Radically reducing energy waste and pollution is one of

the fundamental benefits of this proposal. Reducing the need for military adventures and compromised foreign policy to secure oil are other intended benefits. With the Congressional Budget Office reporting that federal expenditures are now more than twice what was spent in the year 2000, most Americans are also ready to see the excesses of government spending and intrusions into the economy constrained.

As the idea of tax shifting is taken seriously and refined, we can likely find consensus to tax other wasteful or counterproductive activities. With a shift to rational taxation, we can balance our federal budget and pay down our out-of-control federal debt, while more appropriately aligned market forces improve our lives and the environment.

We should begin the tax-shift conversation by recognizing how affordable it could be to align rational revenue policy with sensible market mechanisms that would encourage economic prosperity, job and business growth, broadly shared environmental and clean-energy goals, and the basic principles of personal freedom and liberty that our country was founded upon.

Big changes for big challenges

Minor adjustments to the sclerotic, contradictory patchwork of public policies that have emerged over the decades won't address the massive challenges that confront our nation. As we face continuing economic stagnation and pass the era of peak oil production, it's time to get serious about transforming our economy

and restoring our economic productivity. We need to rethink the role of government and how we fund it.

It is clear from polls that most Americans are fed up with Congress, the federal government, and politicians from both parties. Everyone hates the complexity, irrationality, and obvious corruption of our tax system, which discourages work, productivity, entrepreneurship, job creation, and almost every other goal and fundamental value that our economy is purported to be based upon.

This proposed tax shift represents a real test for clean-energy advocates, environmentalists, and political liberals, conservatives, and libertarians alike to match our rhetoric with good policy solutions.

Think of the productivity gains that would be unleashed if businesses could make decisions based on common sense rather than manipulations of the tax code.

Think of the jobs that would be created if we no longer imposed punishing taxes on working and productive investment, if we eliminated the insane tax subsidies for shifting industrial productivity overseas, and if we eliminated the payroll tax penalties on hiring.

Think of the time, money, and talent that would be freed up if we no longer had to spend countless hours and dollars reporting our personal business to the government. The IRS itself estimates that about 7.75



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billion hours of human labor went into completing 2009 tax forms—and that doesn't include the vast amounts of time and money spent figuring out how to game the system and avoid taxes.

Making the transition

Change this profound couldn't and shouldn't happen overnight. We should plan a transition over at least 15 years, first replacing the most regressive and counterproductive forms of taxation, like payroll taxes, with energy taxes, and then phasing out other forms of taxation while increasing energy taxes. The transition period would give businesses and individuals time to make appropriate plans and investments for the future. The certainty associated with substantial energy taxes would do far more than any other solution being proposed to encourage investment in energy conservation and clean energy.

To minimize the cost, complexity, and impacts of tax collection, energy taxes should be implemented at the wholesale level, at the mine, well, or port of entry. Another technicality that could help ease the transition would be a ratchet mechanism on energy prices. Whenever market forces pushed energy prices up, they would be allowed to rise, but as energy prices declined, energy taxes would rise at a matching rate. This would have the added benefit of discouraging unproductive speculation in energy trading markets.

Change this fundamental would affect every American. Inevitably, the winners and losers will lobby madly to turn a simple idea into the complicated sausage making that is the hallmark of Congress. But if we insist that its simplicity and transparency are critical to its success, perhaps a bold proposition like this could gain enough support to overcome the corrupting influence of lobbyists.

Why tax fossil fuels?

Energy is the lifeblood of a modern economy. The highly concentrated energy available from fossil fuels is a precious resource both for us and for future generations. Unlike metals or other materials that can be readily recycled in a prudent society, once mined and burned, fossil fuels are gone forever. They shouldn't be squandered but rather husbanded wisely, as higher prices would encourage. Balance of trade deficits, compromised foreign policy, pollution, the cost of military entanglements, and other challenges resulting from our fossil fuel addiction offer clear reasons to focus taxation on fossil fuels. It is far past time to put a fair price on the costs of the traditional energy industry's "economic externalities."

Arguably, irreplaceable fossil fuels that have taken millions of years to form should be considered common resources that provide benefits for the common good.

Although we begrudgingly accept being forced to pay such taxes today, government funding through the confiscation of the fruits of citizens' work and investment is actually far less rationally or morally justified.

Finding broad-based consensus

We all need to overcome our fear of sensible change. This proposed tax shift represents a real test for clean-energy advocates, environmentalists, and political liberals, conservatives, and libertarians alike to match our rhetoric with good policy solutions. Are conservatives really willing to effectively promote liberty, economic efficiency, and fair free markets? Are liberals able to admit that like so many federal policies they have supported, our convoluted tax system is completely failing to meet their progressive goals? Are libertarians able to admit that there is a role for government and that collecting taxes rationally is better than the corrupt irrational system of taxation we have today? Are environmentalists ready to support policies that are economically sensible? Are clean-energy advocates ready to compete in a fair marketplace rather than begging for government subsidies? Rather than blaming others for our nation's problems, we all need to focus on finding solutions sensible enough to garner broad support.

Let's start taxing waste and pollution instead of punishing people for working, creating jobs, and making productive investments.

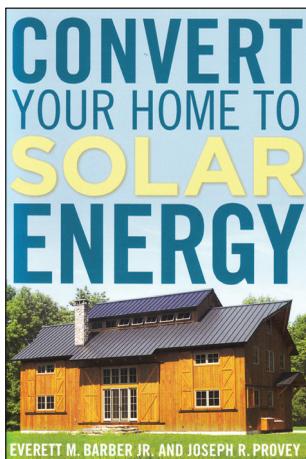
Let's try real market-oriented solutions and restore the economic competitiveness our nation enjoyed before every aspect of the economy was micromanaged by the government and manipulated for tax reasons.

Let's encourage conservation of our limited fossil fuel reserves so we don't impoverish our children, grandchildren, and planet with our profligate waste.

Let's fundamentally reform the American economy with a government funding system that doesn't undermine the most essential ideals and principles of our national heritage.

Let's support an idea bold enough, simple enough, and compelling enough to actually work. 

Fred Unger has worked for over three decades in green building, building envelope engineering, real estate development, and renewable energy project development. He has served on NESEA's board of directors and chaired the 2003 Building Energy conference. Visit his blog, Emerging Consensus, at emergingconsensus.wordpress.com.



Convert Your Home to Solar Energy

Everett M. Barber Jr. and Joseph R. Provey
Taunton Press, 2010

By Joel Gordes

I read my first serious energy book—*Energy for Survival*, by Wilson Clark—in 1975 and was particularly fascinated by its discussion of solar energy. One name that came up was a National Bureau of Standards engineer named Everett Barber, who promoted government deployment of solar technology. The book said he lived in Connecticut, and I hoped I might meet him someday. Four years later, I did, and I remember the day well. But I had to wait 30 more years for this book, which he is one of most qualified people in the world to write.

While this book is aimed at the residential market, it is in-depth enough to be an incredible resource to architects or anyone interested in the solar energy field. Having taught courses on solar energy for years, I can say that with a few tweaks it would make an excellent textbook. It covers topics essential for a thorough understanding of solar energy design: such basics as heat flows and principles of solar energy, including motions of the sun. Armed with these basics, readers can discern the hype from the reality. Particularly helpful are the many sidebars or full

pages that deal with a topic in more detail. While these “Tech Corners” go deeper than the casual reader might like, they will appeal to those who wish to become professionals in the field. The many charts and tables are also extremely useful—I would have liked to see even more of them.

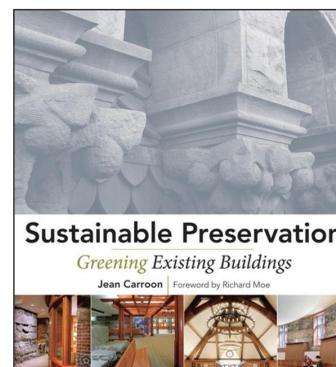
If this book makes any one fact clear, it is that residential solar energy is actually a very broad topic. While the vast majority of it concerns the bread and butter of solar hot water, space heating, pool heating, and electricity production, it also covers daylighting, transportation, solar ovens, dryers, water purifiers, and active versus passive systems (often a source of confusion for amateurs) extremely well.

This book also separates what works from what does not, or goes to the heart of why something that works may not be the optimal choice. A good example of this is the discussion of the envelope home—essentially a house built within a house—which was popular in the late 1970s and into the 1980s and still has its proponents. The author subtly explains the principle yet is unafraid to point out the design’s shortcomings, among them safety considerations and unpredictable performance. Another important concept here is that more is not necessarily better, even when that more is renewable. Barber offers designers and consumers alike the lesson that “some is good, more is better, but enough is best,” which is well in line with the whole concept of diminishing returns as well as sustainability. This does bring up one shortcoming in the book: At least one photo shows a 4,500-square-foot home that makes use of several solar technologies, the subliminal message being that you have to be wealthy to employ solar. Taunton Press does have a reputation for appealing to high-end consumers (*Fine Homebuilding* magazine), so this should be no

surprise, but it does give a mixed message. This may be offset by the book’s other photos of more modest, human-scale homes.

Maybe the icing on the cake is that under “Further Reading,” Barber gives a tip-o’-the-hat to this very magazine as a source of information—which I have never seen in all the books I have reviewed over the years.

Joel Gordes has been involved in energy efficiency and renewable energy for more than 35 years. He has worked with active systems and passive homes, as well issues related to energy policy and security. He also serves on the Northeast Sun editorial board.



Sustainable Preservation: Greening Existing Buildings

Jean Carroon
Wiley, 2010

By Mitch Anthony

When you consider the built environment as a whole system—one that balances social and cultural needs, energy use, resource stewardship, and environmental and health impacts—the greenest building is one that already exists.

If you need to be convinced (or need to convince others) that preservation is the new modern, start with *Sustainable Preservation: Greening Existing Buildings*, by Jean Carroon. She’s got the data points, the

practices, and the case studies to demonstrate that when sustainability is truly the goal, it's usually best to repair, reuse, and recycle the buildings we already have.

The book connects the dots from multiple points of view. Embodied energy and carbon? They're reason alone to start with what you've got. Durability and repairability? There's two more. How about use of local materials, ability to function after system failure, ability to adapt and change? The case gets more and more compelling. By the time Carroon gets around to walkability, streets as commons, and orientation to transit, she's got a trial lawyer's briefcase of testimony on her side.

Carroon is anything but confrontational, though. She doesn't have to be. As head of Boston-based design and planning firm Goody Clancy's preservation and renovation practice, she knows how to help buildings—and the communities they help make—learn and change. And here, she has quietly and confidently cataloged what she and others have learned while making buildings better.

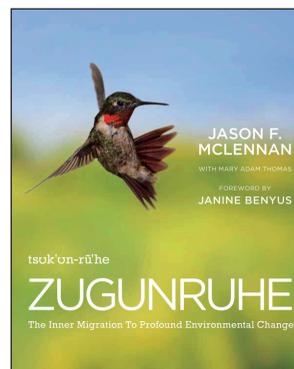
Appropriately, she devotes the first quarter or more of the book to a systems view of buildings and their place in the communities they serve. She covers the basics, defining holistic design, what makes buildings green, and sustainable design versus sustainable development. (Development treats sustainability as an overarching goal that integrates energy and environmental stewardship with social needs, the preservation of cultural heritage, and economic and political contexts.) She designates the "triple bottom line" of "people, planet, and profit" as the best measure of success, and—significantly—provides the tools, metrics, and processes that allow practitioners to meet such lofty goals.

In a major section on resource conservation, informed and insightful

essays show how water and land use, energy, indoor health, and materials optimization connect. Each of these clever ideas is then illustrated with case studies. Fifty significant buildings, owned by groups as diverse as a food co-op, major universities, and the federal government, are re-viewed. A final section focuses on the social engineering such an approach to building requires.

"A building isn't something you finish," Carroon quotes Stewart Brand as saying. "A building is something you start." *Sustainable Preservation* is a very good, practical guidebook to that continual process of improvement. It's also a motivational manifesto that urges, yes, you can do this at home.

Mitch Anthony, a strategic consultant to NESEA, calls himself a facilitator, discoverer, and cat herder. He's a systems thinker who uses design and branding processes to improve organizational effectiveness.



Zugunruhe

Jason F. McLennan
Foreword by Janine Benyus
Ecotone, 2011

By Jeff Aho

Unlike Jason McLennan's earlier books, *Zugunruhe* is not intended to expand the knowledge of his fellow students of architecture. Instead, and arguably far more importantly, this

deceptively simple yet weighty, powerful book provides encouragement and direction for his fellow humans in the face of inestimable environmental challenges. It's designed as a guide to reasonable and effective ways of thinking that can bridge the gap between the usually isolated islands of "doing" and "being."

The word *zugunruhe* is an ethological term describing the restless and anxious behaviors of certain species before migration. Here, it is here applied to people who unconsciously and sometimes inexplicably begin to focus on becoming part of the solution to our environmental challenges. Once these people have "awakened" to the issues we face, McLennan argues, they can't "go back to sleep."

So instead of tramping again over well-trod ground and adding to the problem-focused literature on the environment, McLennan describes ways to change oneself; ways to achieve the "deep personal effectiveness" necessary to undertake community and civilizational change on the scale that confronts us; ways to prepare for the major "migration" we as a species will begin (prepared and willing or not) as we attempt to adapt to the environmental realities imposed upon us.

Using short, distilled verses called Gwersi to capture each chapter's essence, by the end of *Zugunruhe* McLennan has sketched out a way of being that must underpin any larger plans for doing. Many of these Gwersi reflect the reality that our current and historical ways of thinking have created the structures that have gotten us into this situation, and that to attempt to change those structures without addressing the underlying belief systems that created them is another exercise in futility and wasted energy. As Sandy Wiggins says in her conclusion to the book (one of ten), "You can't change the way others act, but you can help them change the mindset from which



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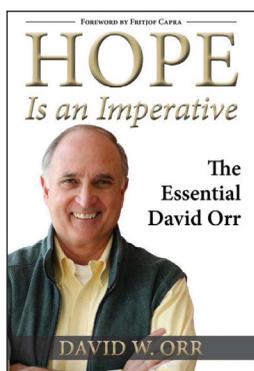


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their actions emanate.” For McLennan, action follows belief and doing follows being, but the collective must also follow the individual.

This book is not for those unwilling to reexamine themselves from basic principles, nor for those able to change only when change is forced upon them. It is for those who “can’t go back to sleep,” who now find themselves in *zugunruhe* and can’t see a way to transform themselves and their communities—perhaps because of the artificially limited nature of current environmental discussion and literature, or because of corporate interests or greenwashing or any other of the myriad obstacles that stand between us and success. McLennan shows the way by battling environmental doom and gloom not with hybrid cars and more recycling, but with hopeful and achievable internal transformation.

Jeff Aho lives in western Massachusetts. He is active in the field of sustainable energy, communities, and civilizations and reads and writes extensively on those and related topics.



Hope Is an Imperative

David Orr
Island Press, 2010

By Arianna Alexandra Grindrod

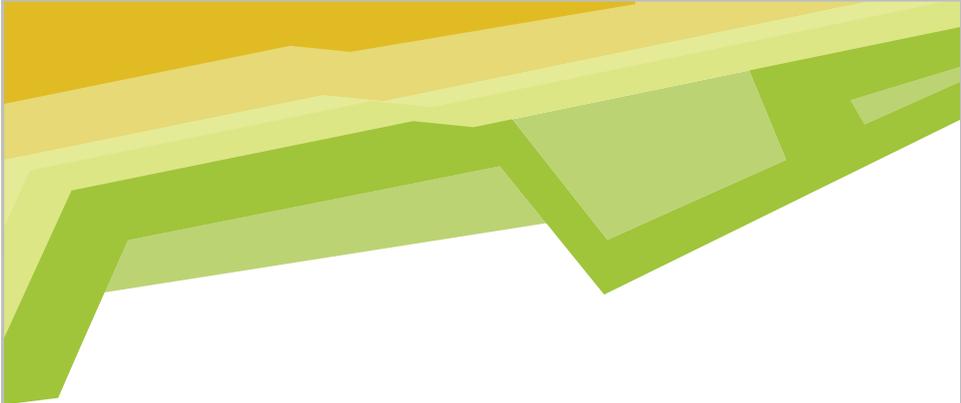
If for some reason you have never heard of David Orr, The Essential David Orr will get you caught up. It

contains all the articles he’s written over the years, woven together and updated to form a cohesive expression of hope for a sustainable tomorrow. Orr lays out our societal blocks candidly, examines them, and then plainly and honestly states next steps. Steps that, while not necessarily easy, will help us evolve beyond current cultural constructs. This book dares you to be humble and not react to ignorance and arrogance but rather reflect and respond with care and integrity.

Each chapter grapples with what it means to be sustainable and to truly account for the biota in our economy and design. In “Verbicide” Orr discusses our declining literacy and how a diminished vocabulary deprives us of rich understanding. “Speed” challenges our assumptions of bigger, better, and faster and gets us thinking about the nature

of velocity and time. And about the need to recalibrate our policies and habits “to promote a more durable prosperity.” In “Four Challenges of Sustainability” he writes, “The overall challenge of sustainability is to avoid crossing irreversible thresholds that damage the life systems of Earth while creating long-term arrangements that secure the well-being of the present and future generations.” How do we meet this challenge in a society operating under the belief that we can live beyond our means, that we do not need to take the future into consideration, that technology will save us?

In several essays, including “Orr’s Laws,” Orr asks to what end we work toward efficiency. Does the efficiency restore the community or alienate members of it? Do the efficiency measures work with the principles of nature or against them?



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For example, being neighborly is not necessarily an efficient use of time on a given day, he says, but in the long run it fosters a mutually beneficial relationship. Energy efficiency is of course in alignment with natural laws and is a healthy use of our time (congratulations, NESEA members). In addition to thoughtful efficiency, we need thoughtful design, as Orr elaborates in “Two Meanings of Sustainability” and other essays on sustainability. Ecological design within the built environment uses nature as the model, for our resiliency “depends upon replicating the structure and function of natural systems.”

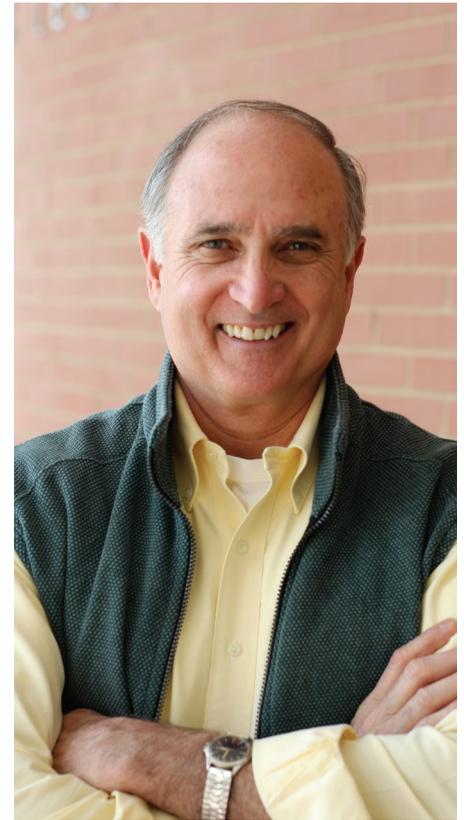
Throughout the book, Orr poses provocative questions. For instance, “What exactly do we intend to sustain and what will it require of us?” The reader is compelled to ponder, What are my passions? Where are they leading me? What can I do now with the time I have? What can I imagine for a bright, healthy, resilient future?

This book begins and ends by challenging and encouraging those who profess to lead, to teach, to do good in the world: Demonstrate your worth. Be humble, be honest, be visionary. Act. Study, love, appreciate, work with, and emulate what gives us life, purpose, connection, and beauty.

Arianna Grindrod is NESEA's education director. She holds an MS in environmental administration from Antioch New England Graduate School and has more than 18 years of experience in teaching and curriculum development in environmental and community education.

— BE11 —

See David Orr! On March 9, he delivers the keynote address at BuildingEnergy11. See the BE program in the center of this magazine.



David Orr, author of *Hope Is an Imperative*.



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Place and Sustainability: Nuggets
from page 23

The vast scale and urgency of sustainability require very clear thinking of all of us. We can only work in our place, but our place won't thrive unless all the other places are thriving too. Failing to make that link is a dereliction of duty. Local action is not a boundary.

In these times, it comes down to a choice: wringing our hands or rolling up our sleeves. I want, before I die, to make at least a few places that are remarkably efficient, technically elegant—and make you feel the way you do when a loved one smiles at you, or when a child holds your hand, or when you look at the stars in a meadow filled with fireflies.

As often as not we are looking for something to be as much as something to do.

Our place, our home, our communities, our planet, are threatened. We need leadership to change minds, not our physical surroundings. The arts can speak truth more readily than even the best political speech making.

A system is good if its activity helps both the systems around it and those which it contains. Reciprocally, a good system is helped by the systems it contains and the larger systems that contain it—a definition that nicely captures our intuitions about what makes something beautiful and also what makes something ethical.

Our notion of place has us firmly living within our ecosystems. We have vastly altered them in the distant and recent past, but our survival now requires us to find beauty in a different balance with nature and the “confidence” to do more with less.

We can't make these things happen, but we can provide vessels that invite them to take place. Those vessels can be as simple as a yoga mat or a garden shed, a family table or a swingset in a park. Here is a window to sit at and watch the street and the sky. Here is the bike and its kickstand. Here is my neighbor, that crazy guy who is always washing something with his shirt off. He's waving to me and smiling. He's happy. I smile back.

Beauty is about wholeness. Wholeness is the deep structure that sustainability is rediscovering. Beauty is perception of wholeness. Deep or true beauty is the degree of wholeness—the intensity of the interaction of centers. Beauty is in the pattern of interaction, not the eye of the beholder. The eye of the beholder is in the beauty—the beauty is manifestation of a personal self tunneling through to the Self. Beauty connects our heart of hearts to the most fundamental truths of physics and cosmology and geometry.

Topophilia means love of place. One challenge of sustainability is that we act like we are not at home. This needn't mean one has to garden to care about the land or have children to care about the future. If we take sustainability and place as real and important, how does that change how we are and what we do? ♻️

Jamie Wolf works to foster engagement and participation in the NESEA community while operating Wolfworks, a design/build enterprise in Avon, CT, striving for “beautility” in low- energy homes.

Nuggets from the Whole Systems in Action Collaborative are from John Abrams, Amelia Amon, Mark Couet, Kim Erslev, David Foley, Justin Good, Robert Leaver, Jess Lerner, Bill Stillinger, and Jamie Wolf.

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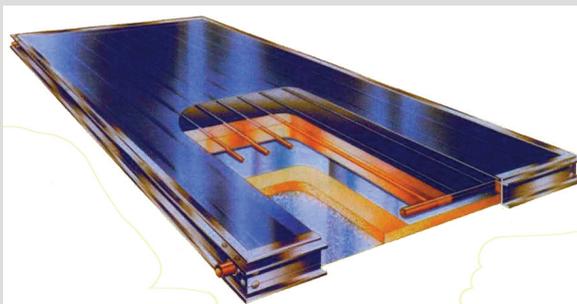
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