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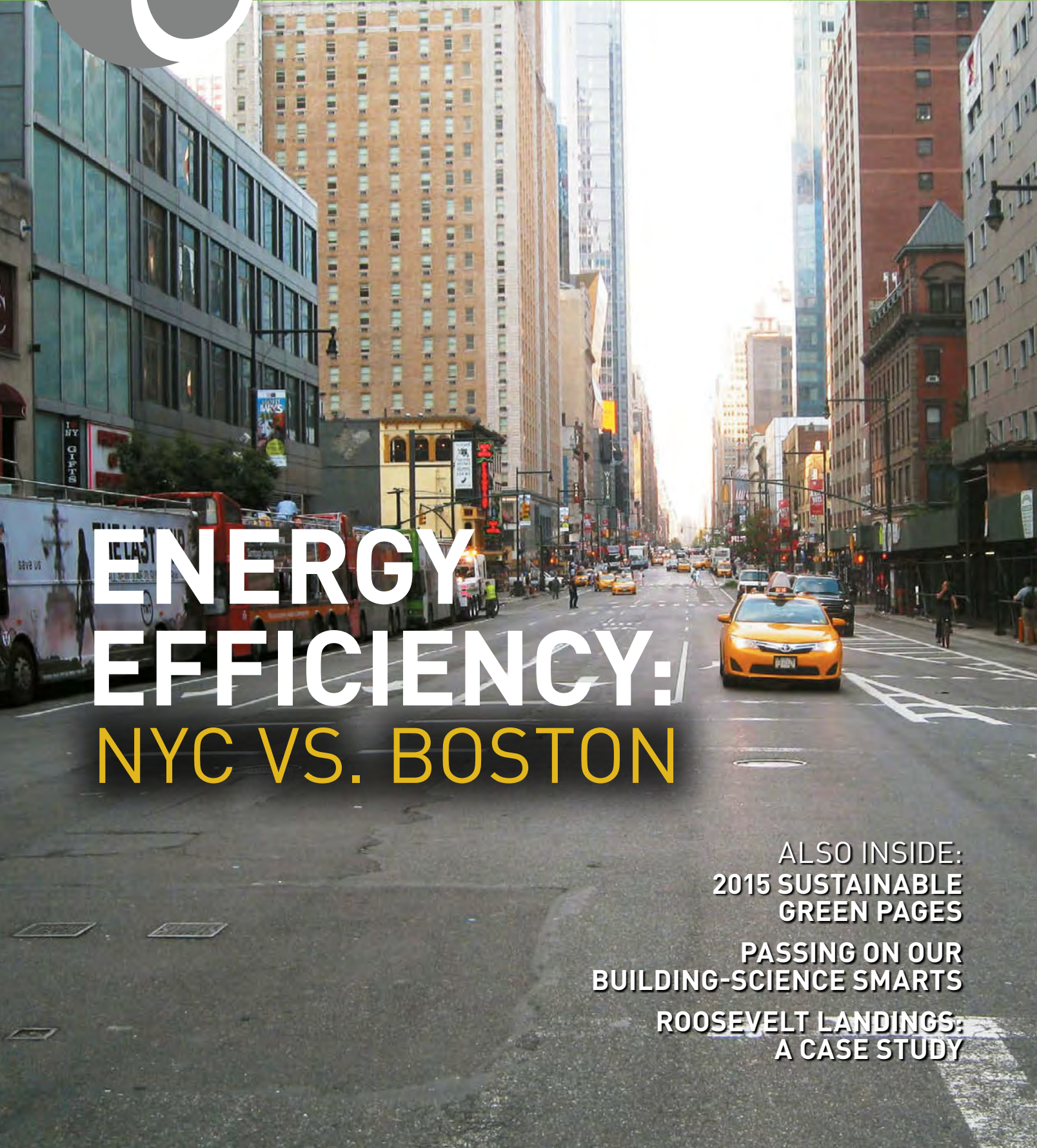
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The Magazine of the Northeast Sustainable Energy Association



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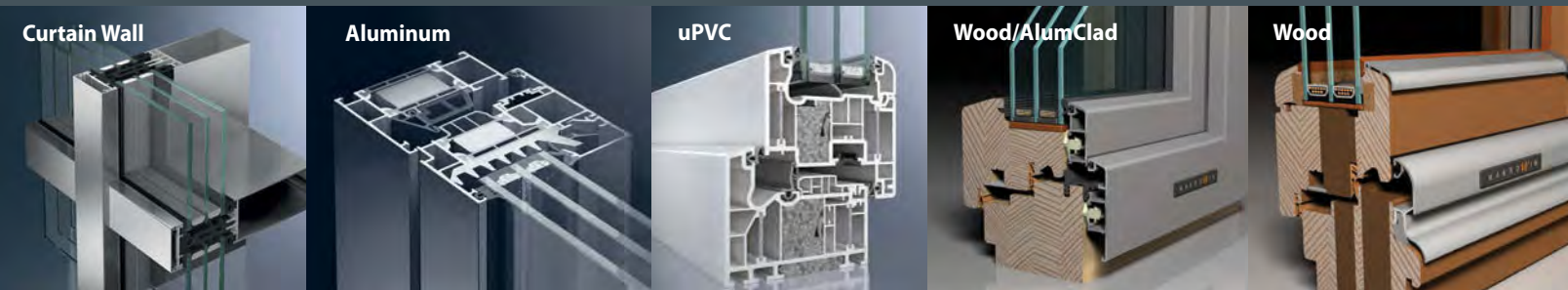
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**PUBLISHER AND
EDITOR-IN-CHIEF**
JENNIFER MARRAPESE

MANAGING EDITOR
KAT FRIEDRICH

PROJECT MANAGER
STEPHEN DOTSON

DESIGN ASSISTANT
JENNY GOLDBERG

NESEA STAFF
**DIRECTOR OF PROGRAM
DEVELOPMENT**
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COMMUNICATIONS
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MEMBERSHIP MANAGER
KATIE SCHEDEL

BUSINESS MANAGER
GINA SIEBER

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GROUP PUBLISHER:
MARCUS WESTON

CONTENT STRATEGIST:
RACHAEL RYALS

PROJECT MANAGER:
MIKE ROSS



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2015 SUSTAINABLE GREEN PAGES - PAGE 44

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ABOUT NESEA AND BUILDINGENERGY MAGAZINE

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 practices in the built environment
through this magazine (distributed to NESEA members), our annual
BuildingEnergy conferences and trade shows, professional
workshops, BuildingEnergy Bottom Lines, and more. A NESEA
membership is \$55/year, which includes BuildingEnergy magazine.

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SCALING OUR IMPACT: PURSUING NEW PATHWAYS TO AUDIENCE ENGAGEMENT



**BY JENNIFER
MARRAPESE**

*Headshot taken by
Matthew Cavanaugh*

It used to be that people knew NESEA largely, if not exclusively, from our BuildingEnergy conference in Boston. In fact, for many longtime NESEA members and even board members, “NESEA” is still synonymous with our flagship conference. You often hear them say “I learned that at NESEA” or ask “Are you going to NESEA this year?”

Finally, however, after five years of attempts to diversify our programming, that’s starting to change. Within the last year, we’ve developed new on-ramps and ladders of engagement, in addition to our conferences, to introduce practitioners to the NESEA community.

One such on-ramp is the BuildingEnergy Masters Series – in particular, Marc Rosenbaum’s 10-week-long online Zero Net Energy Homes course.

One member taking advantage of this opportunity is Christian Belden, senior project manager at Church Community Housing Corporation. Christian took Marc’s course in the spring of 2013 and completed his capstone project. Then, he actually built the home that was the subject of that project. He offered it up for viewing and critique in a BuildingEnergy Pro Tour in Tiverton, R.I. in the fall of 2014.

Now, he intends to submit it as a case study for NESEA’s new BuildingEnergy case study database, which is featured on the page 38.

Christian had never been actively involved in NESEA prior to taking Marc’s course. Now he’s involved – and invested – in a big way. In fact, we’ve invited him to help us curate a more diverse series of Pro Tours in 2016, which will include all different building types from throughout NESEA’s 10-state region.

BuildingEnergy Pro Tours serve as another new on-ramp. Over the past year, we have offered 11 Pro Tours in five states – including a highly-efficient modular home in New Hampshire, a retrofit of mechanical systems in a correctional facility in the Berkshires, and a cohousing community in Martha’s Vineyard.

These tours capitalize on what NESEA does best: they bring sustainable-energy practitioners together face-to-face to share, with intense honesty, their successes and lessons learned. They provide an element of community, with coffee and networking beforehand and an informal workshop afterward. The workshops are often accompanied by a local microbrew and snacks.



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BUILDINGENERGY PRO TOUR PARTICIPANTS LEARN ABOUT A CONSTRUCTION PROJECT IN JAMESTOWN, R.I. ON NOV. 7, 2014.

These tours capitalize on what NESEA does best: they bring sustainable energy practitioners together face-to-face to share, with intense honesty, their successes and lessons learned.

Pro Tours have attracted their own set of groupies - a handful of newly-minted NESEA members who attend every one, almost without fail.


In the words of Ellen Richer, an enthusiastic recent attendee: "I am a student in Environment and Natural Resource Economics at the University of Rhode Island. I feel that my first Pro Tour with NESEA has helped me to grow and expand my practical knowledge in a way that I can take into the field. NESEA is a great force of help for energy students who will eventually shape the future of movements and technology."

By reaching new audiences through these programs, NESEA is scaling up its impact. No longer are we just an organization whose name is synonymous

with one of the best regional energy conferences in the country.

What's next in the "impact-scaling department?" One thing the NESEA board has asked me to focus on is increasing our reach in the commercial and institutional (C&I) sector to build the capacity of practitioners to effect change among some of the largest users of energy in our region.

NESEA board member Michael Bruss describes in his letter from the chair in this issue how he transitioned his own work from primarily residential buildings to large C&I projects.

As a NESEA member, you are welcome to join me in expanding NESEA's focus into the C&I arena by joining one of our many programming committees. For more information about these committees or the benefits of NESEA membership, please contact me at jmarrapese@nesea.org or call (413) 774-6051, ext. 23. 

ABOUT THE AUTHOR

Jennifer Marrapese brings a philosophy of openness and collaboration to her work as the executive director of Northeast Sustainable Energy Association. She earned her B.A. in journalism from the University of Wisconsin-Madison; her J.D. from the University of California, Berkeley; and her M.A. in organizational management and development from Fielding University.

HOW I MOVED FROM RESIDENTIAL CONSTRUCTION INTO THE COMMERCIAL MARKET



BY MICHAEL BRUSS

Photo credit:

Matthew Cavanaugh

I started my foray into the construction business in the early '80s. After a stint as a sculptor's apprentice and assistant, I opted for what I hoped would be a more stable life for my young family.

I had been raised in construction. My father, grandfather and uncles were all in construction. I picked up a hammer at an early age and was, with my father's patience and guiding hand, fairly skilled in carpentry by the end of my high school years.

I worked my way through college as a framer and developed proficiency in cabinetmaking and fine carpentry by my mid-twenties. I had always wanted to have my own business. Construction was a natural choice for me.

I started out as a member of a small builder's co-op that evolved into a partnership. In the '80s, we built a couple of high-performance passive solar homes each year. We experimented with a number of strategies. The book "Building for Energy Independence: Sun/Earth Buffering and Superinsulation" was our Bible.

Ultimately, we moved toward strategies of superinsulation and airtightness and away from the hassles associated with sloped glass and movable insulation. After learning of Joe Lstiburek's work, we quickly realized the Canadians were a lot smarter about building performance than we were. We started trying out various insulation and air-sealing strategies that were prevalent at the time.

We were a small outfit of trusted tradespeople with a steady flow of decent work through the '80s. As I was challenging myself to have a positive impact on the environment, I did the math and recognized that we could have a bigger impact if we applied the same concepts to larger commercial buildings. Since this decision, I have had the good fortune to build and renovate close to one million square feet of high-performance building projects.

The commercial building world is quite different from the residential market. The expectations are different. The stakes are higher, as the buildings are larger and the occupants present many variables. After taking a close look at our internal operations, I realized there would be significant benefits to formalizing our systems of communication and project administration.

The next step in my professional evolution was to set a goal for building high-performance buildings on a commercial scale. The following step was to understand that there was a lot that I didn't know about running a commercial construction management company. After realizing what I didn't know, I set myself on a course of study to learn the things I needed to know to attain that goal.

When I made the decision to take the company in this direction, I quickly realized that there was a lot that I didn't know about project management on a commercial scale. I committed myself, with my family's support, to a course of study that vastly improved my chance of success in this new venture.

I've summarized the key steps in my journey in hopes that they may prove useful to others in our community.

I needed a new kind of education! In addition to reading every book I could find about commercial construction project management, I enrolled in the Graduate Certificate in Construction Management program at Northeastern University. This commitment to three years of night school – while running a small business and raising two active kids – gave me a number of things that I needed to succeed as a commercial contractor. I already had the technical knowledge and a passion for constructing quality buildings. What I needed was the discipline and administrative consistency of recognized industry standards to be able to deliver a project in the commercial and institutional marketplace. The education I pursued gave me the knowledge and background to develop a construction management process that was designed to deliver innovative high-performance building projects.

I tested my newly-developed process with a great team of building-performance gurus, including Stu White and Marc Rosenbaum, in 2001 on the first LEED Gold commercial building project built in New England.

I relied upon several folks from the NESEA community, including Marc, James Petersen, Bruce Coldham and Tom Hartman, who were always willing to take the time to discuss how to better deliver a quality building project. These conversations were often less about where to put the air barriers and more about how to motivate tradespeople to care about actual results.



THE UNION BLOCK DEEP ENERGY RETROFIT IMPROVED A MIXED-USE, HISTORIC BUILDING IN CLAREMONT, N.H.. THE AREA WAS PHOTOGRAPHED IN 2012, AS SHOWN IN THE TWO IMAGES ABOVE.

The most successful projects all had a number of team members from the NESEA community.

I needed to redevelop my team-building and communication skills. Recognizing that institutional projects often required me to work with several “owners,” all of whom had different interests and agendas, I soon understood that these skills were essential. We were no longer working with couples who owned residential buildings; working with married partners has its own complexities. Often in an institutional project, the “owner” consisted of the heads of schools, directors of facilities, faculty members, directors of development, and business managers – all on one team!

Working with a strong design team to complete a quality high-performance building project with a process involving innovation and openness is a very rewarding experience. As I look back on the projects over the years, I recount the challenges and

opportunities we encountered along the way and I find that the most successful projects all had a number of team members from the NESEA community. It is here that I find a supportive community that challenges me to reach for a better future. ☺

ABOUT THE AUTHOR

Michael Bruss was the founder and president of *Bruss Construction and Integrated Building Energy Associates, LLC*. Michael’s passion and drive focus on building with green and efficient technologies, reusing historic structures, and preparing today’s buildings for future generations. With over 30 years of experience in project development and management with a diverse group of building projects, Michael brings collaboration, innovation and craftsmanship to every project that he is involved in.

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PASSING ON OUR BUILDING-SCIENCE SMARTS

“YOU’RE NOT AS SMART AS I WAS BACK THEN –
AND I WASN’T VERY SMART”

BY F.L. ANDREW PADIAN

Today’s university degrees in energy and environmental studies are almost devoid of classes about science, building science, math, and the building industry. NESEA is a great learning ground for students. We need to attract more of them. But more importantly, we need to call for the energy and environmental studies departments that train them to add more of what our high schools are also missing: education in science, technology, engineering and mathematics (STEM).

I think I speak for many people in the field when I say the current crop of grads is not prepared to help the building industry. Today’s grads are even less prepared than students in my generation were 30 to 40 years ago when we started our careers.

In the late 1970s, with the infusion of the first federal solar energy tax credits, many people entered the energy field. Everyone became a solar installer. Everyone wanted to fight the energy crisis. Solar domestic hot water systems were sold, but very few of them were installed properly.

When I attended the first meeting of New York City’s Metropolitan Solar Energy Society in 1979 (which later became a subchapter of NESEA), I met the president, Bill Bobenhausen. I told him I wanted to put solar panels on buildings in New York City. He said, “Wouldn’t it be a better idea if we made the buildings more energy-efficient first so the solar will pick up a larger portion of their load?”

I was stunned. Who was this mad scientist, preaching things they never taught us at Syracuse University? I had just graduated in the first class of the new Energy and Environmental Policy program at that basketball-focused school. I thought this must

be new and under-reported information, as I had never learned it at school.

Who was this sage? And could he become a mentor of mine?

A year later, Bill wrote a recommendation for me to get a job running the Energy Hotline in the Mayor’s Energy Office under Ed Koch.

People called the hotline and asked me stuff every day – and I had no clue. I took their names and numbers, called six people to find the answers, and called them back.

In a year, I learned 300 times what I had learned in college. I was very lucky to get a job like this where I could learn on the fly.

Over the years, I had many mentors, friends, and collections of what my smart young friends now call their “Boards of Directors.”

Bill put up with one of the dumbest youngsters in the field for years – and that would be me. Who knew that in my young state, I would accidentally amass a group of mentors that would take me from being a college-educated dope to being a fairly well-respected person in the CREADS of the building industry (comfort, resilience, energy, affordability, durability and sustainability)?

In 1982, I read an article in New Shelter Magazine about two Canadians who had figured out that if you seal the holes in the floor of the attic in a typical single-family home and stop the heat from rising around these bypasses, the houses get really efficient really fast.

Sounded simple to me. I did it in my parents’ home that October while I listened to playoff baseball on the radio. Over a weekend with six tubes of caulk, some sheet tin, some high-temperature sealant, a little of this new expanding foam stuff, and a case of beer for lubrication, it was done.



By April, my parents' gas bill had dropped 40 percent. Their local gas company accused my father of tampering with the meter. Home run.

Trouble is, this is still not common practice in insulation installation. Further, simple tests like pressure diagnostics, where you can pre- and post-test houses to see how well you air-sealed the attics, are not required in programs, so people don't do them as a matter of course – because “the program doesn't want them to do it.” Worse, no one wants to do this.

On a dare from some of my really smart fellow building scientists, I surveyed every homeowner I knew and explained to them how to air-seal an attic. I said how inexpensive and cost-effective it was, but that it was a bit of work. Nobody was interested. Zero. They wanted a device they could put on their furnaces/boilers to instantly save 50 percent of the energy. They had all heard it was already invented and they just needed to buy it. They had heard from their uncles it was going to be available tomorrow.

Typically, people spend more money on fuel for their cars than fuel for their homes, so their interest in car efficiency is higher.

Jump forward to 1998. My friend and mentor, John Tooley, told me he was concerned the next generation of people who were going to take over our work in CREADS needed mentoring. He said I needed to get on it right away. He didn't ask me – he ordered me.

I was in a weakened state at that time, so I agreed to do so. I had been doing mentoring ad-hoc for years, but I began to work with a few organizations, including NESEA, that had large professional memberships or regular conferences.

I asked them how they brought youngsters – or any emerging or transitioning professionals – into the field. And I asked how these emerging professionals not only got work, but got better at their jobs and moved up in the field. There did not seem to be a ladder anywhere – at least, not a structured one.

Over the years, I have worked with dozens of “kids” – what I call emerging or transitioning professionals – to help them get jobs in the field. Through GreenHomeNYC (another former NESEA subchapter), we have a monthly Green Career Meetup. We have succeeded in getting one emerging professional a real job every month for the last four years. It's a great program. It's great to be a part of it. But I'm still troubled.

Speaking as an energy policy (read: non-technical) grad, I left college dumb as a stone but got great experience in the field from people who beat me like a rented mule.

Throughout the last 35 years, I think I've increased my knowledge in the CREADS 100 percent each year, which makes work fun and interesting.

I'm worried that the new crop of kids think this is all about wheeling power and buying green roofs and water catchment devices rather than examining energy usage and cost and attacking that problem.

I feel the young-uns – like me at their age – don't understand the importance of science in our work. I fear that our industry is getting ready to face another crash of bad publicity caused by inexperienced “experts” not listening to clients and making recommendations that don't save energy/money and improve CREADS.

DARREL MORRISON TEACHES DESIGN TO AN ENGAGED GROUP OF 10TH-GRADE HORTICULTURE STUDENTS AT URBAN ASSEMBLY SCHOOL FOR GREEN CAREERS ON APRIL 16, 2015.



STUDENTS FROM URBAN ASSEMBLY SCHOOL FOR GREEN CAREERS LEARN HOW BLOWER-DOOR TESTS WORK ON APRIL 2, 2015.



DAN RIEBER DEMONSTRATES A MANOMETER ON APRIL 2, 2015 AT URBAN ASSEMBLY SCHOOL FOR GREEN CAREERS.

I think I speak for many people in the field when I say the current crop of grads is not prepared to help the building industry.

I guess I want them to not make the mistakes that many of us made that screwed up a bunch of buildings back in the day but helped us learn a lot.

A young dynamo I know opened a consulting company and got a high-profile client by agreeing to work pro bono. He felt he could cut his client's bills in half for virtually no investment and use this as the springboard for more business.

I spoke to the consultant as a favor and he wanted me to perform an energy audit over three beers. He had no fuel records, no bills, and no idea what was the most expensive fuel or bill.

When people ask me this, typically I ask them about the patient in the emergency room five miles away who just fell off of their chair in the waiting room and collapsed to the floor. I ask them what is wrong with the patient. I get stark looks. And then I say, "I haven't seen the patient, so I can't make a diagnosis."

This particular building is historic – almost 200 years old. Let's just say it is a very important building in this city and many of you would recognize the name of the client and the restaurant.

Air-sealing this building would change the physics of the building. So its current ability to vent

moisture would be stopped in a mostly-hot climate with bouts of high humidity. And it's brick with no insulation.

I asked the young dynamo about condensation, downsizing AC, and removing moisture. Would condensation happen now on the single-pane windows? In short, would this retrofit create a problem that never existed previously?

He had never considered this, but was sure that one of his sub-consultants knew this stuff. I mentioned the BS term – building science – and I was suddenly speaking a completely foreign language. Glazed look. What?

Over two years ago, I went to a GreenHomeNYC event and the usual informal cocktails after. Two young bucks came up to me and said, "Andy, we need your advice. We want to start a company that puts solar panels on buildings all over Brooklyn."

I replied simply to these two young men, "Wouldn't it be a better idea if we made the buildings more energy-efficient first so the solar will pick up a larger portion of their building load?"

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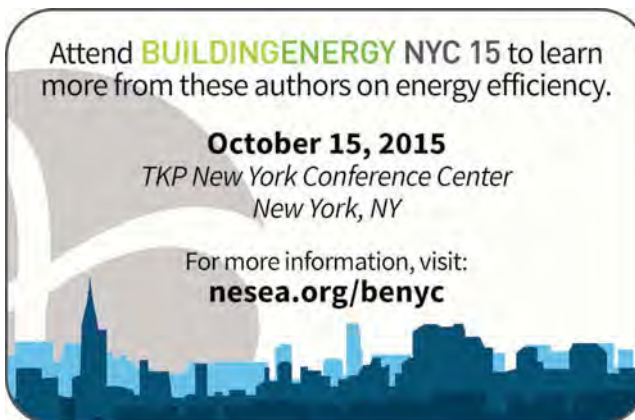
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They were stunned. And I felt that I had finally grabbed the light saber from the hands of Obi-Wan Kenobi and I was a true Jedi knight.

Sadly, one hour later, I found out my friend and mentor, Bill Bobenhausen, had just passed away. This cemented to me how much more we all need to fertilize the fields behind us – and how the old pros need to plead with the young ones even more today than they did when this field began.

Late last year, I taught a graduate-level architecture class. Over two hours, I introduced concepts of air-sealing, fire-stopping, meeting energy codes, exceeding insulation levels, changing framing from 18 to 24 inches on center, and downsizing HVAC.

30 young future architects looked at me completely stupefied. This was engineering. They didn't need to know this. It was math, science, code and physics, all rolled into one, and it was not their responsibility.

Conversely, in June of this year, I was proud to accept the role of commencement speaker at the Urban Assembly High School for Green Careers in New York City. They graduated their first students who had been through three years of study – all 50 of them.

They teach building principles, horticulture, math, and a few kinds of science. But their goal in the future is to graduate every student with a Building Performance Institute (BPI) Building Science Principles Certificate of Knowledge. Not perfect – but wow, what a great step!

If you are new to this field, please reach out and find your “Board of Directors.” Have them tell you where they screwed up so you won't do it again.

If you're not new to this field, be a mentor or a member of the “Board of Directors” of our future shining stars. My fondest moments at any conference are when I see one of my mentees presenting their experience and knocking it out of the park with a rapt audience. That is real career advancement. 🌱

ABOUT THE AUTHOR

F.L. Andrew Padian is a private consultant with 35 years of experience in the building science of multifamily buildings. He has performed energy analyses and successful solutions on thousands of buildings across the country. He is a frequent contributor to sustainable publications and speaks nationwide. A NESEA board member, he is an active volunteer in New York City's Urban Assembly School for Green Careers, Clinton Community Garden, and GreenHomeNYC.

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A BUILDINGENERGY CASE STUDY: ROOSEVELT LANDINGS

BY DAVID DAVENPORT, MARC ZULUAGA AND LARRY HARMON

In advance of the BuildingEnergy NYC 15 conference on Oct. 15, NESEA gathered insights into one of New York City's most exciting and innovative projects: the deep energy retrofit of the Roosevelt Landings multifamily building on Roosevelt Island. The retrofit will be featured in a session at the conference.

Three of the primary professionals involved in this retrofit contributed to this article: David Davenport of Urban Greenfit, LLC (UG), Marc Zuluaga of Steven Winter Associates (SWA), and Larry Harmon of Air Barrier Solutions, Inc. (ABS). They have generously provided their reflections, data and insights.

DEVELOPING THE LEADERSHIP AND IMPACT OF ROOSEVELT LANDINGS

The deep energy retrofit of the 1,003-unit multifamily building at the Roosevelt Landings property in New York City demonstrates what can be achieved when owners take the initiative and commit to comprehensive energy retrofits in partnership with a strong development team, building science professionals, and engineers.

Innovative financing was used to implement aggressive air-sealing, smart controls, and distributed-generation upgrades that resulted in significant savings even after traditional retrofits had already been completed. This approach resulted in reduced operating costs, improved resident comfort, enhanced resiliency, and exceptional returns to investors.

With traditional rebates unable to support the scale of energy-efficiency work that must be done in the future, the project's most lasting legacy may be its demonstration of the business case for this type of work to hard-nosed investors.

In November 2012, UG closed on the \$7.4 million transaction. The project leveraged city, state and federal initiatives to promote renewable energy and energy efficiency in residential housing. It began in January 2013.

The retrofit was projected to achieve 20 percent new energy savings, reduce grid electricity usage by 15 percent, and create 15 full-time jobs paying Davis-Bacon Act labor rates to all workers during

construction. The estimated energy savings were 2,303,416 kWh per year or 6,311 kWh per day, reducing carbon emissions by 750 metric tons of pollutants each year.

This project has outperformed its expectations. To date, it has generated cumulative energy savings of 24 percent – exceeding projections. The project is also outperforming financial goals. The underwritten energy cost savings for the first full year of operation was \$571,000. The actual energy cost savings was \$708,000 – 124 percent of the projected amount. As of June 2015, the second year of operation, the project had already generated over \$515,000 in energy cost savings – 88 percent of the 12-month projection – in its first six months.

In 2014, the first full year after the retrofit was completed, the net operating income of UG significantly exceeded projections. As a result, UG was able to meet and exceed investor return requirements. Based on a cap rate of 5 percent, the increase in net operating income translates into an increase in building valuation of \$19 million.

This increase in building value was achieved with an overall investment of \$8 million and the sponsor's initial out-of-pocket-investment of \$1.8 million – a return that any investor should find extremely attractive.

The project was sponsored by Urban American (UA), a real estate investment company that has provided safe, affordable and high-quality apartments for New York City residents for over a decade. Under the leadership of executive vice president Joshua Eisenberg, UA made a strategic decision to lead urban communities in the reduction of carbon emissions with over \$10 million in investments in energy-efficiency and renewable-energy projects to reposition older multifamily housing as sustainable and empower residents as partners.

The formation of UG was a direct response to UA's need to fund improvements to the building without the building taking on additional debt. By creating an off-balance sheet special-purpose investment vehicle that raised the capital and funded the work,



UG enabled UA to turn a major capital improvement project into an operating expense. This was achieved through an energy-services agreement and power-purchase agreement between the building and this new special-purpose investment vehicle. This agreement allowed the building to pay the difference between baseline projections of energy use and the actual energy used after the energy savings. It also allowed the building to pay for the CHP plant.

This project has set a new precedent, as energy services agreements (ESAs) are more commonly used in the municipal, university, school, hospital and

housing authority markets than in privately-owned multifamily buildings.

The project was led by UG and managed by David Davenport. UG conceived the scope of work, structured the financing, and developed the project. The energy-efficiency measures were engineered by a team led by Marc Zuluaga at SWA. The renewable-energy measures were engineered by Stephen Samohous of KGS Buildings and EVCO Mechanical. The principal energy-retrofit work was led by Larry Harmon of ABS and Richard Whiffen of H2O Degree. Legal support was provided by Peter Funk of Funk & Zeifer LLP and Michael Schwamm of Duane Morris LLP. Accounting support was provided by Novogradac & Company LLP.

At the time of its construction in 1975, critics heralded the innovative design of Roosevelt Landings.

IMPROVING THE ORIGINAL DESIGN OF ROOSEVELT LANDINGS

At the time of its construction in 1975, critics heralded the innovative design of Roosevelt Landings. Architect Josep Lluís Sert, dean of the Harvard Graduate School of Design, achieved efficiency in space usage by triple-loading corridors with duplex apartments so elevators and public corridors were only needed every three floors.

Unfortunately, since the design was conceived in an era when people thought electricity would soon be too cheap to meter, attention to spatial efficiency did not carry over to the energy-efficiency systems. Heating is provided by electric baseboard heaters. A single electric meter monitors all apartments and residential common areas. Also, residents are not billed separately for the electricity they use.

These shortcomings of the original design saddled the complex with increasingly higher operating costs – a problem UA encountered after it acquired the building in 2007.

Soon after the acquisition, UA embarked on a capital plan coordinated with a comprehensive energy-efficiency scope of work. New windows were installed throughout the complex. So were lights, ventilation-fan controls, ENERGY STAR refrigerators, and low-flow water fixtures. These measures were intended to meet NYSERDA's program requirement of 15 percent energy savings for the whole building.

Sub-meters were also installed to enable a third-party company to bill residents for their electricity consumption, based on permission from the New York Public Service Commission (NYPSC). Despite prior approvals, the NYPSC reversed its decision and prohibited the complex from using the sub-meters to bill residents after the installation of the sub-meters had been completed at a cost of over \$1 million.

As a result, UA found itself with reduced but still unsustainably-high operating costs. Moreover,



INSULATION IS BEING INSTALLED UNDER AN EXTERIOR FLOOR AT ROOSEVELT LANDINGS. THE PHOTO WAS TAKEN ON JUNE 26, 2013.



A TEAM INSPECTS HVAC EQUIPMENT AT ROOSEVELT LANDINGS ON JUNE 20, 2014.

The project's most lasting legacy may be its demonstration of the business case for this type of work to hard-nosed investors.

UA had already depleted available capital resources by implementing a comprehensive list of energy-efficiency upgrades.

To address both of these challenges, UA set out to develop an innovative scope of work that would allow deeper savings. It also created a new subsidiary, UG, to act as an energy-services company (ESCO) to finance and implement the scope of work at this building and eventually others. UG then implemented a new scope of work at Roosevelt Landings in 2012-2013.

Like many other buildings in New York City, Roosevelt Landings has been impacted by climate change. It suffered temporary power outages that affected a third of its apartments due to flooding of a subterranean electrical room during Hurricane Sandy.

Combined heat and power (CHP) technology can help to address the power outages hurricanes can create. The building's new CHP system will have a dramatic positive impact on people's lives during emergencies. The CHP and boiler system is strategically located on the 21st floor of the property's tallest building to support building resiliency by providing residents with hot water when the electric grid is down. In addition, electricity can be maintained in the generating room during power outages, creating an emergency-management command center with additional potential capabilities.

The use of wireless thermostats and an energy-management system was a direct response to the NYPSC's rejection of UA's attempt to sub-meter residents to reduce costs and encourage rational behavior. The new control system now allows UA to manage the heat centrally, increasing efficiency dramatically.

DESIGNING THE SCOPE OF THE RETROFIT

The retrofit's scope included CHP, domestic hot water load reduction, heater replacement, wireless apartment thermostats, energy-management systems, programmable thermostats, corridor ventilation, resident education, floor-slab insulation, blower-door testing, and air-sealing.

Heater Replacement: UG replaced older-model baseboard heaters with new heaters that provide better performance in every apartment due to faster heating-coil materials and modern technology.

CHP and Domestic Hot Water Load Reduction: A two-part strategy was executed to reduce the domestic hot water requirements as much as possible prior to the installation of an appropriately-sized CHP system to address the remaining load. Low-flow aerators and showerheads were installed as part of the 2008 scope of work.

A condensing domestic hot water boiler plant installed in 2013 further reduced the energy load by drastically cutting standby losses. UG installed five 1.35-million-BTU water heaters that operate at 95-percent fuel efficiency. The heaters replaced four outdated Scotch Marine steam boilers that were 65-percent-efficient at best.

While construction delays and technical challenges delayed deployment of the CHP system, the system is now operating at 100-percent capacity. UG installed three 100-kW CHP modules that together have the capacity to generate 300 kW of electricity and 2.1 million BTU/hr of domestic hot water.

The CHP system creates 15 percent of the building's electricity onsite and heats 40 percent of its domestic hot water. This system is also equipped with black start capabilities to function as an emergency generator supplying critical building systems – such as house pumps for providing water to all apartments – during grid outages.

Wireless Apartment Thermostats and Energy-Management Systems: The integration of resident-facing off-the-shelf digital thermostats with a wireless mesh network has been done before, though the scale of this installation is somewhat exceptional.

Proving the savings at this scale is helping to catalyze the market for this retrofit.

One practical but also innovative aspect of the work was the incorporation of window sensors to reduce heat output in rooms with open windows.

The wireless backbone and control infrastructure in place allowed magnetic sensors to be installed to sense whether windows are open at minimal extra cost. No system is completely tamper-proof, but the window-open alarms provide management information for a sprawling complex. They also send a strong signal to residents about the significance of open windows. This can be the first step in spurring behavioral change.

Installation of Programmable Thermostats: Dials and buttons on old baseboard heaters were replaced with wall-mounted programmable thermostats. Each thermostat sends a wireless signal to a paired controller on each baseboard heater. Residents are able to select target temperatures.

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THE EXTERIOR OF THE ROOSEVELT LANDINGS COMPLEX IS ILLUMINATED BY INTERIOR LIGHTING ON JULY 18, 2015.

Corridor Ventilation: The original design limited the number of public corridors in the complex compared to a traditional double-loaded corridor layout. But where there were corridors, they were configured with slider windows running nearly their entire lengths. The design was based on natural ventilation with operable windows to meet the fresh air requirements for the 40 public corridors.

This passive design strategy is ideal for the spring, summer and fall. But during the heating season, this decision resulted in severe operational waste. Nearly every time SWA visited the site during the winter, the team observed one partially-open window in most public corridors.

When the mechanical ventilation is operating during the winter, windows are locked. In the spring, summer and fall, windows are unlocked and mechanical ventilation is disabled. This new scheme was filed with the New York City Department of Buildings and reviewed by the New York City Fire Department. In a traditional double-loaded corridor, there are usually no windows.

The current scheme results in enhanced year-round performance compared to most other similar buildings.

Apartment Air-Sealing and Ventilation: The air-sealing designed and installed by ABS provided operating cost benefits to the owner and comfort benefits to residents. There was also a synergy between these envelope upgrades and the new controls.

With insulation improvements, spaces can be more comfortable even at lower temperatures when they are not drafty. The gap between the deteriorated bottom of the sheetrock and the concrete-slab floor behind the electric baseboards, which created an extensive air-barrier defect throughout the property, was air-sealed.

Staff tightened the building envelope by air-sealing apartments to eliminate cold air infiltration and drafts during the heating season. This work also enhanced resident comfort during the cooling season by preventing warm, humid air from entering air-

conditioned apartments. They performed six types of work in each apartment:

1. plugging the holes behind the heaters and along the exterior walls that allowed drafts into the building
2. caulking the windows where leaks were evident
3. installing draft-blocking gaskets in exterior-wall electrical outlets
4. caulking beneath the sills of the outside windows
5. sealing holes near sink pipes that allowed drafts and pests to enter apartments
6. installing plugs over air conditioners and sleeves

The crews also cleaned and retrofitted the ventilation register covers and installed orifices in resident kitchens and bathrooms. The metal interiors of the ventilation ducts were brushed and wiped clean. The new orifice plates were installed to regulate and distribute ventilation airflow more evenly among apartments.

Common Area Air-Sealing: In addition to working in apartments, ABS air-sealed common areas, including elevator machine rooms, stairwells, and HVAC rooms. Through-wall air-supply fans with filters were installed in each corridor. They operate when the windows are locked to meet New York's building code and ASHRAE's code guidelines. These measures have eliminated the wind-tunnel effect that many residents experienced in the halls during cold months. They also keep cold air out of the hallways and apartments.

The complex includes seven banks of elevators. Prior to the retrofit, the tops of the shafts were vented directly to the outside per code, resulting in thousands of cubic feet per minute of conditioned air escaping.

SWA's measurements of airflow escaping from elevator shafts before and after the retrofit were the impetus for "Spending through the Roof," a study published by Urban Green Council. This study has drawn significant attention to the issue of elevator-shaft venting. The New York Times covered the study. The study quantified the \$11 million in annual savings possible by addressing this leakage in New York City alone.

Floor Slab Insulation: ABS installed high-density spray foam directly below the concrete floor slabs and at the wall penetrations of apartments that protrude over walkways and sidewalk arcades. This has eliminated the key source of cold floors in these apartments and blocked cold air from leaking into the building.

In addition, fabricating ducts and sealing connections proved to be successful strategies. Initially, the exhaust-ventilation connections in the building were not sealed to the primary shaft. Some had no ducts to connect the grilles to the shafts. Fabricating ducts and sealing these connections eliminated quite a bit of leakage.

The ventilation orifices further restricted and balanced airflow from the units. While installing polyurethane spray foam (SPF) on the underside of the cantilevered spaces, the team sealed a number of large penetrations as well by extending the



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Urban American plans to replicate this proven scope of work on a group of other large postwar master-metered and electrically-heated complexes.

foam down the sidewall towards the drop-in ceiling panel level.

Building Operator and Resident Education: To support UG's efforts, UA put its key maintenance and management staff through Building Performance Institute's Building Operator Certification course. Further, UA provides residents with helpful materials and education seminars on how to reduce their own households' energy consumption.

Blower-Door Testing: ABS provided design assistance to the engineering consultant, SWA, by conducting a building-envelope evaluation in accordance with ASHRAE standards.

Duct-blasters in blower-door frames were set up in a number of apartments. Their main use was to provide the pressure differential necessary for infrared, smoke-tracer, and hot-wire anemometer testing to identify leakage sites. Common areas were inspected with similar technologies using the buildings' natural stack pressures as the driving force to identify leakage locations. A comprehensive report was submitted and eventually became part of a larger retrofit.

SWA had previously investigated the application of SPF to the underside of cantilevered spaces at this location. The crew also had specific treatments it was trying to implement in elevator-control rooms. The team was concerned about ventilation issues in the kitchen and bath areas. The crew decided to install

orifices in the exhaust-ventilation duct grilles in the units to regulate airflow throughout the building.

LOOKING TOWARD THE FUTURE

An additional positive development has emerged from this solution. The infrastructure put in place for these new controls will be a platform for a planned future project to sub-meter residents only for the apartment-lighting and plug-load portions of their consumption.

With this new system, residents will be accountable for the portions of their consumption that they control completely. This will include their use of energy-efficient lights, appliances or outlets, but not their use of electric heaters. Metering of heaters has historically been the major cause of resistance to sub-metering in these types of buildings.

UA will continue to manage heating limits centrally and will always have an incentive to pursue further envelope upgrades to reduce heating requirements. The project team anticipates an additional 10-percent reduction in whole-building source energy use intensity as a result of this future project.

These resulting benefits will be realized nearly a decade after sub-metering was first proposed. While the process has been circuitous, politicized, and at times contentious, the final approach represents a thoughtful model for other electrically-heated buildings.

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UA plans to replicate this proven scope of work on a group of other large postwar master-metered and electrically-heated complexes.

With other owners, SWA is also engaged in a pipeline of close to two million square feet of electrically-heated complexes scheduled to start construction in 2015. These complexes have very similar scopes of work to the Roosevelt Landings project. Finally, SWA, with a grant from the Natural Resources Defense Council, is currently benchmarking the Mitchell Lama portfolio, which is made up of 180 large postwar complexes across New York state.

APPLYING LESSONS LEARNED

The vast majority of the upgrade work required access to apartment spaces. The coordination of multiple visits by electricians and air-sealing laborers across 1,003 apartments was a challenge met by a full-time onsite project manager overseeing all workers and coordinating resident engagement and communications.

One lesson the team learned from this project is that ensuring reliable access to apartments can save a great deal of time and effort.

At a cost of over \$1 million, the extensive whole-building air-sealing scope of work was the largest air-sealing retrofit project in New York City. Because the deep and site-specific air-sealing scope did not fit into the simple prescriptive rebate-application forms, the project team spent extensive time documenting assumptions and calculations to successfully support an application for a \$300,000 incentive from Con Edison.

Finally, the corridor-ventilation upgrade was nearly halted at an early stage as a result of a myth that had been perpetuated onsite for decades that the New York City Fire Department wouldn't permit the corridor windows to be locked. In a conference call, the team found out that the fire department did have a concern about the corridor windows: to prevent falls, it simply wanted to make sure the windows could not be fully opened. Sometimes it pays to ask a question. 🔄

ABOUT THE AUTHORS

David Davenport is the managing principal of Urban Greenfit LLC, an energy-service company working with building owners in New York City to finance, develop and operate energy-efficiency equipment and onsite power generation in existing multifamily housing. He is also a managing director of 5 Stone Green Capital LLC, a real estate private-equity fund that acquires existing properties and develops new ones in urban markets.

As a vice president and director of SWA's Multifamily Energy Services, **Marc Zuluaga** has directed energy audits on over 20 million square feet of existing buildings and leads a team committed to applying a rigorous technical approach to the evaluation and implementation of a wide range of building upgrades. He is also the project manager for the Deutsche Bank/Living Cities Energy Efficiency Data Report Project.



A CREW MEMBER PERFORMS AN AIRFLOW TEST AT THE ROOSEVELT LANDINGS COMPLEX ON FEB. 22, 2012.

Larry Harmon, vice president of Air Barrier Solutions, LLC, consults with clients on building-envelope issues. He markets building-envelope services in the commercial, residential and institutional sectors. His company is currently involved in studies on air leakage in buildings with Center for Energy and Environment and ASHRAE. He was the founding executive director of Building Performance Institute. He has consulted with utilities, government organizations, contractors, manufacturers and developers.

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THE STELLAR PERFORMANCE OF THE CONCORD SOLAR CHALLENGE



BY JILL APPEL

The Solarize Mass program has empowered communities to take action on climate change and helped the state to achieve its renewable energy goals.

The Concord Solar Challenge became the highest-performing community solar program in Massachusetts because a group of environmentally-minded citizens saw the potential for a program, borrowed some good ideas from Solarize Mass, and installed technology that reduced the town's carbon footprint by more than one million pounds per year.

The community solar movement in the United States began in Portland, Ore. in 2009 as a community-level bulk purchasing program for residential solar systems. The Solarize movement has spread throughout large areas of the nation and is especially active in the Northeast at present.

Massachusetts joined the movement in 2011 when the Massachusetts Department of Energy Resources (DOER) and Massachusetts Clean Energy Center (MassCEC) started the Solarize Mass program. Seeing the benefits, many communities are now choosing to run their own solar programs.

HOW COMMUNITY SOLAR PROGRAMS WORK

As a point of clarification – a community solar program is different from a community-shared solar system (also known as a “solar garden” or “solar farm”) in which residents buy shares of a system to reduce their electric bills. The pricing plans for community-shared solar vary. Community-shared solar programs have a much lower financial return to the homeowner than community solar programs and should be promoted only to homeowners who cannot install their own systems.

Recently, National Grid reached its net metering cap and eliminated net metering for systems larger than 10 kW within its territory. It does not appear that the cap will be lifted in the near term. This means community-shared solar system investments are not feasible in National Grid's service area at this time.

In contrast, the basic intent of a community solar program is to drive the adoption of solar photovoltaic (PV) systems through a partnership between local

solar ambassadors and a highly-qualified solar installer. The community volunteers lead the outreach effort with support from the installer. The installer provides high-quality solar installations under a tiered pricing structure that reduces the price for everyone as more people participate in the program.

For example, the Concord Solar Challenge is a community solar program that involves a group purchasing arrangement with a solar installer. The installer provided PV systems on rooftops and in backyards for homeowners, business owners, and nonprofits.

WHAT THE SOLARIZE MASS PROGRAM ACCOMPLISHES

The Solarize Mass program, which was developed and run by MassCEC and DOER, has been an unqualified success. It has empowered communities to take action on climate change, raised awareness, put solar power within the reach of thousands of homeowners, and helped the state to achieve its renewable-energy goals.

To date, 46 communities have participated in Solarize Mass, installing 2,400 systems for 16 MW of solar energy. Most of the communities that have participated have more than doubled their installed bases of residential systems because of the program.

If a community wants to participate in Solarize Mass, it submits a proposal to MassCEC that outlines its commitment to the program and contains its plan to generate interest. If the community is accepted, MassCEC facilitates the installer proposal and selection process, allocates \$2,500 for marketing, provides program deadlines and a reporting structure, and monitors the program.

Inspired by Solarize Mass, several communities have chosen to run their own community solar programs, either by choice or by necessity. Some of these communities have either not been eligible for Solarize Mass or have not been accepted into it.



Some have felt that they know enough about how to select an installer to run a good program on their own. Others have wanted control and flexibility to set up the timing and characteristics of their programs in order to best meet the needs of their communities.

By necessity, Concord ran its own program, but the added control and flexibility of having a community-led program helped the town achieve extraordinary results.

HOW CONCORD SET A RECORD FOR COMMUNITY SOLAR INSTALLATIONS

Concord has a long history of environmental activism. It was the home of Henry David Thoreau. It was also one of the first communities in the nation to ban the sale of single-serve bottled water, an unnecessary product whose manufacture wastes natural resources.

Concord is a Boston suburb with approximately 17,700 residents and 6,700 single-family homes or condominiums. It is also served by a municipal light plant. These plants are subject to much less regulation than investor-owned utilities in Massachusetts and can set their own policies on solar power.

Concord's Comprehensive Sustainable Energy Committee (CSEC) was established in 2007 with a mission of developing and implementing programs for fostering energy conservation, energy efficiency, and renewable energy generation.

In early 2012, CSEC sponsored a Solar Fair with presentations and vendors. The fair resulted in 30 installations. While the fair introduced solar to many enthusiastic community members, the results were not sufficient to have a real impact on Concord's carbon footprint. Going solar remained daunting for community members due to high prices and uncertainty about equipment and installers.

In late 2012, CSEC members heard about the outstanding results of the 2012 Solarize Mass program. However, because Concord has a

municipal light plant, it was not eligible to apply for Solarize Mass. So CSEC set up a local program with a similar model.

Members spoke with solar coaches from Solarize Mass, reviewed community and installer information on the Solarize Mass website at www.masscec.com/solarizemass, put together selection criteria for a qualified solar installer, and interviewed four of the installers who had participated in Solarize Mass. CSEC selected Astrum Solar (now Direct Energy Solar) as its installer.

In April 2013, CSEC launched the Concord Solar Challenge. The goal of the challenge was to add 100 systems.

An extensive community-outreach program was conducted – including a kickoff workshop, local newspaper articles, tabling at events, a town-wide mailing announcing the program, and a mailing by high school students to homeowners whose homes had good solar potential.

Information about the program was disseminated widely throughout town. Solar power became the topic of conversation at formal and informal gatherings.

Solar power was a lively topic at church coffee hours. One church was able to inspire its congregation to support a solar installation on the church roof.

Lawn signs helped people see that their neighbors and friends were installing solar and encouraged them to do the same. In several areas, many solar installations were inspired by neighbor-to-neighbor conversations.

A CSEC member was the solar coach for the program, helping community members to understand the nuances of their solar decisions and move forward.

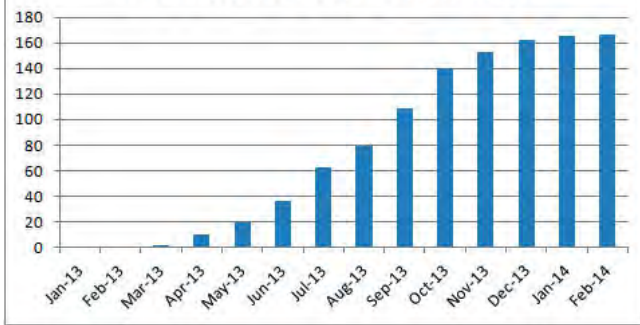
The initial deadline to sign a contract was July 31. As of that date, 360 people had expressed interest and 63 had signed contracts.

Community interest was high, but people needed more time to make their decisions. Staff extended the program to Oct. 31. To encourage earlier sales, the installer promised to install systems by the end of the year for everyone who signed a contract by Sept. 27.

1. THE CONCORD SOLAR CHALLENGE INSPIRED THE OWNER OF THIS HOME TO INSTALL SOLAR POWER. (PHOTO TAKEN ON SEPT. 7, 2014.)

2. THE SOLAR FAIR MOTIVATED THE OWNER OF THIS CONCORD, MASS. HOME TO INSTALL PHOTOVOLTAICS. (PHOTO TAKEN ON SEPT. 7, 2014.)

Cumulative Growth in Sales During the Concord Solar Challenge



In addition to its environmental benefits, the program generated a lot of excitement in town.

An additional 200 people signed up for free site surveys. By Oct. 31, 140 people had signed contracts. At that point, enrollment in the program was closed and homeowners were given until the end of December to make their final decisions.

After including a few latecomers in early 2014, the challenge completed 166 contracts. This yielded 1.3 MW of solar power.

This was the best result achieved by a community solar program in the state at the time. On a per-capita basis, this has still been the state's most successful program to date. The close rate on total leads – the sales as a percentage of total customers interested – was 30 percent. This was significantly higher than the Solarize Mass program's close rate, which was 18 percent.

Many factors led to the success of the challenge:

- The community has a strong culture of concern for the environment.
- There was some pent-up demand for solar power.
- The Concord Town Manager and the Concord Board of Selectmen endorsed the program.
- Information about the challenge was placed prominently on the town's website.
- The installer provided a good price, a professional and qualified sales team, and strong marketing support.
- Systems were installed quickly because of installer capability and support from the town's municipal light plant and building department.
- The Municipal Light Board enacted a net metering policy that both encouraged solar adoption and protected the ongoing operations of the municipal light plant.
- Town management decided that it was safe and legal for the municipal light plant to allow equipment lease contracts for solar power, making this less-expensive option available.
- Several installations in Concord's historic district were approved by the progressive-thinking Concord Historic District Commission.

In addition to producing environmental benefits, the program generated a lot of excitement in town, enhanced connections between community members, and helped homeowners and nonprofits make an investment that will pay handsomely for many years to come.

As a result of the challenge's excellent outcome, Direct Energy Solar donated \$15,000 toward a community solar installation. This system was installed in April 2014 and supplies electricity to a town-owned farm residence and farm stand. The town sponsored a solar party to bring together all of the people in town who had installed solar. The party was a resounding success, with a great turnout and many shared stories of why homeowners chose to move forward and how happy they were that they did.

"Over two years ago, I looked into installing solar panels on my house," said Steve Ippolito, a program participant, in an email interview. "I wanted to do my part to combat climate change, but was pleasantly surprised by how the financials worked out. The price quote using the solar challenge was significantly lower than the other quotes I got and the people from Astrum Solar seemed very competent. After the federal, state and local subsidies, I was expecting a five-year ROI and a 20-percent return thereafter. It was a no-brainer to proceed with the installation. It seems almost too good to be true, but after two years of experience, I can say I am getting the expected return. The system has performed perfectly since its installation. There is no maintenance and it is easy to forget that the system is there."

WHY OTHER TOWNS SHOULD CONSIDER SIMILAR SOLAR PROGRAMS

Solar PV provides the foundation for community action on climate change. Not only does it convert electricity to clean power sources, it also provides a clean energy infrastructure to support the replacement of gasoline-powered vehicles with electricity-powered ones. In addition, PV supports the conversion of fossil fuel-based home heating systems to high-efficiency electric heat pumps.

Solar PV systems are also a very visible and compelling way to educate and engage local residents in supporting clean energy and energy efficiency. Therefore, a community solar program should be one of a town's first steps in combating climate change.

Community solar programs can be accomplished by any town that is willing to make them a priority and spend some time reaching out to local homeowners.

Given the state of the Earth's climate and our need to reduce carbon emissions rapidly, the generous incentives available to community members, and the sizable reductions in carbon emissions that can be achieved by community solar programs, every community in the Northeast should be actively working on kicking off its own community solar program. 🌞

ABOUT THE AUTHOR

Jill Appel has an undergraduate degree in Accountancy from Bentley University and a Masters in Health Care Management from the Harvard School of Public Health. She has 25 years of experience in strategic consulting, systems development, process improvement, and health care finance. She was the solar coach for the Concord Solar Challenge and now serves as Direct Energy Solar's director of community programs in the Northeast.



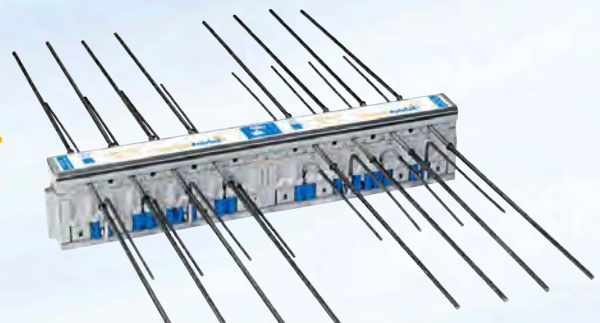
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THESE TWO HOUSES, PHOTOGRAPHED ON JULY 15, 2013, HAVE BEEN DEVELOPED BY THE PEAKS ISLAND HOMESTART PROGRAM, WHICH WAS FORMED TO MAKE WORKFORCE HOUSING AVAILABLE ON THE ISLAND.

HIGH PERFORMANCE COMES IN OUT OF THE COLD

BY PHIL KAPLAN

WHAT HAPPENS IF WE BRING THE NORTHEAST'S CRAFTSMEN INSIDE TO WORK?

In the Northeast, there is a proud history of the craftsman, the homebuilder, and the DIY hero and heroine. They work with sturdy tools, local materials, and real wood. They brave the mean winters, cut each stick with caution, and are frugal with lumber. They measure twice and cut once. They have done this the same way over many years. The product is consistent and steady, exactly the same as it would have been in 1953.

But we live in a very different world than we did in 1953.

The lumber is scarcer. The tools are more costly to run. And although the winters probably aren't meaner, climate change has certainly made the weather more volatile. With skyrocketing fuel costs, our grandparents' myth of the porous house as a good house is no longer viable.

What happens if we bring these craftsmen inside to work? What if we remove the gloves from their chilled, numb hands as they are trying to cut that 2x6 to a precise length - and trying to get that sloping valley rafter just right the first time? Well, their products are built better. And they might not mind being indoors either.

So then why are we not typically building our houses indoors like other high-quality products? According to an industry report from 2013, as the housing market and economy recover, demand for prefabricated housing is expected to rise. Despite the promise of lower construction costs, prefabricated home products have had limited market penetration. This is in part because of consumers' familiarity with traditional construction practices. In the case of manufactured housing, there is also some stigma attached to the product itself, according to a 2013 report from Freedomia Group called "Prefabricated Housing."

But this certainly wasn't always the case. Consider the Sears Kit Homes of the 1920s. These homes were exactly cut, pre-assembled and taken apart to be put back together onsite in a quality-assured, consistent and cost-predictable way. The efficiency of the system led to it becoming a very cost-effective solution.

Somewhere along the way, cost eventually trumped quality in our various building booms from the '60s through the beginning of the 21st century. But this wasn't a flaw inherent in the construction method itself.

Take a trip to one of our longest-standing, local modular factories, Keiser Homes in Oxford, Maine, to visit one of my collaborators. What you see inside may surprise you.

It's those same proud carpenters, working inside, with real wood and high-quality materials in top working conditions. Some of the results may be more-accurate cuts, less-backbreaking lifting, significantly more-airtight construction, less waste, higher efficiency, and greater oversight. These are real, high-quality homes. They just move.

And not only do they still usually cost less than the alternative, but they are inherently more environmentally-friendly as well.

Some of the most significant productivity findings from prefabrication and modularization companies include the following:

- Project schedules are decreased by four weeks or more.
- Project budgets are decreased by 6 percent or more.
- Construction site waste is decreased by 5 percent or more. (These data are from the 2011 SmartMarket Report by McGraw-Hill Construction, "Prefabrication and Modularization: Increasing Productivity in the Construction Industry.")
- CO₂ emissions are reduced by 43 percent or more. (On average, conventional construction results in 14.3 months and 98.9 metric tons of CO₂ emissions while modular construction takes only 6.0 months and results in 56.3 metric tons of CO₂. These statistics were reported in the article "Modular Builders Get in on the Green," published by TecHome Builder in 2014.)

And although these are large-scale industry findings, they actually feel low to some of us who have been working directly in this industry.

A study from the American Institute of Architects has found that up to 40 percent of the nation's solid waste in landfills is building material. According to Sustainable Sources's webpage on construction recycling, 8,000 pounds of waste are typically thrown into the landfill during the construction of a 2,000-square-foot home. (Yes, I know some of us are smarter than that.)

We now know that the market for green building is more than doubling – from \$54 billion to \$120 billion – from 2011 to what's projected for 2015. These data are based on information from McGraw-Hill Construction's report.

The report adds that according to the latest study by National Association of Home Builders, "[most] firms building new single-family homes report that they are doing more than 15 percent of their projects green." This number holds for new multifamily construction as well.

"Greater consumer interest in green homes has contributed to the ongoing growth, leading us to anticipate that by 2016, the green single-family housing market alone will represent approximately 26 percent to 33 percent of the market, translating to an \$80 billion to \$101 billion opportunity based on current forecasts," said Harvey Bernstein, vice president of industry insights and alliances for McGraw-Hill Construction.

So now that the demand for high-performance buildings is finally here, how do we keep up? Building faster sounds like a good idea, right?

About six years ago, our firm, Kaplan Thompson Architects (KTA), made a decision to do only design work that had lower energy consumption as a primary goal.

It was a definitive move that made us feel good, but there were a few problems with it. It had the potential to run in direct opposition to another goal of ours: providing attainable design to clients with relatively modest means. Plus, if builders were tasked with finding cheaper solutions, they usually had difficulty pairing this objective with creating higher-performance building shells.

Soon after KTA set this goal, Keiser Homes contacted us about teaming up to marry our skills. They believed better-designed, affordable, net-zero-energy homes – homes that produce as much energy as they consume annually - had potential in their market.

Our clients were telling us the same thing, but we had no predictable way of providing accurate pricing. So we partnered with Keiser Homes and created Modular Zero Homes together.

This project has evolved into our BrightBuilt Home line. The new line, branded after our very first net-zero-energy project, the prefabricated BrightBuilt Barn, has allowed us to serve the demographic of customers for whom a completely energy-independent home was previously unattainable.

And we're certainly not the only ones working hard on this. Nor were we the first. Preferred Building Systems in New Hampshire incorporates



BRIGHTBUILT HOME DESIGNED THIS VINALHAVEN MODEL IN SURRY, MAINE. IT WAS BUILT WITH ECOCOR. (PHOTO TAKEN NOV. 19, 2013.)



DURING THE CONSTRUCTION PROCESS, BOXES WERE PLACED AT THE FIRST APPLDRE MODEL THAT BRIGHTBUILT HOME CONSTRUCTED IN WELLS, MAINE. (PHOTO TAKEN MAY 24, 2012.)

energy efficiency into all of its modular homes and dedicates a portion of its factory floor to explaining building science to its clients through mockups and demonstrations. Bensonwood is pursuing panelized high performance with its Unity Homes line. Texas architects Lake/Flato are doing similar things with the striking Porch House line. And Chris Corson's ambitious EcoCor is kicking performance up to Passive House levels with panelization.

It's important to note that sometimes costs for these homes decrease, but not always.

Bensonwood's founder, Tedd Benson, is seeing the scale of this movement grow. He said, "We expect the growth to happen in big strides, not just one consumer at a time. We are in serious negotiations and conversations with 11 developer prospects."

Unity has signed on with developers for a large first-phase design development agreement. And they're working with "another prospect who's doing about 50-60 per year and a few others with 20 to 50 homes planned."

Bensonwood is just another harbinger of this trend. Lake/Flato principal Bill Aylor reports similar interest, which has been increasing steadily and rapidly after receiving their 2011 Builder's Choice Project of the Year Award for the Porch House concept. They now have projects as far north as New York and serious interest from across the country.

Currently, more than two thirds of new single-family houses in Sweden are prefabricated. According to the 2003 report "The Application of Renewable Energy for Prefab Houses in Germany," 14 percent of houses in Germany are prefabricated, many of which meet Passivhaus standards. In 2011, about 0.03 percent of homes in the United States were built in factories, according to an article by HowStuffWorks.com.

I could be wrong, but it sure seems like these builders overseas are just smarter about these things than we are.

Architects need to reevaluate this emerging but far-from-experimental means of building.

With these reliable and reproducible systems ensuring certain aspects of buildability and performance, we can spend more of our efforts – and our clients' fees – on designing what's visible, which we love to do.

A bonus opportunity that high-performance off-site construction can provide is the chance to be a more proficient and prolific designer. Still, we can't get lazy. We need to be aware of a home's specifications, limitations, context and performance. Perhaps it's time to think of the whole-house system in the same manner. Select the appropriate system for its use and setting and have it delivered intact to its site, ready for installation. If we rightfully scoff at the idea of assembling a home's individual components piece-by-piece, why do we still do so with the home itself? That's so 1953.

AIA 2030's CEO, Ed Mazria, said during a presentation at the Center for Architecture in New York City that about 60 percent of our housing stock will be replaced within the next 15 years. This is about 900 billion square feet of our built environment.

And as building codes change, the level of required performance will have to rise. This means that building higher-performing homes must go hand in hand with the need for speed.

And there's plenty of work for those of us who are already doing the right thing. You'll see it – including all of the above companies – on the floor of the BuildingEnergy16 conference. NESEA is at the forefront of this movement. It's where the leading edge is – and it's where you are right now. ☘

ABOUT THE AUTHOR

Phil Kaplan is a member of the NESEA Board of Directors and a principal at Kaplan Thompson Architects. Founded in 2004, the firm has emerged rapidly. Its motto, "Beautiful Sustainable Attainable," reinforces its commitment to creating vibrant, healthy and durable buildings for all. His newest venture is BrightBuilt Home, which provides affordable, modular net-zero homes throughout the Northeast and Mid-Atlantic regions.

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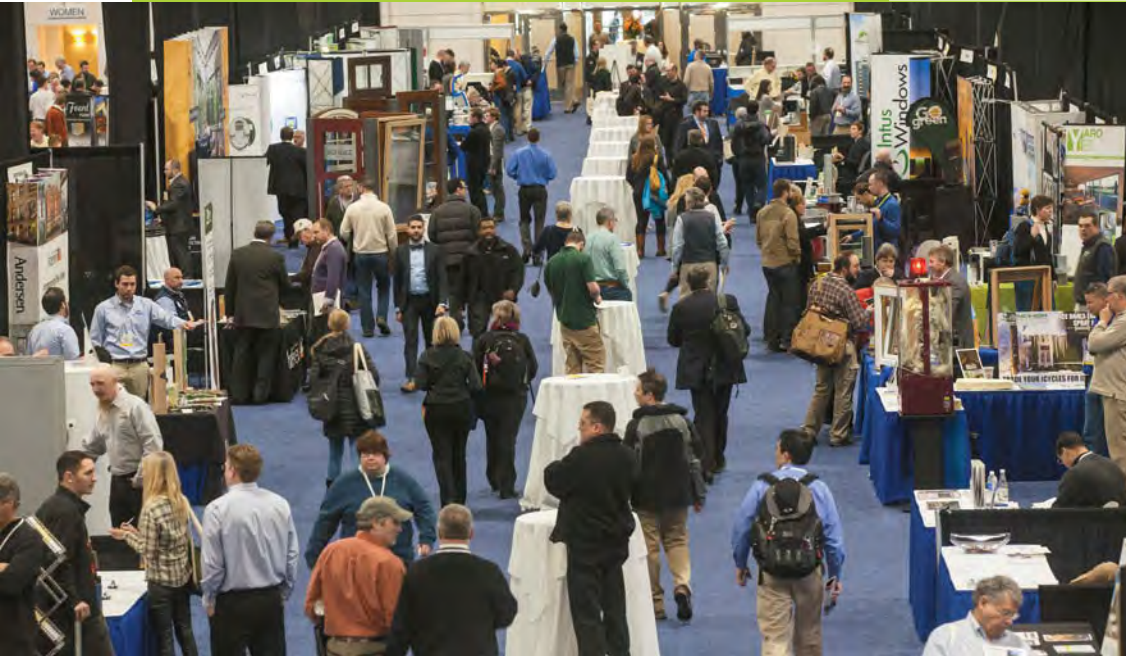
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BUILDINGENERGY 16 PROMISES KNOWLEDGE, INSPIRATION AND COMMUNITY

More than 4,000 people and 100 exhibitors will gather in Boston for three days in March 2016 around a vision of a sustainable, energy-efficient world. The NESEA community, known for its technical expertise and aspirational ideas, has been promoting sustainable building practices, renewable energy, and resilient regenerative communities for over four decades.

BuildingEnergy 16, a conference and trade show for renewable energy and high-performance building practitioners, will continue the tradition of sharing best practices, measured successes, and lessons learned related to different building types and communities. And while the focus of each educational session is unique, the sessions share a common commitment to addressing the burning questions of our diverse community of practitioners.

The topics covered will include:

Best Building Practices – From single-family houses to large institutional buildings, from renovations to new construction – what are the best building practices? What can we do better? What new practices, techniques and applications are on the horizon?

Myths and Traditions – What are the critical assumptions that underlie our work? Which do we need to re-examine and why? For instance, is moving to all-electric buildings best? Is superinsulation the greenest strategy? Are individual net-zero buildings the greenest strategy? Where and how do we need to think differently?

Water and Carbon – What are the footprints of our decisions about water and energy? How do we measure and evaluate our decisions?

Data and Metrics – What are the numbers we have and the ones we need? What do the numbers tell us? What metrics should we be

targeting? How do we know if we are progressing toward a healthy, resilient and regenerative world?


A Changing World – Vulnerabilities to rising water, increased storms, and changing ecosystems affect our human habitats. What do we need to know?

Outreach – How can best practices become the norm in the building and energy fields? How can we transform not just what people think, but what they do?

People and Place – Have we forgotten beauty? Do we remember placemaking? Have we forgotten fun? What does a sustainable world look like?

Policy and Codes – How can policies and codes better support a sustainable world? Which are most important to change and why? What programs are exceeding codes and setting new models?

Excitement – What's out there? What technologies are most exciting? Renewables? Energy storage? Better products? Better controls? What's happening in Europe? What are the case studies and successes that inspire our work?

The unique strength of BuildingEnergy is the professional diversity of the community. The conference draws from decision makers and practitioners across a wide range of scales and sectors. From builders, architects and engineers to owners, developers and policymakers, BuildingEnergy affords each of us an opportunity to learn from our peers both within and outside our regular spheres of practice. From the workshops, exhibitors and tours on Tuesday to the Wednesday keynote and the wrap-up on Thursday, it is the not-to-be-missed event for knowledge, inspiration, challenges, experience and community. 

NEW YORK COMPETES WITH BOSTON IN ENERGY EFFICIENCY

Editor's Note: The article below is a dialogue between F.L. Andrew Padian and Charles Komanoff.

WHY NEW YORK CITY IS #2: A BUILDINGS GEEK LEARNS THE IMPORTANCE OF TRANSPORTATION IN A YANKEES VS. RED SOX WORLD

BY F.L. ANDREW PADIAN

The American Council for an Energy-Efficient Economy (ACEEE) recently released its new “City Energy Efficiency Scorecard.” Casting away logic (and for the second consecutive time), the report ranked Boston #1 and New York #2.

Here’s the rub. In the table shown on the next page are ACEEE’s scores for the two cities. (Boston won by a comparative Bill Buckner error.) As you can see, Boston’s victory margin was in 1) local utility programs and 2) transportation policy.

In essence, New York City lost the trophy because New York state doesn’t make utilities invest in energy efficiency in New York City as much as Massachusetts does in Boston. Also, New York state is blocking programs to reduce car traffic in and around New York City.

Yes, that’s New York’s state policies. The decisions that most critically shape transportation in New York City – concerning funding for mass transit and charging drivers a “social price” for car use – are made in the state capital.

That would be Albany. The location and culture of Albany are in a marked contrast to those of New York City. Whereas any state decisions affecting Boston are made in the capital of Massachusetts. That would be Boston. In the same way that anywhere a few miles outside of the Boston metro area is considered “western Mass,” the counties north of the Bronx are considered by many to be “upstate.”

It is easier for Massachusetts, a state of fewer than seven million, to invest in its capital and the metro region, than it is for New York to do the same.

70 percent of the state’s population lives within the Boston metropolitan area. In New York state, add Westchester and Long Island to New York City, and the population is 11.9 million of 19.1 million statewide, a respectable 62 percent.

But New York City is not the capital – and as they say, all politics are local. New York state continually rebuffs policy proposals that could help New York City residents.

If New York City is #2, it’s because we have archaic policies that allow people to drive into Manhattan without paying a charge for contributing to congestion. It is a sad and cowardly refusal of upstate legislators, whose only pedestrian traffic involves walking to their cars, to understand the depth of health, monetary and carbon benefits New York City and its metro area would get from changing the way we treat vehicles entering the heart of the city.

The built environment, rather than transportation, is our first concern at NESEA. But our heads were spun around by Projjal Dutta of the Metropolitan Transportation Authority in New York at a recent NESEA annual meeting. He reminded us that a super-efficient office building in a big city is significantly more efficient than its counterpart in the suburbs because its employees often take mass transit, walk or bike to work. In the suburbs, it’s all about “carchitecture.”

Some of those “efficient” suburban buildings, Dutta pointed out, use five to ten times more energy in transporting workers to their premises than they use in power and heat. This makes the wonderful

ACEEE's 2015 Energy Efficiency Scores for Boston and New York City

City	Boston		New York	
Category	Rank	Score	Rank	Score
Total	#1	82	#2	78
Transportation	#3	19.5/28	#8	17.5/28
Energy, Water, Utilities, and Public Benefit Programs	#1	17.5/28	#7	13.5/28
Buildings	#1	27/29	#2	26/29
Community Initiatives	#2	9/10	#1	9.5/10
Local Government	#12	9/15	#1	11.5/15

Source: *The 2015 City Energy Efficiency Scorecard*
 Published by American Council for an Energy-Efficient Economy
aceee.org/research-report/u1502



1. THE FIRST LEED GOLD MULTIFAMILY BUILDING IN THE UNITED STATES IS LOCATED IN NEW YORK CITY. 2. THIS LOW-TRAFFIC MOMENT IN NEW YORK CITY ON JULY 11, 2015 SHOWS HOW THE CITY MIGHT LOOK WITH LESS TRAFFIC CONGESTION 3. NEW YORK CITY APARTMENTS WITH EXTERIOR STAIRCASES ARE A COMMON SIGHT. THESE WERE PHOTOGRAPHED ON JULY 13, 2015.

building design insignificant in comparison to the energy and carbon created by the cars. Added to that is the space wasted for these typically low-rise buildings. Ugh.

The fact that cars use more fuel energy than efficient buildings do is known to many; the stark reality was discussed after Dutta's presentation. Some expressed both concern and resignation that our work in buildings was putting our "energy" in the wrong sector.

We talk about transit-oriented development and we are all "enviros," but most of our conference attendees drive their cars or fly to our Boston BuildingEnergy

conference while most take mass transit to our New York City BuildingEnergy conference. Does this sound like a competition? Well, ask anyone - it is.

To understand the depth of this problem and compare New York City to Boston in transportation, I asked one of my first mentors, the true energy genius Charles Komanoff, to ponder the transportation contributions of energy efficiency and carbon in New York City and Boston.

For the record, New York City is the city with 29 World Series trophies. (That includes the Mets, who have two; I forgot whom they beat the last time they won.) I'm just sayin'.

Award-Winning Net-Zero Residence Spearheads NESEA's New BuildingEnergy Case Study Database



NESEA is excited to unveil its new database of high-performance buildings on October 15, 2015 at BuildingEnergy NYC, beginning with this past year's Zero Net Energy Building Award winner, the Giordano-Smeltz residence.

To construct a net-zero home today, builders need to simply follow "The Formula:" insulate using the R20-40-60 rule, get the ACH50 below 0.6, use triple-pane windows, and install a 5-10 kW PV system. The question now is how to bring down costs, get by with a smaller PV system and decrease the energy needed to create the building.

When building this residence, Spartan and Hannah answered the call to improve upon "The Formula" – not through any single measure but through a myriad of small design solutions, most of which, like passive solar, incur little or no additional cost.

Last winter, the average indoor temperature of the Giordano-Smeltz residence was 68 degrees, while the heat pump used a mere \$190 worth of electricity. Also, during the first year of operation, the 4.5 kW PV system produced a 500-kWh surplus, easily securing a net-positive title for the all-electric home.

Although it is important to decrease the operational costs of a building, this year's winners chose to focus on the often-overlooked embodied energy of construction. Throughout construction, they made an effort to use recycled or second-market products and decrease the use of materials with heavy carbon footprints like concrete, aluminum, drywall and foam.

To dive into the data and learn more about this masterful building, visit NESEA's BuildingEnergy Case Study Database today:
nesea.org/case-studies



Explore other high-performance buildings at: nesea.org/case-studies



THIS LEED AFFORDABLE HOUSING DEVELOPED BY LES BLUESTONE IN NEW YORK CITY, STANDS OUT BECAUSE OF ITS WIND ENERGY INSTALLATION. THE PHOTO WAS TAKEN IN 2009.

AN OBSTACLE COURSE BLOCKS PROGRESS FOR NEW YORK CITY DRIVERS AND TRANSIT RIDERS

BY CHARLES KOMANOFF

Andy is too kind. But on the matter at hand – whether Boston deserves top billing over New York City in ACEEE’s energy efficiency report – I think he’s absolutely right: we New Yorkers wuz robbed. ACEEE’s scoring didn’t take into account the fact that New Yorkers drive much less than Beantown residents.

Indeed, residents of Boston drive around two-thirds more miles per person than residents of New York City. Even downgrading New York City for its preponderance of stop-and-go traffic, which adds to its emissions per mile, Boston’s per capita CO² emissions from motor vehicles are 50 percent higher than New York City’s: an estimated 16.5 pounds of carbon dioxide per Beantown resident per day vs. 10.8 per New Yorker. (These figures apportion all miles driven in each city among city residents only, which probably overstates per-capita miles, but it does not bias the city comparison.)

Many factors account for this difference between the two cities. The top ones are these:

- Driving costs more in New York City. A higher share of bridges and tunnels are tolled (and at much higher rates). Free parking is less prevalent.
- New Yorkers use public transportation two to three times as much as Bostonians.

- Traffic congestion is more intense and widespread in New York City. While that raises per-mile emissions, it erodes the utility of driving and thus reduces New York City’s miles driven per capita.
- New York City has twice Boston’s population density. With all else equal, density reduces driving since more destinations are in proximity and thus are more reachable by walking, bicycling and transit use.

At least two and arguably all four of the above factors are policy-driven. Round-trip tolls on eight different New York City tunnels and bridges easily exceed \$10. That high level is for the explicit purpose of financing mass transit.

Moreover, those tolls are only one of a number of fees and taxes on petroleum products, payrolls, real-estate transactions, and general sales that finance operations, upgrades and expansion of the regional transit network.

And recently, in a nascent but striking turnaround from the prior century, city government policies are taking street space from drivers and allocating it to bus riders, walkers and bicycle riders – in effect, ratifying traffic gridlock rather than seeking to accommodate it. Moreover, the last-listed factor militating against driving, New York’s density, is itself enabled by the ubiquity of mass transit.

Now let's put driving in context. By coincidence, New Yorkers' daily CO₂ footprints from electricity and driving are virtually identical: 10.5 and 10.8 pounds per person per day, respectively. (The national average for electricity, by the way, is around 38 pounds.)

In New York City's low electric carbon footprint, we see the impact of both small residences and a per-kWh CO₂ emission rate that's barely half the national average due to domination by natural gas (63 percent) supplemented by nuclear power (27 percent).

I haven't been able to calculate Boston's per-capita electricity carbon footprint, but it would be surprising if it was even close to New York City's.

Returning to driving: the upshot is that New York City's five-to-six pounds-per-day advantage over Boston is both a big deal numerically and largely an outcome of public policy.

This makes it somewhat bizarre that the ACEEE scorers ranked Boston ahead of New York in transportation policies – by 19.5 points vs. 17.5 points. Simply reversing those scores would have offset Boston's net advantage of two points in the other criteria, leading to a tie in the overall score.

I'm well aware that the ratings are at least as much about policies as outcomes. That's why I took pains to elucidate that New York City's lead over Boston in driving-related carbon emissions is largely policy-driven.

Moreover – and here I build on an argument Andy advanced above – our automotive carbon footprint would be lower still, but the state legislature refuses to let us reform our road and bridge tolls and rationalize both driving and transit.

Albany's rejection in 2008 of then-mayor Michael Bloomberg's congestion pricing initiative is well known.

Less widely-recognized is the newer toll plan advanced by advocates including myself that would have fixed the inequities in the Bloomberg proposal and created a robust new revenue stream to finance the next tranche of subway improvements. I say "would have" because our plan has run into the same legislative brick wall.

Our plan, called Move NY, would charge drivers to enter and leave Manhattan south of 60th Street while cutting by nearly half the toll rates on outer-borough bridges like the Triborough Bridge and the Verrazano-Narrows Bridge. The net revenue, capitalized, would plug the \$15-billion hole in the Metropolitan Transportation Authority's next capital plan, letting the transit agency modernize its creaking subways that are straining to carry record numbers of riders.

Our proposal represents the boldest conception for meeting the city's transportation and traffic needs since the revolutionary (and destructive) highway-building in the early Robert Moses era 80 years ago. Its promise to lower tolls on all seven Moses bridges would end decades of forcing outer-borough bridge users and long-haul truckers to fund transit so that a million car trips a day into and out of the gridlocked

Manhattan core can remain un-tolled. The monetary gains in air quality, street safety, and, above all, time savings for drivers and transit users alike would outweigh the new tolls by two to three billion dollars a year, by my estimates.

Interestingly, the reduced carbon footprint accounts for only one to two percent of this net benefit. This is a measure of the fact that the vehicle trips which the Move NY plan would toll are only a tiny fraction of citywide vehicular travel. The tolls are meant not to eliminate these auto trips but to charge a social price for them: don't ban the cars, bill them. The plan's real carbon benefit would come from enabling our inherently green city to function and grow and thus absorb a million or more new people and jobs that would otherwise flow to some car-dependent suburban ring.

While our plan's poor prospects make for a bitter pill, the blame shouldn't be pinned on the city, where support has been robust. But notwithstanding this setback, New York City's clear and largely policy-driven supremacy in vehicular carbon emissions is hard to reconcile with Boston's getting the nod on transportation policies. "Deflate-gate" it's not, but you gotta wonder if ACEEE's judges, like the refs in last winter's American Football Conference championship, were mesmerized by Brady and Belichick and took their eyes off the ball. 🏈

ABOUT THE AUTHORS

Charles Komanoff is an activist, economist and policy analyst. He directs the Carbon Tax Center and develops traffic-pricing modeling tools for the Nurture Nature Foundation. His work includes books (*Power Plant Cost Escalation*, *Killed by Automobile*, *The Bicycle Blueprint*), computer models, scholarly articles, and journalism. An honors graduate of Harvard in math and economics, Charles lives with his wife and two sons in lower Manhattan.

F.L. Andrew Padian is a private consultant with 35 years of experience in the building science of multifamily buildings. He has performed energy analyses and successful solutions on thousands of buildings across the country. He is a frequent contributor to sustainable publications and speaks nationwide. A NESEA board member, he is an active volunteer in New York City's Urban Assembly School for Green Careers, Clinton Community Garden, and GreenHomeNYC.

New York City's clear and largely policy-driven supremacy in vehicular carbon emissions is hard to reconcile with Boston's getting the nod on transportation policies.

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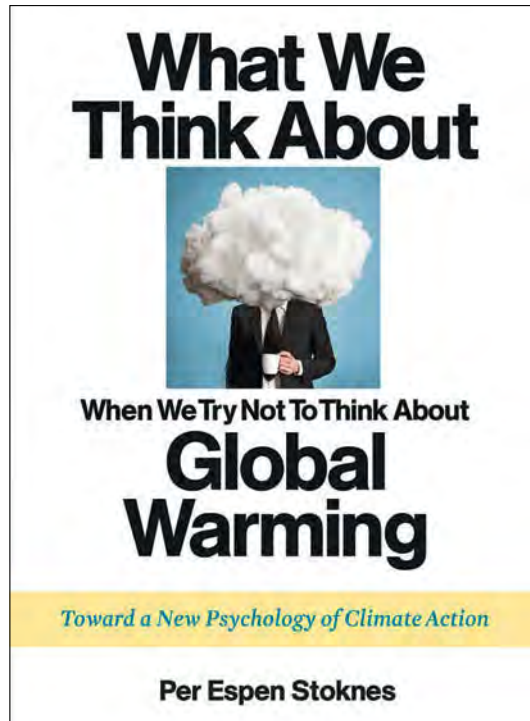
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This book radically reframes the approach for people to take to address global warming. To make this book work for you, you have to suspend your historical assumptions and work with the material.

Let it churn your heart and soul rather than using your mind. When you engage with the book in this way, it will change how you think, act and are in the world.

The key is in the book's subtitle: "Toward a New Psychology of Climate Action." The book is based on psychology and the spirit first and science second. Let's make the change we want personal – solo and with others – and not global. It is a bottom-up approach.

Per Espen Stoknes, a psychologist and economist from Norway, aims to change the conversation and practice of what we do to reduce carbon emissions. He is a colleague, and like me, a student of James Hillman – one of the creators of archetypal psychology.

My love of cities and place comes from Hillman. Hillman built on the work of Carl Jung and Alfred Adler, but challenged and went beyond both of them. This kind of psychology and Stoknes's book are rooted in universal, ancient patterns of understanding and behavior with a heavy dose of aesthetics such as "breathing in the soul of the world." Hillman described this approach in 1975 in his book, "Re-Visioning Psychology."

The book unfolds in three sections that focus on thinking, doing and being.

Thinking is the frame of mind we use to address global warming and the facts we must demonstrate the case for taking action. Doing includes

the actions we take. Being is about how we are each asked to be more emotionally present in the world.

The first and second sections offer the usual remedies for responding to the Earth heating up.

That said, what Stoknes presents in these two sections goes against climate-change gospel.

The third section on "being" makes this book come alive and breaks new ground. Here, Stoknes challenges the historical approach of all the "rock stars" who are leading the way on climate change with rationality and piles of data. We are done with that strategy.

This book tells a new story – a story rooted in mythology and age-old archetypes – a core tenet of archetypal psychology. It asks us to think and practice differently and learn what to do through trying. Begin with feeling your emotional connection to the earth. Then, find fresh ways of doing based on your being. And last, bring out the facts as needed.

A word of caution: many of my NESEA colleagues will bristle at Stoknes' references to LEED as the standard for energy efficiency and the use of electronic cars to reduce the use of carbon. While Stoknes may lack the context to know that other standards, such as Passive House, Living Building Challenge, or net-zero energy, move us closer to our energy goals than LEED does, these are small concerns in the bigger picture of what Stoknes invites and challenges us – as seasoned practitioners – to think, do and become.

THINKING: UNDERSTANDING THE CLIMATE PARADOX

This book does not refute that the climate is changing – and not for the better. Rather, it invites us to let go of many decades of using four approaches: rationality, data, doomsday prophesies, and global policy change.

The more the science and data are presented to those who are not aligned with them, the more people go numb. Keep pounding with the logic and data and even more resistance rises up.

In archetypal psychology, rationality and data are Apollo-driven, using this approach: "I am in charge, so follow my command and control over you." Follow me. And right now there are two different Apollos – those aligned with and those positioned against the conditions of a changing climate.

It is like dueling banjos with no resolution – each banjo keeps notching it up. And now we are numb. So Stoknes suggests we stop playing both banjos by putting the facts in our back pockets and using them "just in time," when they come up in conversation with others. Lead with your doing and being.

DOING: IF IT DOESN'T WORK, DO SOMETHING ELSE

John Dewey loved to say all learning springs from doing. Then after doing, create the space to reflect on what you did. And sometimes the reflection leads, if necessary, to a change in the next doing. This is

the essence of what Stoknes asks of us. Let's not get trapped in our old short lists of to-dos. Try stuff. Experiment. And make the doing both personal and communal.

Instead of talking about destruction and demise, using mounds of data, state a vision of what is possible. Explain there is Herculean work to do for us to get there. People will engage in what is possible. Affirm what is possible, but not with a guarantee.

My old teacher, Robert Fritz, author of "The Path of Least Resistance," taught students to focus on the vision of what they want to create and not the current reality – the doom.

By doing this, you can move beyond current reality into actualizing what you want to create. Fritz used to teach this way of working by holding a rubber band between his two hands with each hand representing structural tension. One end of the rubber band, the top, was the vision of what one wants to create. The other end was current reality – below the vision hand. Since all tension seeks resolution, focus on what is to be created. It can happen.

In our doing, Stoknes asks us to focus on our locality and nurture its sense of place. What actions can you take that reduce carbon use? Show people what you are doing without demanding they do the same.

His premise, based on social psychology research, is this: people change their behavior more when part of and influenced by a group of peers or a social network of people they value because they want to be included in what is happening.

People want to belong. They want to be part of the local crowd doing stuff. Reflect on what you see everywhere with more people recycling and composting now than before. Banging them over the head with logic and facts turns the next potential change-agents away from change.

BEING: BE INSIDE THE LIVING AIR

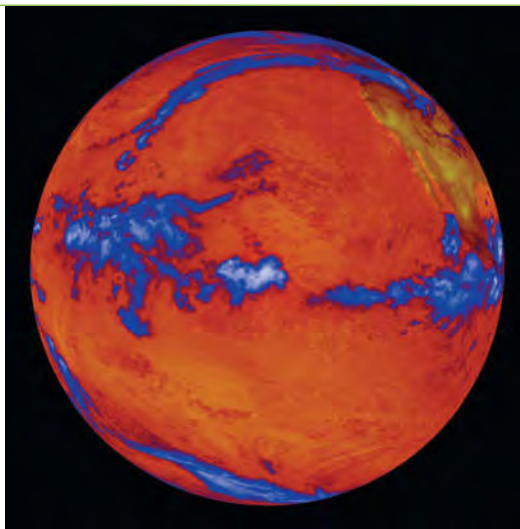
As noted earlier, this section moves the story and conversation into fresh territory and practice about what we each can do about the burning of the Earth.

Some may find this squishy and "out there." But "out there" is actually where we must go next to do something about what is going on with the planet. We tend to talk abstractly about greenhouse gases. There is lots of poetic language that can be used to take us out of the abstract. For example, why not center on the air we breathe each day?

The second-to-last chapter, titled "Reimagining Climate as the Living Air," puts the issue right in front of us.

Even though "global warming" is in the book's title and the phrase "climate change" is often used, Stoknes prefers to use "climate destruction" or "the Earth is burning." Both terms are less abstract and more visceral than the words we usually use.

What is going on with the climate shows us symptoms to attend to and observe, not problems to solve. We have to feel the pain. That is the point.



THIS FALSE COLOR IMAGE OF THE EARTH IS PRODUCED BY THE CLOUDS AND THE EARTH'S RADIANT ENERGY SYSTEM (CERES) INSTRUMENT FLYING ABOARD NASA'S TERRA SPACECRAFT. THE IMAGE SHOWS WHERE MORE OR LESS HEAT, IN THE FORM OF LONG-WAVE RADIATION, IS EMANATING FROM THE TOP OF THE EARTH'S ATMOSPHERE.

The more the science and data are presented to those who are not aligned with them, the more people go numb.

Being with the pain or the depression of climate destruction is what matters. Depression is a teacher of what the soul of the world wants us to do. It is as important as saying "Up – let's do it."

Throughout the book, Stoknes tells his stories of insights as he reframes what is happening to him and his assessment of the planet. His personal stories are one part of what makes the book a compelling read.

TAKING IN OUR CHARGE: MAKE CHANGE

To take in the power of this book, we must suspend our reliance on a historical framework, lists of facts, and once-proven practices about climate. We are invited to take on the roles of local doers and storytellers.

Lead by example and make it personal. Work in groups. Again, feel the Earth's pain and share that pain with others. It is not about wallowing in the pain. It is about having the courage to create change, locally and with others. And when you are sad, you are sad and that is OK.

Gandhi said it best: "Be the change you wish to see in the world." 🌍

ABOUT THE AUTHOR

Robert J. Leaver has more than 43 years of experience organizing more than 500 projects for clients in the Northeast. He is a community psychologist. As a convener, facilitator and provocateur, he has led thousands of groups on the journey from confusion to clarity – managing each group's unique dynamic to help people generate their best thinking, identify the connections to required capabilities, and implement a fresh plan of action. His passions and areas of focus: cities, place and community; the future of teaching and learning; and the impact of digital technology on everything. His company is New Commons.



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In addition to an institutional commitment to sustainability and social justice, AUNE offers the MBA in Sustainability (Green MBA). Competency in sustainability methods, systems thinking, leadership, and collaboration is developed across our integrated curriculum. Our 36-credit MBA in Sustainability is a 2-year weekend program.

Specialties: Commercial & Institutional, Education

Apricus USA, Inc.

1150 South Milliken Ave.
Ontario, California 91761
909-374-9800

inquiry-usa@apricus.com
http://www.apricus.com

Apricus is a leading designer and manufacturer of solar hot water and hydronic heating products. Founded in 2003 by Australian Mick Humphreys with a specific focus on solar thermal solutions, Apricus has since grown into a global company with distribution and support offices worldwide.

Atelier Ten, LLC

45 East 20th St. Floor 4
New York, New York 10003

212-254-4500
newyork@atelierten.com
http://www.atelierten.com

Atelier Ten are environmental designers and building services engineers committed to the application of low-energy and sustainable design principles. Our core objective is to develop well-integrated buildings with simple systems that work with the natural

Auburndale Builders

305 Auburn St.
Newton, Massachusetts 02466
617-467-4171

nick@auburndalebuilders.com
http://www.auburndalebuilders.com

We are passionate about high-performance homes: new construction, renovation, Passive and Net-Zero. Our team knows the integrated process necessary for a truly high-performance home and works with the right experts to ensure excellent results. We believe in making the process as good as the product to enhance the lives of those who live there.

Specialties: Alternative Energy, Beyond Energy, Building Design & Construction, Energy Conservation, Indoor Air Quality, Insulation, Remodeling/DER

Austin Design, Inc.

16 Call Road
Colrain, Massachusetts 01340
413-624-9669

office@austindesign.biz
http://www.austindesign.biz

Austin Design, Inc. provides architectural design services for homes, businesses and communities. We advocate a team approach between client, builder and architect that encourages the sharing of expertise and a passion for good design.

Specialties: Building Design & Construction, Landscape Design, Architecture

B**Bakker & Lewis Architects**

243 Jackson Road
Shavertown, Pennsylvania 18708
570-675-8843

mbakker@bakker-lewis.com
http://www.bakker-lewis.com

We are a small architectural firm specializing in designing new and retrofitting existing buildings which are both responsive to individual needs and that contribute to a greener environment.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Bales Energy Associates

50 Miles St.
Greenfield, Massachusetts 01301
413-863-5020

bart.bales@balesenergy.com
http://www.balesenergy.com/

Bales Energy Associates provides whole building energy analyses; high-performance mechanical design; and solar energy & wind energy systems analysis & design services.

Specialties: Building Design & Construction, Energy Auditing, Photovoltaics

Barnstable Water Pollution Division

617 Bears Way
Hyannis, Massachusetts 02601
508-790-6335

peter.doyle@town.barnstable.ma.us
http://www.townofbarnstable.us/WaterPollution/

The Water Pollution Control Program, an enterprise account-funded program under the Department of Public Works, manages a wastewater collection, treatment and disposal system, including the operation and maintenance of a secondary wastewater treatment plant, 30 sewage pump stations and 55 miles of sewer lines. The Program also includes the operation of a pretreatment program and a laboratory for testing the quality of sewage and septage to prevent the introduction of toxic wastes into the system and to ensure compliance with Federal and State regulations. In addition, the Program manages an accounts receivable and billing system for users of the sewer system.

Specialties: Cities & Communities

Valley Solar

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Basnett Design/Build/Remodel

14 Gilson Road
Littleton, Massachusetts 01460
978-952-2552
jim@basnettdbr.com
http://www.basnettdbr.com

Full service residential remodeling company with extensive experience in all phases of residential construction. We are passionate about energy efficiency, durability, low maintenance, and indoor air quality and bring that passion to every job that includes repair or modification to the building envelope and/or mechanical systems.

Specialties: Building Design & Construction, Remodeling/DER

Baukraft Engineering

307 14th St.
Brooklyn, New York 11215
347-674-4287
cramer@baukraft.com
http://www.baukraft.com

Baukraft Engineering provides design and consulting services for high-performance buildings in the residential and small commercial market, focusing on HVAC systems and enclosure design & detailing for both new construction and renovation projects. Certified (CPHC) Passive House Consultant and Professional Engineer (PE) on staff.

Specialties: Building Design & Construction, Consultancy, Home Inspection

Benjamin & Company, Inc.

136 Maine St. #5
Brunswick, Maine 04011
207-729-7171
ben@benjamin-co.com

http://www.benjamin-co.com/
With a blend of fine New England craftsmanship and innovative, modern building methods, Benjamin and Company Timber Frames and Custom Homes proudly offers a broad range of custom home building resources in Midcoast Maine including creative design, fine construction, and general contracting.

Bensonwood Homes

6 Blackjack Crossing
Walpole, New Hampshire 03608
877-203-3562
info@bensonwood.com
http://www.bensonwood.com

Bensonwood is acknowledged as a premier designer-builder of energy-efficient timber frame, hybrid and other high-performance homes and commercial buildings. Our mission is to find better ways to build, while consistently improving people's lives. Bensonwood is also deeply engaged in bringing a vision of sustainability to the future of housing. We understand that the housing industry must change so it is both responsive to the consumer and responsible to the earth. To create a sustainable society one must build sustainable homes—with approaches to home building that link beauty and craft, ecology and wise resource use, simplicity and elegance.

Specialties: Building Design & Construction, Design Process

Berkshire Photovoltaic Services (BPVS)

46 Howland Ave.
Adams, Massachusetts 01220
413-743-0152
info@bpvs.com
http://www.bpvs.com/

Since 1985, the highest quality design and installation of efficient and durable photovoltaic systems for residential, commercial & institutional customers. Visit www.BPVS.com for more information!

Specialties: Alternative Energy, Energy Conservation, Photovoltaics

BETTER, Inc.

7 Kilburn St. Suite 210
Burlington, Vermont 05401
802-540-0843
david@photonica.biz
http://www.better-bee.com

EFFICIENCY THE BETTER WAY-From strategic planning and design, to project financing, better helps its clients to achieve their goals of highly energy efficient buildings and communities worldwide.

Specialties: Building Design & Construction, Research, Finance/CPA

Beyond Green Construction

13 Terrace View
Easthampton, Massachusetts 01027
413-529-0544
info@beyondgreen.biz
http://beyondgreen.biz/

Beyond Green Construction is a family owned and operated green building company based in Easthampton, MA. The BGC family, Sean, Andy and Jamey Jeffords, were raised in a tradition of craftsmanship, developed through apprenticeships with their father's company specializing in historic restoration and fine woodworking. The brothers honed their skills with additional education and experience for cutting edge green building, insulation and alternative energy techniques to prepare properties to meet the energy challenges of the 21st Century.

Specialties: Remodeling/DER, Insulation

Black Mountain Design Build

16 Academy St.
Saranac Lake, New York 12983
518-354-8340
info@blackmountaindesignbuild.com

http://www.blackmountaindesignbuild.com/
Black Mountain Design Build provides exceptional service, thoughtful design, and step-by-step education enabling clients to meet their goals. The firm specializes in high quality, regionally focused design; high performance energy consulting; and ecologically sensitive landscape design. With a focus on sustainable design, BMDDB can help clients achieve a variety of objectives from LEED certification and NetZero energy use to ensure that your home is healthy and situated gracefully on its site.

Specialties: Building Design & Construction, Design Process, Net Zero Energy

Blake Group

4 New Park Road
East Windsor, Connecticut 06088
800-353-1100
sales@blakeequip.com
http://www.blakeequip.com

The Blake Group is a specialty distributor and manufacturers' representative offering solutions that allow sustained use of water and thermal energy resources. We serve our partners who design, build, maintain and manage these systems; providing innovation through technology and best in class products and services...for a better world.

Specialties: Solar Thermal, Geothermal, Alternative Energy, Renewables & The Grid

Blue Sea Development Company, LLC

164 Main St.
Huntington, New York 11743
631-923-0081
les.bluestone@blueseadev.com

Blue Sea Development Company/Blue Sea Construction Company is an affordable housing developer/general contractor working primarily in the New York City metropolitan area.

Specialties: Building Design & Construction

BPC Green Builders, LLC

523 Danbury Road
Wilton, Connecticut 06897
203-563-9909
mike@bpcgreenbuilders.com
http://www.bpcgreenbuilders.com

Green building for new and existing homes based on building science and sustainability criteria. Award-winning builder with extensive local experience. 100% Energy Star. Certified Passive House, Multiple LEED homes, including four at Platinum. Certified Passive House Consultant services available.

Specialties: Building Design & Construction, Consultancy, Remodeling/DER

Brand Cool Marketing

2300 East Ave.
Rochester, New York 14610
585-381-3350
suekochan@brandcool.com
http://brandcool.com/

Business is a powerful force. And when it balances people, profit and planet, it works in everyone's favor. Brand Cool is a B-Corp committed to empowering brands that build a better world by designing strategies, programs, integrating campaigns with humanity at their core. We're also a proud woman-owned business (WBE) and an approved contractor for the U.S. General Services Administration (GSA) for specific advertising and integrated marketing solutions.

Specialties: Marketing

Briburn

28 Maple St. Suite 202
Portland, Maine 04101
207-847-3788
cbriley@briburn.com
http://briburn.com

Design Philosophy: "architecture for life" is the creation of architecture that is timeless, environmentally friendly, beautiful, and long-lasting. Architecture that focuses on the experiences of the building's occupants, enhancing their daily lives with natural daylight, excellent ventilation, and delightful spaces that engage their artful minds, architecture that is mindful of our finite resources and respectful of the natural environment. It is architecture that will stand the test of time by being very durable, simple to operate, economical to maintain, and beautiful. Our Mission: Briburn is committed to creating innovative, energy efficient, green solutions for residential, commercial, Institutional and civic projects that artfully reflect our client's needs and interests.

Specialties: Architecture, Beyond Energy, Building Design & Construction, Design Process, Education, Indoor Air Quality, Multifamily, Net Zero Energy, Passive Housing, Single Family

Brisette Electric, Inc.

P.O. Box 4904
Vineyard Haven, Massachusetts 02568
508-693-0764
jarret@briselectric.com
http://briselectric.com/

Brisette Electric, Inc. is a Martha's Vineyard based electrical contractor committed to customer service and quality. Our electricians take a team approach on every job and are dedicated to providing quality and performance that will exceed expectations. We enjoy working with people, and will do everything possible to complete your project in a professional and timely manner.

Specialties: Construction Process

Building Science Corporation

3 Lan Drive Suite 102
Westford, Massachusetts 01886
413-774-6051
betsy@buildingscience.com
http://www.buildingscience.com

Building Science Corporation is a building science consulting and full service architecture firm that specializes in building technology consulting for all types of buildings including commercial, institutional and residential. In addition to our architecture and consulting services we offer free, objective, high-quality information to promote the design and construction of durable, healthy, energy-efficient and economical buildings. Through our Bookstore we offer publications related to building science including moisture management, building enclosures, psychrometrics, water management and ventilation. We also regularly conduct workshops and seminars that focus both on introductory building science topics and advanced building science principles and practices.

Specialties: Consumer Information, Consultancy, Education

Building Shelter, Inc.

P. O. Box 2297
Vineyard Haven, Massachusetts 02568
508-696-3757
info@buildingshelter.com
http://www.buildingshelter.com

We build homes from nature. Our construction practices are based on building science and the tradition of our trade. Our team is trained to understand how buildings work well and why they can cause harm. We are RESNET trained, a Certified Passive House Builder, Certified Passive House Consultant, EPA Lead Safe Certified Firm, certified Building Performance Institute Home Analyst Professional. Our carpenters are trained to understand that a house is more than parts assembly. A building incorrectly conceived and executed can be expensive to maintain and harmful to live in and harmful to nature on which we depend. We value honesty and good relationships with our clients, helping our community and respect for nature.

Specialties: Building Design & Construction, Consultancy

BuildingGreen, Inc.

122 Birge St. Suite 30
Brattleboro, Vermont 05301
802-257-7300
jerelyn@buildinggreen.com
http://www.BuildingGreen.com

BuildingGreen provides building industry professionals with well-researched information on environmentally sound building practices and green products. Online resources include BuildingGreen and LEEDuser.

Specialties: Alternative Energy, Beyond Energy, Building Design & Construction, Education, Energy Conservation

BuildingLogic, Inc.

P.O. Box 210
Gardiner, New York 12525
845-443-0657
lillianmaurer210@gmail.com
http://buildinglogicinc.com/

We design and build beautiful high performance homes. Our full service company integrates traditional craft, science, and modern design, to create durable efficient homes that people love to live in.-Certified Passive House Consultant and Tradesperson.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Byggmeister, Inc.

667A Sawmill Brook Parkway
Newton, Massachusetts 02459
617-527-7871
info@byggmeister.com
http://byggmeister.com

Byggmeister is a residential design/build remodeling firm founded in 1983. Our priorities for each project are comfort, durability, and efficiency and a unique level of accountability.

Specialties: Building Design & Construction, Remodeling/DER

C**CGH Architects**

49 South Pleasant St. Suite 301
Amherst, Massachusetts 01002
413-549-3616

tom@coldhamandhartman.com
http://coldhamandhartman.com/
C&H Architects is a full service architectural practice designing residential, commercial, and institutional buildings for mission-driven public, non-profit, and private clients. We create transformative designs for a renewable future, making buildings that are loved in the region where we live. C&H: Design for the Next Hundred Years

Specialties: Architecture, Energy Conservation, Remodeling/DER

Casaceli Construction, LLC

55 West St.
Northborough, Massachusetts 01532
508-351-9400
michaelcasaceli@gmail.com

Casaceli Construction, with over 30 years of experience, builds and remodels homes. Leveraging our experience, we are focusing on building in ways that are healthy for our clients and the Earth. Casaceli Construction has made a commitment to be a sustainable builder and remodeler and to pass the benefits on to our clients. With this commitment, we are offering deep energy retrofits and zero energy ready homes.

Specialties: Building Design & Construction, Remodeling/DER

CED Greentech East

15 Commerce Way
South Windsor, Connecticut 06074
860-436-5321
solarteam@cedgreentecheast.com
http://www.cedgreentecheast.com/

CED Greentech East serves East of the Mississippi in the ever-expanding solar industry. We work closely with installers and have both excellent service and extensive experience in the electrical and photovoltaic fields. Our goal is to meet your project requirements at a competitive price, and to manage and deliver your system in a timely and professional manner. Our stock of material and accessories will help complete your jobs without any holdups! Greentech personally handles daily deliveries throughout the region, ensuring that your complete system arrives on time and at no additional cost to you! We get low freight rates through our corporate account and your order will be shipped out same day!

Specialties: Photovoltaics

Celebration Contracting

736 Boston Post Road Suite C
Madison, Connecticut 06443
860-883-6200
bfreeman@celebrationcontracting.com
http://celebrationcontracting.com/

At Celebration Contracting we are proud to have been part of the emphasis on energy efficiency from its earliest phases when the Energy Star program began in the 1990's. Since then, we have been major advocates and practitioners of Green Building. Our company is not only passionate, but as a team, we have extensive experience utilizing many types of energy-efficient construction practices while continuing our education and certification to keep abreast of the latest technologies and products as they become available.

Specialties: Building Design & Construction, Construction Process

Celtic Energy, Inc.

701 Hebron Ave.
Glastonbury, Connecticut 06033
860-882-1515
info@celticenergy.com
http://www.celticenergy.com

Celtic Energy is an independent consulting firm founded to help energy users and associated organizations maximize their cost reduction and productivity benefits in the ever-changing energy marketplace.

Specialties: Alternative Energy, Beyond Energy

Center for EcoTechnology (CET)

320 Riverside Drive
Northampton, Massachusetts 01062
413-586-7350
susan.ash@cetonline.org
http://www.cetonline.org

The Center for EcoTechnology helps people and businesses in Massachusetts save energy and reduce waste. We make green make sense. For more than 35 years, we've offered proven advice and resources to save you money, make you more comfortable at home, and help your business perform better. As a non-profit 501(c)(3), CET works with partners throughout the region to help transform the way we live and work for a better community, economy, and environment â€” now and for the future. We provide practical solutions that save energy, materials and money and have a positive impact on our environment and community. We serve residents, business and communities in the areas of energy efficiency and waste reduction and through our retail store, EcoBuilding Bargains.

Specialties: Commercial & Institutional, Composting, Education, Energy Auditing, Energy Conservation, Insulation, Multifamily, Net Zero Energy, Renewables & The Grid, Single Family, The Big Picture, Wind

Centerbrook Architects and Planners, LLP

67 Main St.
Centerbrook, Connecticut 06409
860-767-0175
coan@centerbrook.com
http://www.centerbrook.com

Centerbrook has been a leading firm in the practice of green and sustainable design since the 1970s. These are essential components of all its projects.

Specialties: Alternative Energy, Architecture, Biomass, Building Design & Construction, Commercial & Institutional, Design Process, Envelope & Enclosure

Central Home Energy Experts

9 North Maple St.
Woburn, Massachusetts 01801
781-933-8288
dhamilton@centralcooling.com
http://www.centralhomeenergy.com/

We recently opened a new division, Central Home Energy Experts, to help you prevent energy loss throughout your home all year round. We offer Mass SaveÂ® Home Energy Assessments as a Mass Save partner. We have the tools to provide a truly comprehensive home energy assessment. When we visit your home, we can evaluate its total â€œenvelope,â€ including duct work and ventilation, insulation and weatherization, heating and cooling efficiency, indoor air quality and more. As a Mass Save partner and accredited members of the Building Performance Institute, we are the HVAC experts you can trust.

Specialties: Energy Auditing, Energy Conservation, HVAC, Indoor Air Quality, Insulation, Single Family

Clark & Green Architects

113 Bridge St.
Great Barrington, Massachusetts 01230
413-528-5180
info@clarkandgreen.com
http://www.clarkandgreen.com/

Clark & Green, Inc. is committed to meaningful architectural design. Since 1988, it has applied its design principles to a variety of building types. In addition to residential work, the firm has executed major commercial, institutional and municipal projects. These include the adaptive reuse of an historic building into a mixed-use, six-screen cinema and the conversion of an athletic field house into a multi-use theater complex. The firm relies on strong relationships with consultants supporting the special needs of each project. Collaboration enables Clark & Green to integrate quality design with complex engineering requirements.

Specialties: Architecture

Clean Energy Design, LLC

11 Oak Lane
Osterville, Massachusetts 02556
508-563-6990
info@cleanenergydesign.com
http://www.cleanenergydesign.com
Clean Energy Design, LLC, was founded by Tom Wineman in 1996, to meet the growing need for quality renewable energy services in New England. CED handles every aspect of the design, construction, installation, and maintenance of residential and commercial solar photovoltaics and solar thermal panels and systems. In addition, we provide small wind energy solutions for residences, farms and businesses. We are committed to providing a comprehensive and thoughtful approach to the design and implementation of renewable energy systems including professional advice on financing, rebates, tax incentives and the sale of renewable energy credits (SRECs). Serving Cape Cod, Massachusetts, Rhode Island, Connecticut, New Hampshire, Vermont, South Eastern New England and beyond.

Specialties: Photovoltaics, Solar Thermal, Wind

Climate Change & Environmental Services, LLC

1506 Henry Ave.
Mamaroneck, New York 10543
914-584-6720
karell@ccesworld.com
http://www.ccesworld.com
Climate Change & Environmental Services (www.CCESworld.com) specializes in sustainability, energy, and environmental compliance. We deliver maximum financial and environmental benefits to our clients. For Sustainability and Energy, we perform carbon footprinting, ASHRAE I-III energy audits, develop strategies to reduce GHGs and energy usage, and manage such projects. For environmental compliance, we perform air and other emission inventories, compliance audits, strategic advice to cost-effectively comply, permitting, and design of APC devices and of appropriate monitoring, recordkeeping, and reporting systems. Climate Change & Environmental Services Principal Marc Karell, P.E., CEM has over 25 years of experience in these areas.

Specialties: Alternative Energy, Commercial & Institutional, Consultancy, Education, Energy Auditing, Energy Conservation, Engineering, HVAC, Insulation, Lighting Design, Lighting Supply, Manufacturing, Mechanical Systems & Lighting



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Gail Burrington

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Coastal Window & Exteriors, Inc.

100 Cummings Center #236H
Beverly, Massachusetts 01915
978-304-0495
svanderbilt@mycoastalwindows.com
<http://mycoastalwindows.com/>

You don't want to settle for an ordinary company. Coastal Windows & Exteriors is a woman-owned exterior home remodeling company, a rarity in a male-dominated industry. Owner, Stephanie Vanderbilt, a former Teacher of the Deaf, is hard-wired to bring a full intensity to everything she does. Besides giving back to the community through work with local non-profits, she is committed to bringing empathy and passion for service to her business. She wants every homeowner to have the BEST customer experience—the kind of experience that "wowed" customers, had them raving to others, and make them loyal, lifetime customers.

Specialties: Roofing, Windows

Community Preservation Corporation

28 East 28th St. 9th floor
New York, New York 10004
212-785-1811
ederry@communitycp.com
<http://communitycp.com/>

A nationally recognized leader in affordable housing finance, CPC has provided a consistent source of capital to underserved housing markets throughout New York State since our inception, in 1974. CPC is committed to delivering financing, technical expertise and to working closely with a range of community partners to create and preserve affordable housing. Over our 39-year history, CPC has contributed to the preservation or creation of over 157,000 units of affordable housing, initiated numerous downtown revitalizations, and improved the quality and energy efficiency of the multifamily stock.

Specialties: Finance/CPA, Social Services

Con Edison Green Team

100 Summit Lake Drive
Valhalla, New York 10595
212-460-4771
nathansonk@conedsolutions.com
<http://www.conedsolutions.com/Home.aspx>

Con Edison provides energy to 3.4 million customers in New York and Westchester County, New York. Newsweek recently named the company the 'Greenest' utility in the United States. To learn more about our energy-saving programs, visit conEd.com/greenteam.

Specialties: Alternative Energy

Conergy

2460 West 26th Ave. Suite 280C
Denver, Colorado 80211
888-396-6611
info@conergy.us
<http://www.conergy.us/>

Conergy knows solar. For more than 15 years, we have been a global leader in providing clean, renewable solar energy. When you choose Conergy you can rest assured that you're receiving the best possible solar solution and service.

Specialties: Photovoltaics

Conservation Services Group, Inc. (CSG)

50 Washington St. Suite 3000
Westborough, Massachusetts 01581
413-774-3900
alissa.holt@csggrp.com
<http://www.csggrp.com>

Conservation Services Group (CSG) designs and delivers cost-effective energy efficiency programs to help millions of homeowners save energy. As the most trusted leader in residential energy efficiency, we focus on engaging with customers to make smart energy decisions. CSG brings 31 years of experience and successful collaboration to everything we do. We work with utilities, state and federal agencies, housing authorities, communities, and others who want to increase program participation and reduce consumer energy use.

Specialties: Consultancy, Consumer Information

Cornerstone Architecture

700 Richmond St. Unit 110
London, Ontario N6A 5C7
519-432-6644
rhammond@cornerstonearchitecture.ca
<http://www.cornerstonearchitecture.ca>

Established in 1991, our firm has developed a wide range of experience in a variety of sectors from children's facilities to seniors' communities; as well as educational, administrative, healthcare, and community projects. Our clients include both public and private sector organizations, as well as not-for-profit groups and private individuals. As the leading firm in our region, we encourage all of our clients to consider opportunities for reducing the impact of their buildings on the environment.

Specialties: Architecture

Cotuit Solar, LLC

P.O. Box 89
Cotuit, Massachusetts 02635
508-428-8442
conradg@cape.com
<http://www.cotuitsolar.com>

Solar thermal, photovoltaics, wind and wastewater alternative engineering, installation and service. In business since 1988.

Specialties: Multifamily, Single Family, Mechanical Systems & Lighting, HVAC, Photovoltaics, Wind

Cozy Home Performance, LLC

180 Pleasant St. Suite 4
Easthampton, Massachusetts 01027
413-529-0200
info@mycozyhome.com
<http://www.mycozyhome.com/>

CHP is a building performance contractor firm. We specialize in advanced energy solutions that improve the health, comfort, and energy savings of homes and commercial buildings. Building Performance Diagnostics, Energy Assessments, Cellulose and Foam insulation, Infra-red scanning, envelope airtightness/blower door testing, and consultation.

Specialties: Commercial & Institutional, Energy Auditing, Insulation, Multifamily, Single Family

The Crown Heights Jewish Community Council, Inc.

387 Kingston Ave.
Brooklyn, New York 11225
718-771-9000
mail@chjcc.org

<http://www.chcentral.org/>
The Crown Heights Jewish Community Council (CHJCC) was created in 1969 in response to deteriorating social and economic conditions in the Crown Heights neighborhood of Brooklyn, with the mission of assisting all people of the Crown Heights community with a focus on the rapidly growing Jewish population.

Specialties: Social Services, The Big Picture

Cushman Design Group, Inc.

100 Mountain Road
Stowe, Vermont 05672
802-253-2169

inquiry@cushmandesign.com
<http://www.cushmandesign.com>

Personalized full service architectural and interior design services for those who value elegant design, natural materials and green building practices in their home or business.

Specialties: Building Design & Construction, Single Family, Multifamily, Commercial & Institutional, Design Process

D**DEAP Energy Group, LLC**

667 Sawmill Brook Parkway
Newton, Massachusetts 02459
617-775-4716

mduclos@deapgroup.comp.com
<http://www.deapgroup.com>

DEAP Energy Group provides comprehensive consulting services to improve the quality of life and energy efficiency of homes. Our work encompasses both new construction and existing home retrofits. We work on single-family homes, multi-family up to three stories, and small-scale commercial and institutional projects.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Decumanus Green Design/Build, Inc.

29 Edgewood Drive #2
Lenox, Massachusetts 01240
413-281-0046

joseph@decumanusgreen.com
<http://decumanusgreen.com/>

Decumanus Green provides both design and construction services. Whether you are looking to build new or remodel, we can help you to visualize and realize a new home that fits within your budget. At Decumanus Green we strive to make all of our building practices as environmentally responsible as possible and our homes and additions as energy efficient as possible. We keep ourselves abreast of the constantly developing world of sustainable design and building.

Delta Products Corporation

4405 Cushing Parkway
Fremont, California 94538
888-979-9889
breezsales@delta-corp.com
<http://www.deltabreez.com>

DeltaBreez Bathroom Ventilation Fans are ENERGY STAR qualified, extremely quiet fans with high energy efficiency. Powered by state-of-the-art DC motor technology, these fans consume up to 85% less energy than other leading fans; energy efficiency exceeds ENERGY STAR requirement by up to 835%; annual energy cost when run continuously is as low as \$4.20. Delta is proud to be recognized for its never-ending commitment to innovative, clean and energy-efficient solutions for a better tomorrow.

Specialties: Energy Conservation, Indoor Air Quality

Demand Management Institute, Inc. (DMI)

300 Chestnut St. Suite 150
Needham, Massachusetts 02492
781-449-5700

astevens@dmiiinc.com
<http://www.dmiinc.com>

DMI specializes in providing expert consulting and engineering services to improve energy efficiency and operation of commercial, industrial, institutional, and large-scale residential facilities. DMI has established itself as one of the most respected energy engineering firms in New England with unsurpassed attention to detail and quality.

Specialties: Energy Auditing, Energy Conservation

Dietz & Company Architects, Inc.

17 Hampden St.
Springfield, Massachusetts 01103
413-733-6798
office@dietzarch.com
<http://www.dietzarch.com/>

Dietz & Company Architects provides a full range of architectural services in both the public and private sectors. The breadth and depth of our experience is evidenced by our housing, education, healthcare, commercial, historic preservation and sustainable projects. In addition to planning memorable buildings, we've also helped to plan large, complex developments, including entire neighborhoods. Whenever possible, we seek to bring the benefits of integrated design into all types of projects.

Specialties: Architecture, Design Process

Dominic Paul Mercadante Architecture

70 Waldo Ave.
Belfast, Maine 04915
207-338-4089

info@dpmercadante.com
<http://www.dpmercadante.com>

With over 20 years of experience I bring creativity and attention to detail to my practice of residential architecture creating buildings that perform well environmentally, functionally and aesthetically.

Specialties: Architecture, Building Design & Construction, Consultancy

Dryvit Systems, Inc.

1 Energy Way
West Warwick, Rhode Island 02893
401-822-4100
dean.balcirak@dryvit.com
<http://www.dryvit.com>

As a global leader contributing to sustainable buildings, Dryvit Systems is committed to providing quality products and services while considering people, planet and prosperity in all business decisions. We are recognized for developing the world's most energy efficient, architecturally diverse, insulated cladding systems and decorative finishes for vertical wall surfaces. Utilizing responsible chemistry and exceptional manufacturing processes, we conserve resources and minimize our environmental impact to support and enhance healthy, vibrant communities. With an engaged and empowered workforce, Dryvit embraces a sustainable culture and creates lasting value for our stakeholders.

Specialties: Insulation, Manufacturing

E

e2 Solar, Inc.

831 Main St
Dennis, Massachusetts 02638
508-237-3892

jason@e2solarcapecod.com
<http://www.e2solarcapecod.com>

In 2008, E2 Solar was established to deliver high quality photovoltaic systems to residents and businesses on Cape Cod and the South Shore. Since then E2 has installed over 100 mW of photovoltaic and numerous solar thermal systems on residences and businesses across southeastern Massachusetts. Jason Stoots and the entire staff at E2 Solar, Inc. is committed to designing and installing exceptionally efficient, low maintenance, long lasting solar energy systems. E2 offers SunPower PV modules with the highest efficiency now available (cell efficiencies over 20%). Talk with one of E2 Solar's qualified solar site analysts today.

Specialties: Photovoltaics, Solar Thermal

EcoArchitecture DesignWorks, PC

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845-247-4620

ecoarchitect@hvc.rr.com
<http://janusweltondesignworks.com/home/>

Art and technology, aesthetics and function, and sustainability amidst diminishing resources and global degradation, Eco Architecture DesignWorks is a bridge-linking the contradictions, simplifying the complexities, and shaping an innovative design sensibility for the 21st century.

Specialties: Architecture, Design Process

Ecolibrium Solar

340 West State St.
Athens, Ohio, 45701
740-249-1877

jyoung@ecolibrumsolar.com
<http://www.ecolibrumsolar.com>

Ecolibrium Solar is the leading supplier of simple, fast, and cost effective mounting systems. Our solution saves installers countless hours from planning and installing more complicated systems.

Specialties: Alternative Energy, Commercial & Institutional, Photovoltaics, Single Family

eco_logic STUDIO, architecture & engineering, PLLC

2495 Main St. Suite 431
Buffalo, New York, 14214

kevin@eco-logicSTUDIO.com
<http://www.eco-logicSTUDIO.com>

eco_logic STUDIO is an architecture, engineering and planning firm focusing on green design and community revitalization. Specializing in high performance new and retrofit design of custom homes, affordable housing, institutional facilities, commercial development, urban design and planning, and green infrastructure. Certified Passive House Designer, Architects, and Engineer on staff. Experience in natural building, solar systems and living roofs. Architectural registration in NY, NJ, MI, NC, SC, and CT.

Specialties: Architecture, Building Design & Construction, Passive Housing, Roofing, Single Family, Cities & Communities, Consultancy, Design Process, Engineering, Envelope & Enclosure, Insulation, Multifamily, Net Zero Energy

EcoRealty

P.O. Box 3007
Amherst, Massachusetts 01004
413-259-9800

dave@ecorealty.org
<http://www.ecorealty.org>

EcoRealty is an environmentally friendly buyer brokerage with a special interest in green building, farming, and living local economies.

Specialties: Real Estate

Ely Beach Solar, LLC.

5030 Broadway Suite 819
New York, New York 10034
646-837-8580

doug@elybeach.com
<http://www.elybeach.com>

Ely Beach Solar is a solar thermal company. We specialize in the design, installation, monitoring and control of solar hot water systems. Our focus is on commercial & large multi-family residential buildings in the New York City area.

Specialties: Solar Thermal, HVAC, Mechanical Systems & Lighting, Energy Auditing, Energy Conservation

Emerald Builders

P.O. Box 299
Bowdoinham, Maine 04008
207-841-2775

reggie@emeraldbuild.com
<http://emeraldbuild.com/>
Emerald Builders is a residential building company serving mid coast Maine. We focus primarily on building sustainable and energy efficient homes and buildings. We work closely with our clients, designers and subcontractors to bring their dreams to reality. We rely heavily on open communication between all parties from conception through project completion to make sure we've put out the best possible product for our clients. We pride ourselves on an unwavering commitment to the highest quality craftsmanship and to the environment.

Specialties: Alternative Energy, Building Design & Construction, Construction Process

Energy Circle

81 Bridge St. 3rd Floor
Yarmouth, Maine 04096
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Energy Circle PRO is a complete web and marketing platform designed for energy efficiency professionals. No matter your niche in the industry - remodeling, HVAC, auditor or home performance contractor - we can help grow your business. Energy Circle PRO is a complete web and marketing platform designed for energy efficiency professionals. No matter your niche in the industry - remodeling, HVAC, auditor or home performance contractor - we can help grow your business.

Specialties: Alternative Energy, Architecture

Energy Futures Group

P.O. Box 587
Hinesburg, Vermont 05461
802-482-5001

rfaesy@energyfuturesgroup.com
<http://www.energyfuturesgroup.com/>
EFG is a consulting firm that provides clients specialized expertise on energy efficiency markets, programs and policies, with an emphasis on cutting-edge approaches. It was founded in April 2010 by Chris Neme, Richard Faesy and Glenn Reed, each of whom has more than 20 years of experience in the energy efficiency industry. EFG has worked with a range of clients - government agencies, consumer advocates, environmental advocates and utilities - in 24 states, 3 Canadian provinces and several countries in Europe.

Specialties: Consultancy, Public Policy

Energy Opportunities

1200 East Camping Area Road
Wellsville, Pennsylvania 17365
717-292-2636

sheffer@sevengroup.com
<http://www.sevengroup.com>

Energy Opportunities provides services focused on energy issues and the interface of nature and human enterprises. Founded in 1993, EO is also a part of 7group, LLC.

Specialties: Alternative Energy, Architecture, Beyond Energy, Building Design & Construction, Certifications & Standards, Commercial & Institutional, Composting, Construction Process, Consultancy, Design Process, Education, Energy Auditing, Energy Conservation, Engine

Enterprise Community Partners, Inc.

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212-262-9575

bjung@enterprisecommunity.org
<http://www.enterprisecommunity.com/>
Since 1982, Enterprise has raised and invested more than \$14 billion to help finance nearly 300,000 affordable homes across the United States. Our award-winning Enterprise Green Communities initiative offers the first national framework for green affordable housing.

Specialties: Social Services, The Big Picture

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Specialties: Envelope & Enclosure, Net Zero Energy, Passive Housing, Windows

EvB Design

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617-623-2222

edrick@evbdesign.com
<http://evbdesign.com/>
EvB Design provides architectural services for custom designed energy efficient housing.

Specialties: Architecture

F

Foam USA, LLC

180 Pleasant St.
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Specialties: Insulation

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<http://www.foardpanel.com>
Foard Panel manufactures and installs structural insulated panels for residential and commercial construction.

Specialties: Insulation, Manufacturing

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Specialties: Lighting Supply, Energy Conservation, Education

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Specialties: Construction Process, Net Zero Energy, Single Family

G

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Garland Mill is a small family-owned business, specializing in the design and construction of heavy timberframed structures and high performance homes. Garland Mill has designed and built a variety of super-insulated buildings over the last 14 years. Net Zero has become a particular sweet spot, but we are excited to pursue any building project that integrates exceptional energy performance with beautiful and durable craftsmanship. While the heart of our business is the design and construction of high performing buildings, the soul of our business resides in our old water powered sawmill that has been in continuous operation since 1856. We use the mill to saw the timber and lumber we use in our homes. When not sawing, the mill's micro hydro-electric generator produces clean energy.

Specialties: Building Design & Construction, Design Process, Net Zero Energy, Passive Housing, Solar Thermal

Geoffrey Richon Company, Inc.

19 Duncan St.
Gloucester, Massachusetts 01930
978-283-6063

tsrichon@ghrichon.com
<http://www.ghrichon.com/>
The Geoffrey H. Richon Company specializes in delivering high quality construction, remodeling and consulting services to Cape Ann and Essex County. Our experience is based on over 35 years in residential construction and remodeling. Through a whole-system approach to design and construction, we provide our clients with a high level of energy efficiency, comfort and durability for their projects.

Specialties: Building Design & Construction, Consultancy, Remodeling/DER

George Penniman Architects, LLC

35 Pratt St. Unit 202
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860-767-2822

george@pennimanarchitects.com
<http://www.pennimanarchitects.com>
George Penniman Architects LLC is a full-service, client oriented firm working on large and small scale residential projects, as well as small commercial and institutional projects throughout New England. Our work is characterized by its contextual nature, high performance building practices and environmental stewardship.

Specialties: Architecture, Commercial & Institutional, Design Process, Landscape Design, Multifamily, Single Family

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 egarrison@greenandwirednh.com
 http://www.greenandwirednh.com
At Green & Wired, we build and renovate HOMES FOR A BETTER FUTURE. We offer a full array of building services: energy efficient new homes, home energy upgrades, and improvements to existing homes. President/owner Mark Stewartson has been building homes in the Central New Hampshire region for over 25 years.
Specialties: Building Design & Construction, Single Family

The Green Engineer, Inc.

54 Junction Square Drive
 Concord, Massachusetts 01742
 978-369-8978
 info@greenengineer.com
 http://www.greenengineer.com/
The Green Engineer, Inc. is a sustainable design consulting firm specializing in solutions to design, build, and operate buildings with improved energy efficiency and reduced impact on the environment. Founded in 2005 by Chris Schaffner, PE, LEED Fellow
Specialties: Design Process

Green Mountain College/Griswald Library

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Green Mountain College prepares students for fulfilling lives by taking the goal of creating just and sustainable societies as the unifying theme for its interdisciplinary graduate and undergraduate liberal arts education. The College fosters the ideals of environmental and personal responsibility, civic engagement, entrepreneurial spirit, and global understanding.

Green Mountain Panel

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Green Mountain Panel is one of the first producers in Structural Insulated Panels in the United States. Starting in 1981, Green Mountain Panel's precursor, Winter Panel, started producing the finest quality Urethane Foam Structural Insulated Panels in a converted shoe factory in Brattleboro. Over the ensuing 30 plus years, Winter Panel shipped panels for over 3000 structures: homes, schools, commercial and institutional. One of only three Urethane Panel producers in the US, Green Mountain Panel continues to ship only the highest quality, highest R-Value panels to markets, domestic and abroad.
Specialties: Insurance, Manufacturing

H

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 rwhiffen@h2odegree.com
 http://h2odegree.com/
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Specialties: Energy Conservation, Energy Auditing, Education

Hancock Software, Inc.

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 http://www.hancocksoftware.com
Hancock Software Inc., http://www.hancocksoftware.com, is a Massachusetts-based energy efficiency software company that helps its partners increase their energy efficiency installation's cost effectiveness by providing a technology that brings all parties and activities to one platform. The platform includes fully integrated mobile apps for field personnel, as well as an online program portal where utility, implementation, contractors and customers interact and monitor their pipeline, energy savings and production goals. Today's Energy Efficiency DSM challenge is to achieve more energy savings with lower costs. If you are in the market for a proven approach to DSM tracking & management solution that will significantly reduce labor costs, consider Hancock One™.
Specialties: Alternative Energy, Commercial & Institutional, Energy Auditing, Energy Conservation, Geothermal, Home Inspection, HVAC, Indoor Air Quality, Insulation, Lighting Design, Manufacturing, Multifamily, Renewables & The Grid, The Big Picture

Hands-On Construction

25 Upland Road
 Concord, Massachusetts 01742
 978-369-4605
 lise@handsonconcord.com
 http://handsonconcord.com
Hands-On Construction is a full-service, design/build residential remodeling company specializing in kitchen and bath remodel, additions, whole house renovation as well as new home construction. Established in 1982, our mission is to deliver excellent design, expert craftsmanship and superior service while adding value and beauty to your home. -Hands-On Construction takes great pride in delivering the highest quality product. We are proud to say that 85% of our customers are either repeat customers or those referred to us by previous customers. Creating and maintaining customer satisfaction is our business. We look forward to working with you.
Specialties: Building Design & Construction, Remodeling/DER, Windows

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Specialties: Building Design & Construction, Construction Process, Design Process

Hardypond Construction

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 Portland, Maine 01403
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 deirdre@hardypond.com
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We believe that indoor air and water quality are overlooked aspects of sustainable development. The firm's core principle is to pioneer the use of materials, systems, and design to protect the health and wellness of its occupants through improvements in indoor air and water quality. We carefully test and select construction materials in order to incorporate non-toxic or minimally-toxic products. Our buildings combine architecturally-contextual exteriors with clean, green building technologies. By minimizing energy usage and harmful chemicals, we strive to provide homeowners with a better and healthier interior home environment.
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Healthy Home Energy & Consulting

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Specialties: Consultancy, Indoor Air Quality

Heartwood Group, LLC

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Providence, Rhode Island 02906
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unger@hrtwd.com
http://www.HeartwoodSolutions.com
Our company was founded in 1983 to create environmentally responsible buildings. Today we provide consulting and development services in the renewable energy and building industries.
Specialties: Alternative Energy, Beyond Energy, Consultancy, Energy Conservation, Money & Business, Photovoltaics, Real Estate, Renewables & The Grid, The Big Picture, Wind

Higgins Energy Alternatives

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Barre, Massachusetts 01005
978-355-6343
info@higginsenergy.com
http://www.higginsenergy.com/
Higgins Energy Alternatives has built a solid reputation as the energy alternative experts. We love to share our knowledge and experience with you on the many options available in alternative heating fuels. Come visit our showroom to see the product lines we carry from the world's leading manufacturers. We have many working units set up in the showroom so you can envision them in your home!
Specialties: Alternative Energy, HVAC

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peter@homeenergytechnologies.com
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Home Energy Technologies is a RESNET-accredited Home Energy Rating System Provider. Our services include HERS ratings, ENERGY STAR & NGBS certification, comprehensive home energy audits, building performance testing and other energy diagnostic and analytical services. Our clients include architects, builders and owners of single-family and multi-family homes in Connecticut and adjoining areas.
Specialties: Consultancy, Energy Auditing, Energy Conservation

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Specialties: Building Design & Construction

Hudson Valley Community College

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518-629-7075
p.hill@hvcc.edu
https://www.hvcc.edu/
Hudson Valley Community College's Malta facility, TEC-SMART, stands for Training and Education Center for Semiconductor Manufacturing and Alternative and Renewable Technologies. TEC-SMART serves as a community resource for demonstrating energy efficient design and building techniques and ties into several of the College's education and training programs. Incorporating green building techniques, as well as passive solar design in construction it achieved US Green Building Council's LEED platinum certification in 2011.
Specialties: Commercial & Institutional, Education, Money & Business

IBACOS, Inc.

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413-774-6051
dprahl@ibacos.com
http://www.ibacos.com/
IBACOS generates innovative solutions for the homebuilding industry both in the U.S. and abroad. For nearly 25 years, IBACOS has partnered with production builders, manufacturers, governments, and industry to improve home quality and performance. Our vision is homes that are safe, healthy, comfortable, durable, efficient, responsible and affordable.
Specialties: Building Design & Construction

Independence Solar

50 Franklin St. Suite 421
Boston, Massachusetts 02110
617-938-3599
info@independencesolar.com
http://independencesolar.com/index.php
Independence Solar is a developer and installer of turnkey commercial solar energy projects. Since 2007, their team of renewables experts have managed the development of over \$200 million of solar projects, including the largest rooftop solar array (9 MW) in North America at the Gloucester Marine Terminal in NJ.
Specialties: Alternative Energy, Photovoltaics

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Specialties: Consumer Information, Energy Auditing, Energy Conservation

Innovative Building & Design

54 Porter St.
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413-552-9771

henry.ibd@gmail.com

<http://www.innovativebuilding-design.com/>

We are a residential general contracting firm which has been designing and building energy efficient, healthy homes for 25 years using a wide range of sustainable technologies.

Specialties: Building Design & Construction, Remodeling/DER

InSoFast

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INTEGRATA Architecture + Construction

419 Palmer Ave. Suite 200
Falmouth, Massachusetts 02540
508-495-6575

info@integrata-ac.com

<http://www.integrata-ac.com/>

INTEGRATA is an architecture and construction company based in Falmouth, MA serving the greater New England area. From site development to material selection, all our work is guided by sustainable design and construction practices.

Specialties: Architecture, Single Family, Multifamily, Commercial & Institutional, Design Process, Building Design & Construction

Integrated Eco Strategy

136 Water St. (Rear)
Williamstown, Massachusetts 01267
413-884-2571

charley@integratedecostrategy.com

<http://www.integratedecostrategy.com>

Integrated Eco Strategy is a consulting firm that focuses on sustainability planning, building energy efficiency, and green building certification. Our clients include architecture and engineering firms, institutions of higher education, not-for-profits and homeowners.

Specialties: Building Design & Construction, Commercial & Institutional, Consultancy

Integrated Solar Applications Corporation

121 Spring Tree Road
Brattleboro, Vermont 05301
802-257-7493

info@isasolar.com

<http://isasolar.com/>

We specialize in the design, service & installation of renewable energy systems, including solar thermal hydronic, photovoltaic, small wind, micro-hydro, biomass & hybrid systems.

Specialties: Multifamily, Single Family, Mechanical Systems & Lighting, HVAC

J

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info@jimgodbout.com

<http://www.jimgodbout.com>

We are a Plumbing heating air conditioning company that has been around thirty years providing service to southern maine our goal is to provide innovative, efficient, comfortable mechanical systems for our clients with professional service in mind.

Specialties: HVAC, Mechanical Systems & Lighting, Renewables & The Grid, Alternative Energy

John Fülöp Associates, Architects and Planners

103 East Alford Road
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413-232-7122

john@fulopassociates.com

<http://www.fulopassociates.com>

John Fülöp Associates, Architects provides design services for all building types, creating aesthetically pleasing, economic green architecture throughout the Northeast.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Jones Whitsett Architects, Inc.

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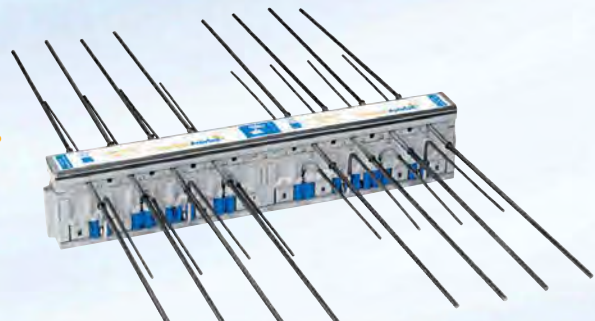
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lrichardson@jordaninstitute.org
<http://www.jordaninstitute.org>

The Jordan Institute is a non-profit focusing efforts on high-performance energy-efficiency and renewable-energy policy, program design, and project implementation in New Hampshire's commercial buildings. Jordan Institute launched its majority-owned for-profit subsidiary, Resilient Buildings Group, Inc., in 2013 to handle energy audits, building commissioning, monitoring and verification, LEED consulting and certification, energy-centric construction management, and energy-project advocacy and consulting. In 2015, Jordan Institute is launching an innovative statewide C-PACE financing program, as well as focusing on public policy issues such as an Energy Efficiency Resource Standard, updating energy codes, and publicly funded energy programs and policies.

Specialties: Alternative Energy, Architecture, Biomass, Building Design & Construction, Cities & Communities, Commercial & Institutional, Construction Process, Consultancy, Design Process, Energy Auditing, Energy Conservation, Envelope & Enclosure, Finance/CPA, HVAC

K

Kaplan Thompson Architects

424 Fore St.
Portland, Maine 04101
207-842-2888

info@kaplanthompson.com
<http://www.kaplanthompson.com/>

Our mission is to bring beautiful, sustainable and attainable buildings to the world. From your home to your business, we can design the sustainable building you have been looking for.

Specialties: Architecture, Multifamily, Net Zero Energy, Passive Housing, Remodeling/DER, Single Family

Karl Engineering, LLC

132 Chase Road
Cooperstown, New York 13326
607-544-4626

dwkarl@gmail.com
<http://www.karlenengineering.net/>

Specialties: Engineering

Kent Hicks Construction Company

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413-296-0123

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Our clients often want both high quality and low environmental impact as they build, renovate or restore their home. They want to reduce energy costs, achieve greater energy independence, and protect their health from toxic chemicals. Whether you want to make your own energy, invest for long-term energy security, live in a 'healthy' home, or protect the environment, we have the experience to help you choose the best design and materials for your high-performance green home. We know the full range of products, construction materials and building processes at all levels. Our team has experience with contractors who can provide a full range of systems for efficient heating, cooling and ventilation and for generating your own energy.

Specialties: Building Design & Construction, Remodeling/DER

Klearwall Industries, LLC

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Specialties: Passive Housing, Windows

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Kohl Construction, Inc.

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Hadley, Massachusetts 01035
413-256-0321

info@kohlconstruction.com
<http://www.kohlconstruction.com/>

Kohl Construction has been building communities in the Pioneer Valley since 1986-one home at a time. Our commitment to custom design, quality materials and fine craftsmanship is your assurance that a Kohl Construction home will provide comfort, style, and enduring value. Whether you picture a Craftsman-style home for empty-nesting, a light-filled contemporary surrounded by nature, or a comfortable open-plan Colonial on a cul de sac with sidewalks, our experienced staff will help you bring that vision to life. With several neighborhoods under construction and a variety of extraordinary lots ready to build, we may have the perfect spot waiting for you. Contact us today to learn about our current projects or to discuss building on your own lot.

Specialties: Building Design & Construction, Construction Process

Kolbert Building

90 Gray St.
Portland, Maine 04102
207-799-8799

dan@kolbertbuilding.com
<http://www.kolbertbuilding.com>

We focus on bringing energy efficiency and healthy home techniques to all of our work, from small renovations to complete new houses. We are active members of NESEA, and run a local building science discussion group.

Specialties: Building Design & Construction, Consultancy, Remodeling/DER

Kraus-Fitch Architects, Inc.

110 Pulpit Hill Road
Amherst, Massachusetts 01002
413-549-5799

mkraus@krausfitch.com
<http://www.krausfitch.com/>

Kraus-Fitch Architects offers a full range of services emphasizing ecologically sound and socially responsible design. Our work ranges from deep energy retrofits and zero net energy buildings to cohousing communities and other smart-growth projects. Our interactive approach allows us to realize your vision with practical, innovative, and cost-effective solutions. Skilled in group process facilitation and active listening, we build consensus within families, communities, and building committees. We have received numerous awards for green design and smart growth development, are internationally recognized for our expertise in cohousing, and were named one of the Top Ten Green Architects for 2005 by Natural Home and Garden magazine.

Specialties: Architecture, Commercial & Institutional, Multifamily, Net Zero Energy, Remodeling/DER

L

Landmark Services, Inc.

326 Washington St. Annex Building
Wellesley Hills, Massachusetts 02481
508-533-8393

brian@landmarkservices.com
<http://www.landmarkservices.com>

Landmark Services, Inc specializes in renovating and restoring period homes, and building new, energy efficient homes inspired by traditional architecture. We believe that saving old homes can and should be a key part of any sustainable housing strategy in New England and beyond. Building Zero Net Energy/Renewable new homes aligns with the principals' life long passion for fostering and supporting sustainable innovation. We believe that it is our highest calling as builders, and citizens, to be conscious, compassionate stewards of the natural world. Wherever we can we support people and businesses that share this mission.

Specialties: Building Design & Construction, Construction Process, Net Zero Energy, Remodeling/DER, Single Family

Lewis Creek Builders

771 Long Point Road
North Ferrisburgh, Vermont 05473
802-999-6942
mark@lewiscreekbuilders.com

<http://www.lewiscreekcompany.com/>

Our Company has four integrated divisions. Design, Build, Energy and Education. We offer traditional design/build residential services which are coupled with expertise in renewable energy, high performance homes and passive house construction. What makes us special is our whole systems approach which includes not just the built environment but the education of the public and homeowners in matters related to sustainability and generative living.

Specialties: Building Design & Construction, Education, Energy Conservation

Liberty Utilities New Hampshire

15 Buttrick Road
Londonderry, New Hampshire 03053
603-898-6023

bob.reals@libertyutilities.com

<http://www.libertyutilities.com/>

Liberty Utilities-NH is a regulated energy distribution company serving 87,000 natural gas and 43,000 electric customers. Energy efficiency programs are listed at libertyutilities.com/efficiency/ and at NHSaves.com. For info on Deep Energy Retrofit & Near Net Zero building incentives call or email.

Specialties: Energy Auditing, Marketing, Remodeling/DER

Little Green Homes

23 Autumn Pond Park
Greenland, New Hampshire 03840
603-319-8095

chris@littlegreenhomes.com

<http://www.littlegreenhomes.com>

Little Green Homes, LLC is a residential design-build company focusing on healthy, durable and energy efficient new homes and renovation/addition projects.

Specialties: Building Design & Construction

M

M.G. Kane Properties, Inc.

162 Pond St.
Ashland, Massachusetts 01721
508-881-8882
mg.kane@verizon.net

<http://www.mgkaneproperties.com/>

M.G. Kane Properties specializes in building Net Zero Energy "Attainable" homes.

Specialties: Real Estate

Maclay Architects

4509 Main St.
Waitsfield, Vermont 05673
802-496-4004

bill@maclayarchitects.com

<http://www.maclayarchitects.com>

*Maclay Architects specializes in ecological planning and architecture, healthy building design, micro-load and net zero building design and received the 2012 NESEA Zero Net Energy Building Award. The firm's project portfolio includes ten LEED Gold or Platinum certified buildings, and five net zero or net zero ready institutional and commercial projects. Bill Maclay and Maclay Architects authored a book titled: *The New Net Zero: Leading-Edge Design and Construction of Homes and Buildings for a Renewable Energy Future*, by Chelsea Green Publishing. Bill Maclay, AIA, LEED-AP, and founding principal of Maclay Architects, has been recognized as a leader in innovative, healthy, and ecological planning and architectural design since 1971.*

Specialties: Architecture, Building Design & Construction, Commercial & Institutional, Education, Energy Conservation, Envelope & Enclosure, Multifamily, Net Zero Energy, Remodeling/DER, Single Family

Maine Association of Building Efficiency

Professionals

11 Columbia St.
Augusta, Maine 04330
207-620-8214

info@mabep.org

<http://www.mabep.org>

Maine Association of Building Efficiency Professionals (MABEP) was established in 2009 to represent and advance the interests of businesses and individuals providing energy efficiency and renewable energy services and equipment, including but not limited to architects, builders, engineers, energy auditors, HVAC and electrical contractors, building envelope professionals, manufacturers and suppliers, and all other persons and businesses who seek to improve the energy efficiency of residential and commercial buildings and to reduce our dependence upon fossil fuels.

Specialties: Energy Conservation

Mainline Energy Systems, Inc.

591 Ference Road
Ashford, Connecticut 06278
844-255-8965

mainlinenrg@gmail.com

<http://www.mainlinehs.com>

Mainline Heating & Supply understands the value of a warm comfortable home in New England. That's why we specialize in the sale, installation, maintenance, and repair of home heating systems and insulation. We want to save you money and help you stay warm while being kinder to the environment with renewable resources. Mainline Heating & Supply offers outstanding heating and energy solutions that will enhance room ambiance and increase the value of your home.

Specialties: Insulation, Single Family

Maloney Properties, Inc.

27 Mica Lane
Wellesley, Massachusetts 02481
617-209-5204

mfrazier@maloneyproperties.com

Specialties: Real Estate

Maple Hill Architects

55 Glezen Lane
Wayland, Massachusetts 01778
508-561-2233

doug@maplehillarchitects.com

<http://www.maplehillarchitects.com>

Maple Hill Architects is a full service design firm specializing in green design work in a variety of project types including educational, religious, and residential.

Specialties: Building Design & Construction

Massachusetts Audubon Society

208 South Great Road
Lincoln, Massachusetts 01773
781-259-2112

bpoor@massaudubon.org

<http://www.massaudubon.org>

Mass Audubon works to protect the nature of Massachusetts for people and wildlife. Together with more than 100,000 members, we care for 35,000 acres of conservation land, provide school, camp, and other educational programs for 225,000 children and adults annually, and advocate for sound environmental policies at local, state, and federal levels. Founded in 1896 by two inspirational women who were committed to the protection of birds, Mass Audubon is now one of the largest and most prominent conservation organizations in New England. Today we are respected for our sound science, successful advocacy, and innovative approaches to connecting people and nature.

Specialties: Consumer Information, Education, Public Policy

Massachusetts Clean Energy Center (Mass CEC)

63 Franklin St. Floor 3
Boston, Massachusetts 02110
617-315-9311

info@masscec.com

<http://www.masscec.com>

The Massachusetts Clean Energy Center (MassCEC) is dedicated to accelerating the success of clean energy technologies, companies and projects in Massachusetts, while creating high-quality jobs and long-term economic growth for the people of Massachusetts.

Specialties: Consumer Information, Education, Energy Conservation, Public Policy

McCauley Lyman, LLC

10 Speen St.
Framingham, Massachusetts 01701
508-665-5801

inquiries@mccauleylyman.com

<http://www.mccauleylyman.com>

McCauley Lyman advises people about energy and business law and represents them in business-related transactions. We have a particular focus on the energy industry, including energy regulatory agencies, and have done a great deal of work with all aspects of developing, financing and operating independent energy projects. We help people negotiate letters of intent and contracts, arrange financings, buy and sell businesses and their assets, resolve disputes, and do the myriad other things business people (and government officials who deal with business people) need to get done in order to accomplish their business objectives.

Specialties: Consultancy, Public Policy

Menck Windows

77 Champion Drive
Chicopee, Massachusetts 01020
508-509-3140

alanwall@menckwindows.com
<http://www.menckwindows.com/>

Menck Windows German Window Engineering now in America. This year, the U.S. will import over \$150 million worth of windows to meet the increasing demand for energy-efficient building products. Because windows represent up to one-third of a building's energy-loss, architects and builders have increasingly turned to German manufacturers for technologically advanced and highly engineered windows and doors. Recognizing that the need for energy-efficient, environmentally friendly, and competitively priced windows will continue to grow, Menck Windows USA is building a new manufacturing facility in the United States. The new U.S. operation will produce windows and doors to the exacting specifications found at Menck-Fenster's production facility in Schwerin, German.

Specialties: Windows

Miracol Energy, LLC

17 Lawrence Road
Wellesley, Massachusetts 02482
781-591-8152

jcolmenares@miracolenergy.com
Miracol Energy LLC, a boutique investment house specialized in the development, structuring and finance of mid-sized Renewable Energy projects in the US and abroad.

Specialties: Finance/CPA, Money & Business, Multifamily

Mitsubishi Electric Heating & Cooling

150 Cordaville Road
Southborough, Massachusetts 01772
978-988-5771

spickett@hvac.mea.com

<http://www.mitsubishielectric-usa.com>
For more than 90 years, Mitsubishi Electric has made changes for the better through its energy-efficient products and technologies. These include factory automation equipment, automotive equipment, escalators, elevators, heating and cooling products, commercial hand dryers, large-scale video displays for stadiums and arenas, uninterruptible power supplies, solar panels, semiconductors, display walls, photographic and thermal printers, and electric utility products.

Specialties: HVAC, Mechanical Systems & Lighting, Energy Conservation

Moran + Associates

64 Dwight St.
Dedham, Massachusetts 02026
781-461-8000

molliemoran@moranandassoc.com
<http://www.moranandassoc.com/>
Since 1979, Moran and Associates has specialized in fine homebuilding and design for new homes, additions, renovations, restorations, and interiors. Principal, Mollie Moran's projects have received several awards including Architectural Record Houses of the Year and Boston Society of Architects Housing Award. They have been published in national and local publications, including House Beautiful, Progressive Architecture, Boston Magazine, Vermont Magazine and Boston Globe Magazine

Specialties: Architecture

Mulberry Tree Builders, LLC

24 Old Amherst Road
Mont Vernon, New Hampshire 03057
603-673-2603

mulberrytreebuilders@gmail.com
<http://www.mulberrytreebuilders.com>

Mulberry Tree Builders has been a leader in high performance architectural design and construction since 1981. We achieved Passivhaus infiltration standards in 1988, in a modest Cape in Standish, Maine, employing Canadian Double Walled building techniques. We are now one of 150 firms in the US to have earned Passive House Certified Builders status. We are currently working closely w/ some of the top building science firms in the Northeast, in an effort to build on these early ground breaking accomplishments. Our hope is to collaborate w/ our clients to construct attractive, comfortable and environmentally resilient homes and business venues in Southern NH, Northeastern Mass, Greater Portland, and the Hollowell/Augusta, areas of Maine.

Specialties: Building Design & Construction, Consultancy, Remodeling/DER

N

National Grid

939 Southbridge St.
Worcester, Massachusetts 01610
508-860-6000

benjamin.veri@nationalgrid.com
<http://www.nationalgridus.com>
We serve a total of 1.2 million customers in 168 Massachusetts communities and are an electricity distribution subsidiary of National Grid. We contribute to the quality of life in communities across the Northeast. Care for the environment is integrated

Specialties: Energy Conservation

Natural Resources Defense Council (NRDC)

40 West 20th St.
New York, New York 10011
212-460-4489

nrdcinfo@nrdc.org
<http://www.nrdc.org/>
NRDC is the nation's most effective environmental action organization. We use law, science and the support of more than 2 million members and online activists to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things.

Specialties: Education, The Big Picture

Neighborhood Housing Services of New Haven, Inc.

333 Sherman Ave.
New Haven, Connecticut 06511
203-562-0598

kfay@nhsofnewhaven.org
<http://www.nhsofnewhaven.org/>
Neighborhood Housing Services of New Haven was incorporated in 1979 with a mission to revitalize selected neighborhoods in New Haven. Over time, our mission has evolved to focus on positioning New Haven's neighborhoods to succeed by increasing homeownership; making homes beautiful, energy-efficient, and affordable; and helping residents take charge of their neighborhoods. We believe that increased owner-occupancy rates, educated homebuyers, and rehabilitated houses will produce stable, revitalized neighborhoods that our clients will be proud to call home. During the course of our 35-year history, NHS has fully renovated and sold nearly 450 units to low- and moderate-income families.

Specialties: Social Services, Remodeling/DER

New Commons

545 Pawtucket Ave. Suite 106A
Pawtucket, Rhode Island 02860
401-475-6762

rlaever@newcommons.com
<http://www.newcommons.com>

New Commons is a whole new kind of think tank which helps clients move from thought to action by helping them build a fresh network and then mobilize that network to get the job done.

Specialties: Consultancy, Commercial & Institutional

New Energy Works

jonathan@newenergyworks.com
1180 Commercial Drive
Farmington, New York, 14425
800-486-0661

<http://timberframe-postandbeamhomes.com>
Nearly three decades ago we started a small timber frame company. Today, along with our sister company Pioneer Millworks, we employ nearly 100 designers, timberwrights, engineers, craftspeople, and community members. Together, we design and build some of the most lyrical and efficient timber frames in the industry, using reclaimed timbers, environmentally responsible practices, and state-of-the-art technology and software.

Specialties: Building Design & Construction, Consultancy, Remodeling/DER

New Commons

545 Pawtucket Ave. Suite 106A
Pawtucket, Rhode Island 02860
401-475-6762

rlaever@newcommons.com
<http://www.newcommons.com>

New Commons is a whole new kind of think tank which helps clients move from thought to action by helping them build a fresh network and then mobilize that network to get the job done.

Specialties: Consultancy, Commercial & Institutional

New England Geothermal Professional Association (NEGPA)

240 Millbury St.
Auburn, Massachusetts 01501
508-832-4485

info@negpa.org
<http://www.negpa.org/>
NEGPA is a regional non-profit association formed to address issues with geothermal that are specific to New England. Our mission is to educate the public and advocate with state and federal officials, as well as utilities, to give Geothermal Syst

Specialties: Geothermal

New Frameworks Natural Building

1 Mill St. Suite 163
Burlington, Vermont 05404
802-917-4059

info@newframeworks.com
<http://newframeworks.com/>
New Frameworks Natural Design/Build is a full-service contracting, consultation, and education company specializing in the integration of natural materials and technologies and high-performance building systems. We are passionate about working in healthy environments and creating positive relationships to build structures that are truly sustainable. We enjoy working directly alongside clients in both design and construction, and firmly believe in the importance of social justice and skills access to enable people of all creeds and economic backgrounds access to safe, beautiful, and affordable shelter.

Specialties: Building Design & Construction, Construction Process

New York State Energy Research and Development Authority (NYSERDA)

17 Columbia Circle
Albany, New York 12203
518-862-1090
info@nyserda.ny.gov
http://www.nyserda.ny.gov/
NYSERDA offers objective information and analysis, innovative programs, technical expertise, and funding to help New York businesses and resident increase energy efficiency, save money, use renewable energy, and reduce their reliance on fossil fuels.

Specialties: Consultancy

Newport Solar

14 Vernon Ave.
Newport, Rhode Island 02840
401-787-5682
doug@newportsolarri.com
http://www.newportsolarri.com
Newport Solar is a Rhode Island based business specializing in the design and installation of residential and small commercial photovoltaic systems. Newport Solar provides free roof analyses and cost estimates including financial analysis.

Specialties: Photovoltaics

Noble Home, LLC

P.O. Box 476
Shelburne Falls, Massachusetts 01370
617-694-7253
info@noble-home.net
http://www.noble-home.net/
The modern, all natural, affordable home. The Noble Home is a house kit designed for each building site, easily assembled by an owner-builder.

Specialties: Alternative Energy, Beyond Energy, Building Design & Construction, Design Process, Research, Single Family

North By East Building Company

P.O. Box 4521
Portland, Maine 04112
207-420-1525
peter@northbyeastbuildingco.com
http://northbyeastbuildingco.com/
We are a full service building firm providing southern Maine (and beyond) with a range of smart building solutions for residential and light commercial projects. We combine unparalleled craftsmanship with a systematic approach to budgeting and scheduling. Our goal is to provide clients with a refreshing design/build experience. We have tremendous respect for our coastal Maine environment and are proud to implement sustainable building practices and to use quality, locally sourced materials whenever possible.

Specialties: Building Design & Construction, Construction Process

NorthEast Electrical-Sonepar NE

560 Oak St.
Brockton, Massachusetts 02301
781-401-8500
nate.pedro@needco.com
http://www.needco.com/
NorthEast is a full-service electrical distributor to Electrical Contractors, Industrial, OEM, Utility, and Institutional customers. With its' Industrial/OEM Division, NorthEast Electrical Distributors has grown into one of the largest electrical distributors in New England offering more than 30 convenient locations. The company operates these strategically located branches throughout the 6 New England States in order to make exceptional customer service available to our customers.

Specialties: Photovoltaics, Lighting Supply, Manufacturing

Northeast Solar

136 Elm St.
Hatfield, Massachusetts 01038
413-247-6045
info@northeastsolar.biz
http://northeast-solar.com/
NorthEast Solar provides professional design and turnkey installation of commercial, municipal, residential and village solar electric systems using the latest in state-of-the-art design and installation methods. We use a whole systems design approach-balancing the technical and economic tradeoffs with the non-technical needs of the client to ensure you get the very best system possible.

Specialties: Photovoltaics, Electrical

Northern Manhattan Improvement Corporation (NMIC)

45 Wadsworth Ave.
New York, New York 10033
212-822-8300
danrieber@nmic.org
http://nmic.org/
NMIC has been providing Weatherization Services for over 30 years. If you have a multi-family building in Manhattan we can help you reduce your heating/hot water costs. We have helped dozens of buildings save as much as 35%. NMIC is BPI certified with cumulative staff experience of over 100 years in the energy conservation and retrofit industry.

Specialties: Energy Auditing, Energy Conservation, HVAC, Mechanical Systems & Lighting, Multifamily, Single Family

O

October Engineering, LLC

16 October Road
Sudbury, Massachusetts 01776
508-561-7553
rlm@octoberengineering.com
http://www.octoberengineering.com
October Engineering offers project development services for energy service performance contracts (ESPC), energy management systems (EMS) design and specification, heating, ventilating and air conditioning (HVAC) energy analysis and design and residential HVAC design. See octoberengineering.com for details and work samples.

Specialties: Alternative Energy, Energy Auditing, Engineering, HVAC, Net Zero Energy, Remodeling/DER

Optimal Energy Solutions

64 Peg Shop Road
Keene, New Hampshire 03431
603-283-0366
hcs@optimalenergysolutions.net
Comprehensive building system analysis and design, including: building envelope, high-efficiency HVAC (esp. hydronic), customized control systems and renewable energy. Also provide biomass heat as a service (non-residential) through xylogen.net.

Specialties: Biomass, Engineering

P

Paquette Electric Co., Inc.

368 Killingly Road
Pomfret Center, Vermont 06259
860-963-7078
tedd@paquetteelectric.com
http://paquetteelectric.com
In 1979, Paquette Electric Company was established by our founder, current President, and CEO, John M. Paquette. Since incorporation in 1982, Paquette Electric has grown to be the largest electrical contracting firm in northeastern Connecticut; serving residential, commercial, and industrial customers throughout the state, Massachusetts, and Rhode Island. Our company-located in beautiful Pomfret Center-has earned a distinct reputation for providing quality workmanship, exceptional customer service, and a competitive standard for today's marketplace. Paquette Electric's success would not be possible without our strong office support and qualified field personnel.

Specialties: Construction Process, Electrical

Partners for Architecture, Inc.

48 Union St. Building 1
Stamford, Connecticut 06906
203-708-0047
lagrasso@pfarch.net
http://www.pfarch.net
After a combined 75 years of working for many successful organizations, Partners For Architecture Inc. was inaugurated in 1999 with the dedication to establish an architectural firm that provides comprehensive and environmentally sensitive architectural services.

Specialties: Architecture, Building Design & Construction, Energy Conservation

Passive House Academy

334 Douglas St.
Brooklyn, New York 11217
646-233-1365
info@passivehouseacademy.com
http://www.passivehouseacademy.com/
PHA is proud to be one of the leading training providers globally in Passive House (Passivhaus), offering a wide range of internationally accredited Passive House Courses on both sides of the Atlantic. Our team of highly experienced educators has been delivering informed and stimulating training since 2002 to audiences around the world who want to get to grips with the most challenging of energy efficiency standards. PHA has trained over 800 graduates of the Certified Passive House Designer, Certified Passive House Tradesperson and PHPP trainings, graduates who are now providing design, consulting and contracting services on leading high performance projects.

Specialties: Passive Housing

Pavers by Ideal

45 Power Road
Westford, Massachusetts 01886
978-692-3076
info@idealconcreteblock.com
http://www.IdealConcreteBlock.com

Ideal manufactures a full line of interlocking concrete pavers and retaining wall systems. Products include Eco-Stone, Aqua-Bric, and Turfstone, environmentally friendly, permeable pavers. Pavers by Ideal offers a GREEN solution.
Specialties: Landscape Design, Pavement

Pella Windows and Doors

240 Mohawk Trail
Greenfield, Massachusetts 01301
978-373-2500
dorourke@184.pellapdsn.com
http://www.pella.com/home/default.aspx

Pella has a proud 90-year history of environmental stewardship and has been recognized for its energy efficiency leadership and sustainable business practices. You can feel good about choosing Pella windows and doors.

Specialties: Windows

Performance Building Supply

111 Fox St.
Portland, Maine 04101
207-780-1500
info@mainegreenbuilding.com
http://www.performancebuildingsupply.com

Performance Building Supply provides construction products and information to make buildings high performing, energy efficient, durable, resilient, healthy and more comfortable for the occupants. Every product we offer is thoroughly researched and chosen based on energy performance, environmental and health effects, manufacturing process and location, durability and practical use.

Specialties: HVAC, Mechanical Systems & Lighting, Solar Thermal, Windows

Peterson Engineering Group

25 Van Zant St.
Norwalk, Connecticut 06855
203-253-7513
info@peg-eng.com
http://www.peg-eng.com

Peterson Engineering Group, LLC has been open since 2008. All employees have multiple years experience in consulting engineering for MEP & FP trades. The team has worked on projects from hotels to marinas & airports. PEG takes part in the energy efficiency incentive program. PEG pays special attention to energy efficiency savings as well as operational & maintenance issues. PEG deals with these issues early in the design stage rather than at the end of the project to ensure a successful lifetime of the building. The principal of PEG is Mr. Donald C. Peterson, PE. He has been in the consulting engineering trade for the past twenty years. Mr. Peterson is a LEED AP with certifications in Energy Management, Commissioning & a Green Building Engineer on Department of Energy Star site.

Specialties: Consultancy, Engineering

Picton Brothers, LLC

10 Titus Road
Washington Depot, Connecticut 06794
860-868-5007
info@pictonbrothers.com
http://www.pictonbrothers.com

We are a construction & general contracting co. interested in progressive projects that incorporate practical & pleasing design geared to long-term sustainable use of resources.

Specialties: Building Design & Construction, Remodeling/DER

Pilgrim Interiors, Inc.

19C Ames Ave.
Chicopee, Massachusetts 01013
800-501-5407
info@ma-pilgrim.com
http://www.ma-pilgrim.com/

Pilgrim Interiors was founded in 1999 as an open shop subcontractor specializing in metal framing, drywall and plaster installation/restoration. Our approach has always been to focus exclusively on client satisfaction. We have a dependable and qualified team of professionals that work together to complete projects safely, on time and on budget. In our 12 years of business we have completed hundreds of projects for the public and private sector. Our projects range from a 5000 square foot office and/or medical fit up, to a ground up hotel development and 100,000 square foot plus industrial complex. We have a history of finishing our projects ahead of schedule and on budget.

Specialties: Commercial & Institutional

Pill-Maharam Architects

53 Falls Road
Shelburne, Vermont 05482
802-735-1286
dpill@pillmaharam.com
http://www.pillmaharam.com

Pill-Maharam Architects, founded in 1991 by David Pill offers comprehensive architectural services for institutional, commercial and residential clients. With hands on experience in the construction field, our staff brings to each project a realistic body of knowledge to create a buildable innovative solution. We are continually doing research into and incorporating sustainable strategies so that our finished projects are environmentally responsible. We fuse creative ideas with functional, budgetary and programmatic requirements to create finely detailed sculptural spaces and buildings.

Specialties: Architecture, Building Design & Construction, Commercial & Institutional, Construction Process, Consultancy, Design Process, Electric/Hybrid Vehicles, Energy Conservation, Envelope & Enclosure, Geothermal, Mechanical Systems & Lighting, Net Zero Energy, P

Placetaylor, Inc.

51 Heath St.
Boston, Massachusetts 02130
617-442-2101
staff@placetaylor.com
http://www.placetaylor.com

Placetaylor-made projects are always built to the highest efficiency possible with a particular eye toward comfort. Where a well placed window captures the sun's energy to heat a house, a heat recovery ventilator streams fresh winter air into a room without bringing in the winter temperature. We keep heat when we want it and get rid of it when we don't.

Specialties: Building Design & Construction

Powers Air

68 Hamilton Drive
Conway, Massachusetts 01341
413-539-7032
powersair@comcast.net
http://powersair.net/

HVAC Systems and Indoor Air Quality. Designing with Load Calculations, Installing and Servicing. Including Ductless systems, High Efficient Warm Air and Energy Recovery Systems. LEEDS Certified. Whether you are a Builder or Homeowner, new or retro fit. Feel free to call/text me at 413-539-7032.
Drew Powers

Specialties: HVAC, Indoor Air Quality, Mechanical Systems & Lighting, Remodeling/DER

Project Planning and Management

224 Follen Road
Lexington, Massachusetts 02421
781-861-9545

*paul@paulhlapointe.com
http://www.paulhlapointe.com
Plan and manage construction projects for environmentally conscious educational and cultural institutions; represent institutions throughout the project delivery process; assist institutions in selecting architects, consultants, and contractors.*

Specialties: Building Design & Construction

PV Squared

311 Wells St. Suite B
Greenfield, Massachusetts 01301
413-772-8788
info@pvsquared.coop
http://pvsquared.coop/

PV Squared is a worker-owned cooperative dedicated to making our shared community a better place to work and live. We are based out of two offices in western Massachusetts and central Connecticut. (PV) has over 12 years of experience providing renewable energy solutions to home owners and businesses in the Pioneer Valley and the surrounding regions.

Specialties: Photovoltaics

Q**QCoefficient, Inc.**

35 East Wacker Drive Suite 1816
Chicago, Illinois 60601
312-945-3143
vince@qcoefficient.com
http://www.qcoefficient.com

QCoefficient, Inc. (QCo) uses scalable, automated, cloud-based technology to harness building mass in large commercial buildings (e.g. drywall and concrete) as a thermal energy storage ('TES') medium; and then uses that storage to 'economically dispatch' electric chillers and to optimally integrate HVAC operations with electric grid operations and markets in large metropolitan areas...dramatically reducing cooling expense and emissions. QCo's TES requires no capital expense or space, and deploys in 2-4 weeks.

Specialties: Alternative Energy, Beyond Energy, HVAC, Mechanical Systems & Lighting

Quigley Builders, Inc.

P.O. Box 2008
Ashfield, Massachusetts 01330
413-625-2301
maryquigley@quigleybuilders.com
<http://www.quigleybuilders.com>

Quigley Builders is a woman-owned construction and renovation firm located in the hills of Western Massachusetts. We specialize in deep energy retrofits of historic buildings, using new materials and techniques in traditional configurations that respect and honor the vernacular architecture. Our goal is to achieve elegance and efficiency not just in appearance but also especially - in the function of every project we undertake. This means conserving resources in materials and labor, as well as investing in the life of the building over the next hundred years.

Specialties: Building Design & Construction

R

R. L. Benton-Builder

154 Schoolhouse Road
Center Sandwich, New Hampshire 03227
603-284-6860
rlbentonbuilder@gmail.com

Full service builder/designer for energy-efficient residential construction in the NH lakes region. Timber-framing as well as advanced hybrid construction, with expertise in solar thermal system design and installation since 1978. Our Sandwich Cabinet Shop can furnish your project as well.

Specialties: Building Design & Construction, Energy Conservation, Renewables & The Grid

r3construction, inc.

96 Upham St.
Melrose, Massachusetts 02176
781-844-2621
andrew@r3-inc.com
<http://www.r3-inc.com>

r3construction, inc. is a residential builder serving the Greater Boston area. We are a certified Passive House Builder with an in-house CPHC. We are passionate about re-establishing craft into the building process in service of resilient and efficient buildings.

Specialties: Building Design & Construction, Envelope & Enclosure, Net Zero Energy, Passive Housing, Remodeling/DER, Single Family, Windows

Ra Solar Company

P.O. Box 2222
Littleton, Massachusetts 01460
802-496-9496
yimbo98@gmavt.net
<http://www.rasolar.ca/>

Builders of energy efficient, solar, green homes, additions & renovations since 1978. We can provide complete design/build services to our clients. We also offer green project consulting, plans modification, and specifications writing.
Specialties: Alternative Energy, Building Design & Construction, Passive Housing

RBI Solar, Inc.

5513 Vine St.
Cincinnati, Ohio 45217
513-618-7214
hkaur@rbisolar.com
<http://www.rbisolar.com>

RBI Solar, Inc. is the leading turn-key supplier of solar mounting systems. As a specialist in ground mount, roof mount, landfill solar, and custom designed specialty solar structures, RBI Solar focuses on providing the most robust solar racking systems, installation services and project management capabilities to serve owners and integrators. RBI Solar has engineers on staff licensed in all 50 states and offers complete design, high tech manufacturing, nationwide installation, and technical support to help solve the toughest challenges in the industry. Leveraging more than 80 years of experience in the commercial design-build specialty structures market, RBI Solar works with its clients to identify the most economical, durable and robust solution for solar installations.
Specialties: Photovoltaics

REinsulation, Inc.

340 McKinstry Ave.
Chicopee, Massachusetts 01013
413-599-4884
reinsulation@gmail.com
<http://www.reinsul.com>

REinsulation reclaims useable rigid insulation boards from commercial flat roofs at our Chicopee, Massachusetts warehouse. The insulation is in usable condition at about 1/2 the price of new insulation. This combination results in equivalent thermal performance for 50% or more off cost of new insulation, or twice the thermal performance at cost similar to new. We also stock innovative rigid insulation products not available at lumberyards.

Specialties: Building Design & Construction, Commercial & Institutional, Consultancy, Education, Energy Conservation, Envelope & Enclosure, Insulation

Retrotec Energy Innovations, Ltd.

1060 East Pole Road
Everson, Washington 98247
604-732-0142
becci@retrotec.com
<http://www.retrotec.com>

Retrotec is the world's leading manufacturer of building diagnostic tools. They make blower doors, duct testers, digital manometers, and air leakage testing software. Retrotec promotes green building through air tightness and enclosure integrity testing with equipment, software & training.

Specialties: Certifications & Standards, Consultancy, Energy Auditing, Envelope & Enclosure, Home Inspection, HVAC, Indoor Air Quality, Insulation, Mechanical Systems & Lighting, Multifamily, Passive Housing, Research, Single Family, The Big Picture, Windows

RH Irving Homebuilders

543 West Salisbury Road
Salisbury, New Hampshire 03268
603-344-6488
bob@rhirvinghomebuilders.com
<http://www.rhirvinghomebuilders.com>

Building fossil fuel free high performance homes with constant fresh air supply for excellent air quality and low energy bills. BrightBuilt Modular Homes. Custom Net Zero Energy Homes. Custom Passive House Homes, Certified or Non-Certified. Deep Energy Retrofits for existing homes. Design-build; on site or modular. Certified Passive House Consultant.

Specialties: Building Design & Construction, Remodeling/DER

Rhode Island Commerce Corporation

315 Iron Horse Way Suite 101
Providence, Rhode Island 02908
401-278-9100
ref@commerceri.com
<http://www.commerceri.com>

The Commerce RI Renewable Energy Fund (REF) is dedicated to increasing the role of renewable energy throughout the state. The REF provides grants and loans for renewable energy projects with the potential to make electricity in a cleaner, more sustainable manner, while stimulating job growth in the green technology and energy sectors of Rhode Island's economy. Using funds from the 'system benefit charge' on electric bills and Alternative Compliance Payments, Commerce RI will fund renewable energy projects in small-scale solar, feasibility studies and commercial development.

Specialties: Consumer Information, Education



Bryan G. Hobbs Remodeling Contractor

Blown Cellulose Insulation • Spray Foam Insulation
Airsealing • Energy Audits • Replacement Doors & Windows

Email: bryanhobbsremodeling@gmail.com

Home/Office	Lic # 083982	Bryan G. Hobbs
413-775-9006	Reg # 139564	346 Conway St.
Fax: 413-475-3255		Greenfield, MA 01301

Richard Renner | Architects

35 Pleasant St.
Portland, Maine 04101
207-773-9699

info@rrennerarchitects.com

http://www.rrennerarchitects.com/

Richard Renner | Architects, a full-service architectural firm with offices in Portland, Maine and Sherborn, Massachusetts, is a richly varied practice creating inspired places for living, working, and learning. Environmentally responsible design is a cornerstone of the practice, and for over a decade, the firm has expanded and refined the process of designing effective "green" buildings.

Specialties: Alternative Energy, Architecture, Building Design & Construction, Cities & Communities, Commercial & Institutional, Design Process, Energy Conservation, Indoor Air Quality, Insulation, Multifamily, Net Zero Energy, Remodeling/DER, Single Family, The Big P

Ridgeview Construction

43 North Road Suite 303
Deerfield, New Hampshire 03037
603-303-7206

scarter@ridgeview-construction.com

http://www.greenbuildernh.com

The home-building industry is more dynamic than ever before. As our environmental consciousness grows, the protection of land and natural resources is a mounting public concern. How we build homes, with regards to location, design and choice of materials, is one of the most significant ways we impact our future. At Ridgeview, we offer a wholistic, green approach to home building, harmonizing the intricate systems within the home and property to minimize the environmental impact and improve the overall efficiency and healthiness of a home. Best of all, we care about the bigger picture without comprising aesthetics or the needs of the present. Our award-winning custom design shows that our eye for detail extends through all aspects of the home-building process.

Specialties: Building Design & Construction, Remodeling/DER

Rodman & Rodman

3 Newton Executive Park
Newton, Massachusetts 02462
617-965-5959

info@rodmancpa.com

http://www.rodmancpa.com

The Rodman & Rodman Green Team is a specialty accounting practice dedicated to providing alternative energy producers and other businesses that pursue energy efficiency initiatives with expert counsel and services in green energy tax accounting and business strategy. The firm offers tax advisory, financial and accounting services for companies involved in solar, wind, biomass, and energy efficiency projects. The Rodman & Rodman Green Team provides clients with a sustainable financial roadmap through: expert partnership/corporate structuring for optimal tax benefit; grant qualification assistance and auditing; ongoing advisory services for federal, state and local tax incentives; and specialized strategic financial planning and management for alternative energy and sustainability projects.

Specialties: Finance/CPA

RST Thermal

372 University Ave.
Westwood, Massachusetts 02090
617-908-1655

mehickey@rstreps.com

http://www.RSTThermal.com

RST Thermal is a Manufacturer's Representatives in the New England area covering Eastern Massachusetts, New Hampshire, Maine, Connecticut, and Rhode Island for multiple leading manufacturers whose products offer a systems approach to comfortable heating and cooling. We provide technical and sales support to our wholesale distributor partners and contractors. For homeowners, we provide geographic lists of installing and servicing contractors to help them find the "best fit" for the project to be done.

Specialties: Multifamily, Single Family, Mechanical Systems & Lighting, HVAC

S**S+H Solar, Division of S+H Construction**

26 New St.
Cambridge, Massachusetts 02138
617-876-8286

jamie@shconstruction.com

http://sandhsolar.com/

An award-winning general contractor in Cambridge. Our Renewable Energy Division designs and installs solar electric and hot water systems, and offers energy management consulting.

Specialties: Building Design & Construction, Photovoltaics, Solar Thermal

Sage Builders, LLC

672 Chestnut St.
Newton, Massachusetts 02468
617-965-5272

info@sagebuilders.com

http://www.sagebuilders.com

Award-winning, full service Boston area residential design-build company committed to responsible design and construction practices. Experts in energy efficiency and weatherization.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Saltonstall Architects

380 Wareham St.
Marion, Massachusetts 02738
508-748-1043

will@saltonstallarchitects.com

http://www.saltonstallarchitects.com

Providing architectural services to residential, commercial and institutional clients the firm is committed to sustainable design practices; focusing on working closely with our clients to design thoughtful, innovative, healthy and energy-efficient places to live and work.

Specialties: Architecture

Sandri Energy, LLC

400 Chapman St.
Greenfield, Massachusetts 01301
413-772-2121

jgoodyear@sandri.com

http://www.sandri.com/renewable-energy

Sandri is a full service energy provider for your home or business. We are family owned company that has been in business for 80 years. Our direct service area encompasses Western MA and Southern VT and NH. We wholesale our products throughout the North East.

Specialties: Biomass, Photovoltaics, Solar Thermal

Schock USA, Inc.

100 Overlook Center 2nd Floor
Princeton, New Jersey 08540
855-572-4625

info@schock-us.com

http://www.schock-us.com

Our company and Schöck Isokorb® are known globally in the construction industry. In Europe, we are market leaders for reinforcement technology and building physics solutions that minimise thermal bridges and acoustical bridges.

Specialties: Manufacturing

Sellers Lathrop Architects, LLC

1 Kings Highway North
Westport, Connecticut 06880
203-222-0229

ann@sellerslathrop.com

http://www.sla-arch.com

Small, woman-owned firm designing upgrades, additions and renovations for 21st century living. Primary projects are residential and light commercial work in Fairfield County, CT., emphasizing energy efficiency and smart building technologies to create high quality solutions with character and style.

Specialties: Building Design & Construction

Shift Energy, LLC

2 Main St. Suite 17-302T
Biddeford, Maine 04005
207-710-6116

mick@shiftnrg.com

http://www.shiftnrg.com/

We're passionate about: Putting heat from the sun to good use, Providing ventilation and increased occupant comfort without increased cost, Clean energy solutions that make sense, are easy to use and look amazing, Offering the fastest investment paybacks of any clean energy solution, Providing a solar energy solution that can remove the costs of expensive siding solutions.

Specialties: Energy Auditing, Energy Conservation

SIGA Cover, Inc.

8001 Irvine Center Drive Suite 400
Irvine, California 92618
855-733-7442
info@sigacover.com
http://www.sigacover.com

SIGA high-performance adhesives offer first-class quality. With the easy to apply SIGA system you create an air and windtight layer which offers you the best reliability and comfort for the entire lifespan of your house. You have our word!

Specialties: Indoor Air Quality, Manufacturing, Windows

SJP Environmental Consulting

P.O. Box 303
Montague, Massachusetts 01351
413-559-7257
sjp@crocker.com
http://sjpconsulting.biz/

Offering Pioneer Valley, MA, residents an unbiased, friendly perspective on energy saving and renewable energy options for their homes, helping them: explore & prioritize cost-effective measures for a cozier, healthier home with less wasted energy, understand renewable energy options like solar, tax incentives, and learn about financing for energy projects. I also have a list of local energy contractors. For businesses & nonprofits, my services include: writing articles, press releases, grant proposals, and website text; managing and promoting projects; collaborating with organizations; and public education.

Specialties: Alternative Energy, Composting, Consumer Information, Education, Energy Conservation, Single Family

Smart Energy of New England, Inc.

1930 US Route 3
Columbia, New Hampshire 03576
800-608-5840
david@smartenergyne.com
http://www.smartenergyne.com

Smart Energy of New England is a seven-year-old corporation located in Columbia, New Hampshire. We serve New Hampshire, Vermont and Maine as well as the Bahamas. We are an up-and-coming provider of energy efficient systems, both commercial and residential. Our main focus is on Solar Photovoltaic Systems and we are becoming well-known for our attention to detail and our satisfied-customer business model. We are currently increasing our presence in the international marketplace with new projects in the Bahamas and potential projects in Africa. Our mission is to introduce our customers to local natural resources to save them money while reducing our collective carbon footprint and decreasing our dependence on fossil fuels and imports.

Specialties: Biomass, Photovoltaics, Solar Thermal, Wind

SolaBlock

1 Federal St. Building 101
Springfield, Massachusetts 01105
339-230-4600
pauinlan@solablock.com
http://www.SolaBlock.com

SolaBlock LLC manufactures permanently PV-clad building materials, providing a cost-competitive solar solution to meet most of the electric load in a energy-efficient building.

Specialties: Wind, Photovoltaics, Building Design & Construction

Solaire Generation

102 West 38th St. 7th Floor
New York, New York 10018
212-219-0920
tleyden@solairegeneration.com
http://www.solairegeneration.com

Solaire Generation is the market leader for the design and installation of innovative solar structures and systems. Solaire is an award-winning, industry-acclaimed company, having won the project of the year distinction at both Intersolar North America and SPG in 2014. In 2013, Solaire was awarded project of the year by Solar Builder and was recognized by Greentech Media for being one of the top ten cleantech leaders in NYC.

Specialties: Photovoltaics

Solar Store of Greenfield

2 Fiske Ave.
Greenfield, Massachusetts 01301
413-772-3122
claire@solarstoreofgreenfield.com
http://www.solarstoreofgreenfield.com

Local Western MA renewable energy consultants in a brick and mortar storefront. We provide Advice, Design, and Installation of Solar PV and Hot Water systems for residential and commercial settings. All projects are turnkey from beginning to end, covering all permits, incentives, utility interconnection and SREC aggregation. We also offer battery backup systems for grid and off grid PV systems. Additionally, composting toilets, biodiesel, solar clothes drying racks, books and Eat More Kale tshirts are available.

Specialties: Energy Conservation, Photovoltaics, Solar Thermal

Solar Wave Energy, Inc.

31 Cambridge Terrace
Cambridge, Massachusetts 02140
617-242-2150
hkv@solarwave.com
http://solarwave.com

Solar Wave Energy has been installing and servicing solar energy systems 1978. Today we provide controller integrated web-based monitoring for solar thermal (heating & hot water) systems allowing installers and building owners to oversee and manage their systems remotely. We currently have integrated performance monitoring for solar controllers including Resol, Caleffi, Stiebel Eltron, Viessmann and more. Call or see demo at www.solarwave.com

Specialties: Energy Auditing, Energy Conservation, Solar Thermal

SolarReviews

777 South Wadsworth Boulevard
Building 1, Suite 1-202
Lakewood, Colorado 80226
720-328-8928
pete@solarreviews.com
http://www.solarreviews.com

SolarReviews operates in harmony with our other solar industry websites, www.Solar-Estimate.org and www.SolarPanelTalk.com. Together these sites answer many common questions that people or business's have when they are considering solar. This resource is free to the consumer and installers/manufacturers can have a free listing on www.SolarReviews.com, our combined sites got over 2 million unique visitors in 2014.

Specialties: Consultancy, Consumer Information, Marketing, Photovoltaics, Solar Thermal

Solect Energy Development

89 Hayden Rowe St. Suite E
Hopkinton, Massachusetts 01748
508-598-3511
info@solect.com
http://solect.com/

Solect, Inc. is a solar renewable energy development company focused on the deployment of solar photovoltaic (PV) systems. Solect works with the appropriate financial partners to fund the deployment of solar renewable energy systems.

Specialties: Photovoltaics

Solectria-A Yaskawa Company

360 Merrimack St. Building 9, 2nd Floor
Lawrence, Massachusetts 01843
978-683-9700
inverters@solectria.com
http://www.solectria.com

Solectria – A Yaskawa Company, a wholly-owned subsidiary of Yaskawa America, Inc., is a leading U.S.-based grid-tied PV inverter, combiner & web-based monitoring manufacturer for residential, commercial & utility-scale solar projects. Solectria's products include 3.8 to 750 kW inverters. Solectria is backed by over 100 years of power electronics and inverter experience. All of Solectria's three-phase central inverters are made in the USA. PV System owners, developers and EPCs rely on the high performance, reliability and bankability of Solectria – A Yaskawa Company.

Specialties: Manufacturing, Photovoltaics, Renewables & The Grid

South Mountain Company

15 Red Arrow Road
West Tisbury, Massachusetts, 02575
508-693-4850
info@somoco.com
www.southmountain.com

South Mountain Company, located on Martha's Vineyard, is a multi-faceted firm offering architecture, engineering, building, interiors, woodworking, and energy services.

Specialties: Building Design & Construction, Energy Conservation, Photovoltaics

Sparhawk Group

81 Bridge St. Suite 107
Yarmouth, Maine 04096
207-846-7726
admin@sparhawkgroup.com
http://www.sparhawkgroup.com

From offices in New York City and Portland, Maine, we have driven energy efficiency into over 25,000 units of multifamily buildings, commissioned \$900+ million in new construction and provided leadership in energy efficiency since 1990. Early in the company's history, Sparhawk Group began with pay-for-performance energy efficiency projects delivering 3.5 megawatts of electrical power conservation at industrial, institutional, commercial and government buildings. These projects were commissioned to ensure savings, and thus payments for performance, were realized. This grounding in energy performance and commissioning, drives our company vision to this day.

Specialties: Consultancy, Energy Auditing, Engineering

Spartan Solar

10 Charles St.
Greenfield, Massachusetts 01301
413-768-0095
gospartansolar@gmail.com
http://www.GoSpartanSolar.com

We provide the highest quality solar hot water installations available utilizing both drain-back and pressurized designs. We take special care to integrate our systems seamlessly within the larger design of the building. In partnership with Turnkey Builders, we offer additional services including air source heat pump installation, HRV/ERV installation, and affordable triple pane windows. We designed and built the home that won the 2015 NESEA Net Zero Energy Building Award and are able to provide consulting services with a holistic approach.

Specialties: Alternative Energy, Building Design & Construction, Consultancy, Energy Conservation, HVAC, Net Zero Energy, Renewables & The Grid, Solar Thermal, Windows

Spirit Solar

P.O. Box 80007
Springfield, Massachusetts 01138
413-883-3144
info@spiritsolar.net
http://www.SpiritSolar.net

Spirit Solar provides installation and service for all types of solar hot water systems, solar educational services, and third party PV system verification.

Specialties: Consultancy, Education, Solar Thermal

SPL Development Group

71 Deer Hill Circle
Pelham, New Hampshire 03076
603-582-0151
spaquette@spllc.com

Steve has over 28 years experience in real estate development, construction and property management. After earning a bachelor's degree in management in 1984, he began working in real estate development, acquiring development sites. He has been a registered Massachusetts Real Estate Broker since 1987. In 1988, Steve began developing multi-family apartment sites for SK Properties. During that time, he developed over 600 units of elderly and family properties in three New England States. He also developed and managed the build out of several single-family subdivisions, the latter of which was a 43-unit development in the southern part of Manchester, NH, Heritage Common, completed in 1997.

Specialties: Building Design & Construction

Steele Kellogg AIA

3 Walnut St.
Madison, New Jersey 07940
973-377-5757
steelekellogg@gmail.com
http://www.steelekellogg.com/

We draw on an interdisciplinary team of design professionals to give you the highest level of expertise, concentrating on a small number of clients in order to bring each project the attention it deserves. Whether you are planning a new building, a renovation or an addition, for an imaginative and thoughtful review of your design needs, please contact us.

Specialties: Architecture, Design Process

Stephen C. DeMetrick Woodworking

201P Grawwilly Hill Road
Wakefield, Rhode Island 01879
401-789-4712
sdemetrick@gmail.com

Specialties: Building Design & Construction, Design Process

Stephen Turner, Inc.

317 Hope St.
Providence, Rhode Island 02906
401-524-4798
info@sturnerinc.com

http://www.buildingcommissioning.com/
Stephen Turner Inc. is dedicated to providing comprehensive commissioning services. Commissioning is a quality process which ensures, verifies, and documents that a completed project or existing building meets the owner's needs and expectations. Our firm provides commissioning services in all forms: new building commissioning, renovation commissioning, retrocommissioning, ongoing commissioning of existing buildings, and commissioning of system retrofits.

Specialties: Construction Process

Steven Winter Associates, Inc.

61 Washington St.
Norwalk, Connecticut 06854
866-676-1972
clients@swinter.com

http://www.swinter.com
Since 1972, SWA has provided services to improve commercial, multifamily, and residential buildings. We specialize in energy, sustainability, and accessibility consulting as well as certification, research, and compliance services.

Specialties: Energy Auditing, Engineering, Consultancy

Steveworks, LLC

108 Cabot St.
Newton, Massachusetts 02458
617-201-0121
steve@steveworks.com
http://steveworks.com/

At steveworks, we expect all our jobs to exemplify craftsmanship, durability, and value. These principles are important to the customers who frequently come back to us or pass us along to new clients, and they are the pillars of sustainable building. Being sustainable requires us to take into account energy performance, the sources and quantity of materials and resources, and how often those materials or other parts of your home will last. We believe quality craftsmanship, durability, value, and sustainability can all be implemented with a practical approach that will fit in any budget.

Specialties: Remodeling/DER

Stiebel Eltron, Inc.

17 West St.
West Hatfield, Massachusetts 01088
413-247-3380
bill.riley@stiebel-eltron-usa.com
http://www.stiebel-eltron-usa.com

Stiebel Eltron-German manufacturer energy saving Tempra Plus tankless electric (99% efficient) water heaters feature advanced flow control to automatically keep output temperature constant and provide unlimited hot water. Accelera 300 & 220 E Heat Pump water heaters, Energy Star rated Accelera 300 has the largest capacity (80 gal), highest energy factor (2.73), lowest power input (2.2 kW) and lowest power consumption (1391 kWh/year) as determined by DOE testing. Stiebel solar thermal systems present a great hedge against fossil fuel price volatility. Federal tax credits, often state and local incentives too, can cut installed cost by up to 40%.

Specialties: Energy Conservation, Manufacturing, Solar Thermal

Sustainable Energy Analytics

4 Militia Drive Suite 6
Lexington, Massachusetts 02421
781-652-8282
energystar@sea.us.com
http://www.sea.us.com/

Sustainable Energy Analytics, LLC is dedicated to helping owners of all types of residential buildings (from single family to large multi-family, new and existing) maximize the value of their property by: Reducing the energy consumption, Improving the building's durability and comfort, Providing a safe and healthy environment for the occupants, Identifying the most economical path, unbiased by product or technology loyalties.

Specialties: Consultancy, Renewables & The Grid, Single Family

SWZ Architects

1 Edgehill Road
Winchester, Massachusetts 01890
617-890-8907
shelly@swzarchitects.com

http://www.swzarchitects.com
SWZ Architects offers a full range of architectural services for new construction and renovation for a wide range of clients. The firm is service minded and comfortable handling projects of various sizes and locations throughout the United States. We love what we do and value working with others who share our enthusiasm and outlook.

Specialties: Architecture

Symmes, Maini, & McKee Associates (SMMA)

1000 Massachusetts Ave.
Cambridge, Massachusetts 02138
617-547-5400
mdion@smma.com

http://www.smma.com/
SMMA's 180 person staff has made sustainable design a focus of its multi-disciplinary design practice, and has long incorporated sustainable design elements into all projects. A signatory of the 2030 Challenge and USGBC Member, SMMA's success in sustainable design continues to be enhanced by the 70+ LEED-Accredited Professionals who represent all of our in-house technical disciplines.

Specialties: Architecture, Design Process, Engineering

T**Taggart Construction, Inc.**

10 South St.
Freeport, Maine 04032
207-865-2281
peter@tagcon.com
http://www.tagcon.com

Residential and commercial design/build construction company, emphasizing energy efficient, environment friendly and occupant healthy building solutions: architectural services, construction management, value engineering, historic restoration, and custom woodworking.

Specialties: Building Design & Construction

ThinkLite, LLC

182 West Central St. Suite 201
Natick, Massachusetts 01760
617-500-6689
danny@thinklite.com

<http://www.thinklite.com>

ThinkLite is a global lighting efficiency company that custom designs, manufactures, distributes, and installs energy efficient retrofit solutions to commercial customers and governments. Our efficient lighting products leverage proprietary LED and induction technologies that specifically adapt to existing infrastructures. We are headquartered in Natick, Massachusetts with operations in over 14 countries.

Specialties: Lighting Supply, Manufacturing

Thomas Buckborough & Associates

358 Great Road
Acton, Massachusetts 01720
978-263-3850

thomasb@tbadesigns.com
<http://www.tbadesigns.com>

TB & A is a team of creative and caring remodeling professionals. We provide the greater Boston area with an array of remodeling solutions from kitchen design to whole house design through general contracting and antique home restoration. We are here for you if you are looking for an architect that is also an award winning kitchen remodeling contractor for your home, addition, or other remodeling project. Check out our remodeling customer reviews, pictures of our award winning architectural designs on our website.

Specialties: Building Design & Construction, Remodeling/DER

Thompson Johnson Woodworks

115 Island Ave.
Peaks Island, Maine 04108
207-653-1392

heather@tjwhome.com
<http://www.tjwhome.com>

Residential building and renovations in the Greater Portland Maine area. We employ best building practices in all aspects of each of our projects. We strive to incorporate highly efficient/green building standards and materials to the maximum extent possible on each of our projects.

Specialties: Building Design & Construction, Remodeling/DER

Thornton Tomasetti, Inc.

386 Fore St. Suite 401
Portland, Maine 04101
207-347-5066

cstreifel@thorntontomasetti.com

<http://www.thorntontomasetti.com>

Thornton Tomasetti performs whole-building energy analysis and modeling throughout design and into occupancy to predict and measure operational performance. Advanced analytical tools allow us to offer data-driven strategies to maximize energy savings, increase occupant comfort, reduce carbon footprint and effectively incorporate renewable energy strategies. Our multidisciplinary staff consults on green building certifications including, but not limited to, LEED and Passive House. Our services range from complete administration to special calculations, simulations and services geared toward individual credit requirements.

Specialties: Alternative Energy, Certifications & Standards, Commercial & Institutional, Construction Process, Consultancy, Education, Energy Auditing, Energy Conservation, Engineering, Envelope & Enclosure, Multifamily, Net Zero Energy, Passive Housing, Photovoltaics

Thoughtforms Corporation

543 Mass Ave.
Acton, Massachusetts 01720
978-263-6019

mark@thoughtforms-corp.com

<http://thoughtforms-corp.com>

Thoughtforms Corporation specializes in building high-end custom homes and unique institutional buildings in eastern Massachusetts.

Specialties: Building Design & Construction

Timberhomes, LLC

6335 VT Route 113
Vershire, Vermont 05079
802-685-7974

info@timberhomesllc.com

<http://timberhomesllc.com/>

We specialize in designing and building natural, soulful, resilient and energy efficient homes. Timber Frames. Tree forms. Scribe work. Vermont materials. Net zero homes. Timber framed solar pavilions. Barns & outdoor structures. Spiral stairs & compound roofs.

Specialties: Building Design & Construction

Timeless Architecture

147 School St.
Quincy, Massachusetts 02186
617-696-6448

hmaclean@timearch.com

<http://www.timearch.com>

Timeless Architecture is an architectural office specializing in residential & light commercial work, focused on the integration of historic preservation and green design.

Specialties: Building Design & Construction, Energy Conservation, Remodeling/DER

Transformations, Inc.

323 West Main St.
Ayer, Massachusetts 01432
978-597-0542

carter@transformations-inc.com

<http://www.transformations-inc.com>

Transformations, Inc. is focused on creating Zero and Near Zero Energy homes including Sustainable Developments.

Specialties: Building Design & Construction, Photovoltaics



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trilliumarchitects@gmail.com

<http://www.trilliumarchitects.com/>
We are a women owned and operated full service architecture and design firm. At Trillium we design intelligent quality architecture and we endeavor to cultivate beauty and delight. We are trained in and highly aware of aesthetics and the human spatial experience. We believe in designing houses that you would be proud to leave your grand children. As unique as the people who occupy them; as beautiful as the natural world that surrounds them.

Specialties: Architecture, Building Design & Construction, Single Family

TripleNet Energy, LLC

1375 Broadway Suite 1015
New York, New York 10018
347-604-6005

info@triplenet-energy.com
<http://www.triplenet-energy.com/>
Founded in the beginning of 2013 through a partnership between multi yearly experienced energy executives, engineering and smart grid technology professionals who have been providing energy cost recovery and advisory services to commercial real estate owners and managers for more than 20 years, Triple Net Energy, LLC is a full service energy asset management consultant firm focused on energy cost recovery strategies and asset management solutions for small to large energy-consuming commercial and industrial companies.

Specialties: Consultancy, Finance/CPA

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<http://www.uncarvedblockinc.com>
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Specialties: Building Design & Construction, Remodeling/DER

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203-499-2923

patrick.burns@uinet.com
<http://www.uinet.com>
The United Illuminating Company (UI), Southern Connecticut Gas Company (SCG) and the Connecticut Natural Gas Company (CNG) are administrators of the Residential and Commercial Industrial energy efficiency programs through the Energize Connecticut initiative. Energize Connecticut (SM) is an initiative dedicated to empowering Connecticut citizens to make smart energy choices, now and in the future. We provide Connecticut consumers, businesses and communities the resources and information they need to make it easy to save energy and build a clean energy future for everyone in the state. Energize Connecticut helps you save money and use clean energy.

Specialties: Building Design & Construction, Energy Auditing, Energy Conservation

Urban Grid

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Specialties: Alternative Energy, Finance/CPA, Photovoltaics, Renewables & The Grid

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328A Tremont St.
Boston, Massachusetts 02116
617-423-5566

kim.vermeer@urbanhabitatinitiatives.com
Urban Habitat Initiatives Inc. is a leading independent consulting firm focused on advancing sustainability in multifamily housing. We offer green project management services to owners and developers from early strategies through development and construction to measuring results. Kim Vermeer, President, is a frequent speaker, educator, and author.

Specialties: Consultancy, Multifamily

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pete@ussolarworks.com
<http://ussolarworks.com/>
US Solar Works is a company primarily serving the renewable energy needs of Massachusetts and Rhode Island. Situated in Attleboro, we are a short way from both Boston and Providence. Though our main focus is local, US Solar Works has designed and built solar installations for dozens of customers in New England and regions across the U.S. We specialize in high quality, high performance systems, made-in-USA solar products, and professional service.

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Specialties: Alternative Energy, Beyond Energy, Building Design & Construction, Certifications & Standards, Commercial & Institutional, Consultancy, Design Process, Energy Auditing, Energy Conservation, Engineering, HVAC, Indoor Air Quality, Insulation, Mechanical Sys

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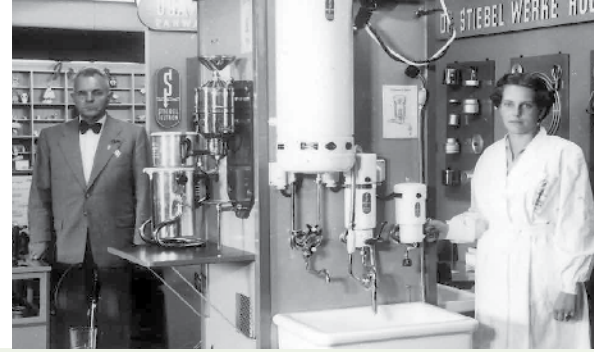
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