



VOL. 38 NO. 1 | 2019

# **BUILDINGENERGY**<sup>®</sup>

*The Magazine of the Northeast Sustainable Energy Association*

## THE IMPORTANCE OF THE PROCESS

### **ALSO INSIDE:**

**ENERGY SHIFT — A UTILITY-SCALE PATH  
FROM GAS TO RENEWABLE THERMAL**

---

**A METHODOLOGY FOR  
DEEP ENERGY RETROFITS OF  
MID-CENTURY CAMPUS FACILITIES**

---

**BUILDING EFFICIENCY VIA ELECTRIFICATION  
OF DOMESTIC WATER HEATING**

---

**THE PROCESS OF CHANGING THE PROCESS**

---

**GETTING SMARTER — AND BETTER —  
ABOUT MATERIALS & HEALTH**

---

**NESEA BUSINESS MEMBER DIRECTORY**



Photo of PARC courtesy Illinois Clean Energy Foundation

## When Net Zero Is the Goal, PHIUS+ Is the Means

The PHIUS+ climate specific passive building standard provides a cost-effective path to Net Zero.

An example: The Plainfield, Illinois Park District's new Prairie Activity and Recreation (PARC) center.

The 40,000 square foot facility in suburban Chicago earned the PHIUS+ Source Zero certification in 2019. Designers chose the PHIUS+ standard because it tailors design, construction, and operations to the building's climate zone.

The PARC center is the first park district facility in the United States to earn the PHIUS+ Source Zero certification. The facility includes a preschool with four classrooms,

a 1,600-square-foot multipurpose room, and a 4,000-square-foot fitness center and studio.

Designed to use 65 percent less energy than a similar conventional building, PARC will generate more energy that it consumes. The building utilizes a 215-kW array of on-site solar panels. The building will only use power from the grid on days when the solar panels are unable to produce full needed capacity. Conversely, the building will offset its draw by providing surplus energy to the grid on sunny or partly sunny days.

The PARC facility relies on the pillars of passive building:

employing superinsulation, airtight design and construction, eliminating thermal bridges, and using high performance windows and doors dramatically reduces the energy it takes to heat and cool the building. PARC also includes other sustainability features like rain gardens and LED site lighting.

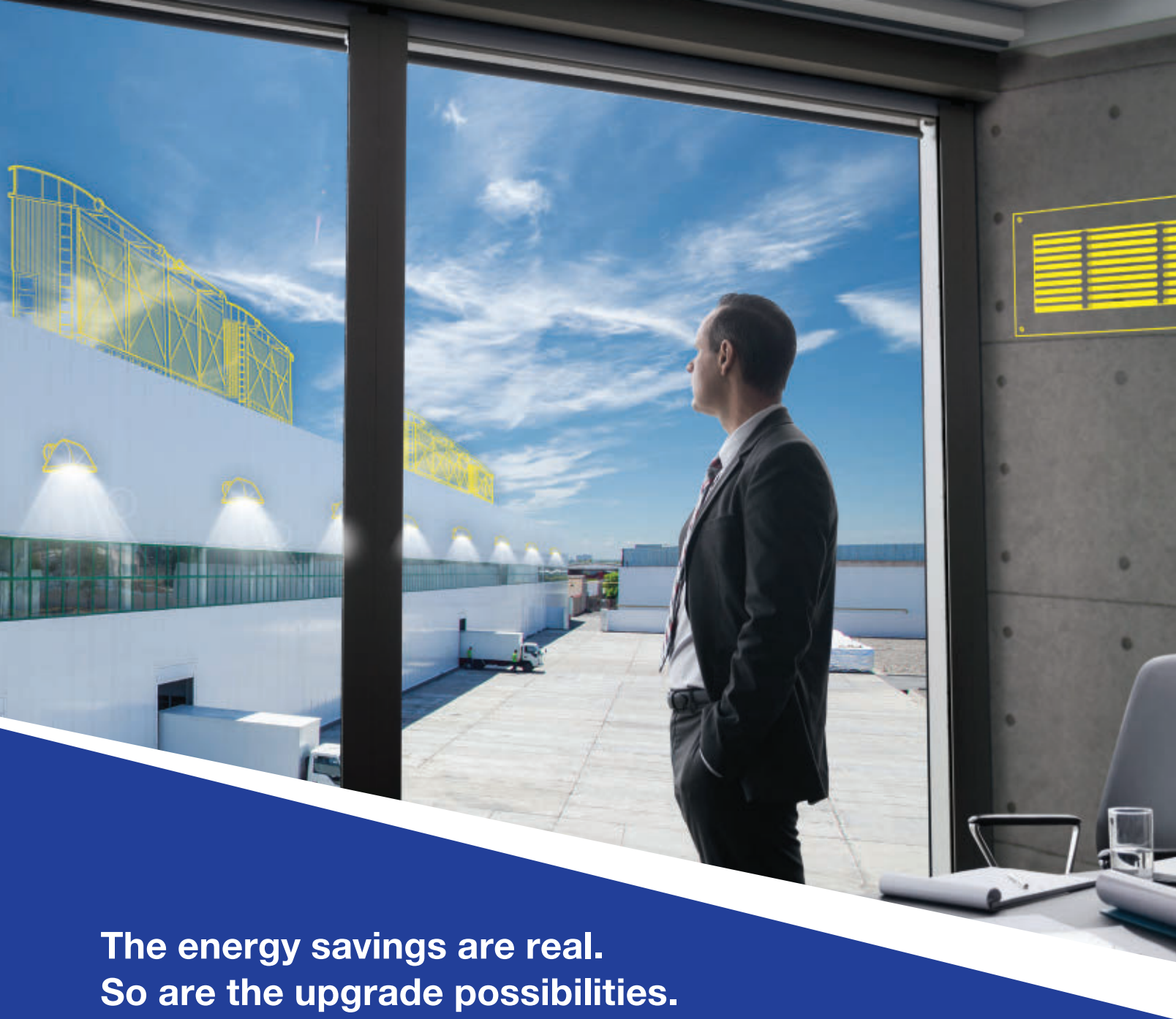
In cases where attaining Zero is out of reach, the PHIUS+ Core standard guides designers to use passive principles to cost-effectively achieve stringent conservation standards, minimizing draw from the grid.



- **LEARN MORE** in the Commercial Construction Resource Center at: [www.commercial.phius.org](http://www.commercial.phius.org)
- While you're there, download the *Passive Building Design Guide*
- 14th Annual North American Passive House Conference, Dec 4-8, 2019, Washington, D.C. [passive-house-conference-2019.phius.org](http://passive-house-conference-2019.phius.org)



[www.phius.org](http://www.phius.org)



## The energy savings are real. So are the upgrade possibilities.

Use the money you save on energy to make your dreams of expansion a reality.

By improving your energy efficiency, you can use the money you save on your bill to fuel your next capital improvement project. We can even help you cover the costs of specific energy projects like new chillers, lighting and air quality enhancements. The best part: our experts guide you through every step of the process—from planning to execution to helping you maximize financial incentives.

**See all the possibilities  
at [ngrid.com/business](https://ngrid.com/business)**

**nationalgrid**

Incentive offers vary by service territory.

**PASSIVE  
HOUSE  
CERTIFIED**

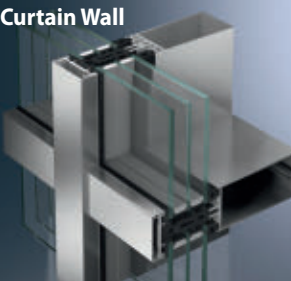
**Glass**  
up to  
**R-14**



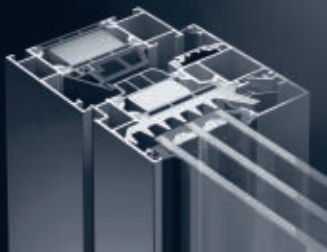
Ada, MI Residence  
Design: Mathison Mathison Architects  
Product: Schuco AWS 75 with R-10 glass

## Celebrating Our 17<sup>th</sup> Year as New England's Leading Supplier of Residential and Commercial Advanced Fenestration Systems

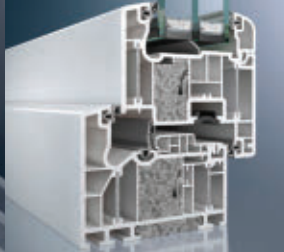
Curtain Wall



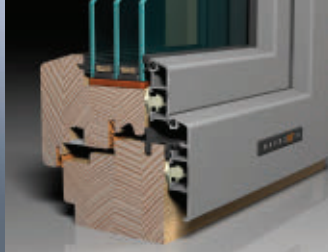
Aluminum



uPVC



Wood/AlumClad



Wood



Elm Place, Milton, VT

**2017 PHIUS Awards:  
Best Overall Project - Winner**

SCHÜCO

EUROPEAN  
ARCHITECTURAL  
SUPPLY

MAKROWIN

144 North Road, Suite 2500  
Sudbury, MA 01776  
1.781.647.4432

[www.finewindows.com](http://www.finewindows.com)

SUPERVISED DELIVERY | TRAINING | INSTALLATION | SERVICE



## TABLE OF CONTENTS

**BUILDINGENERGY® MAGAZINE**  
is published for:

**THE NORTHEAST  
SUSTAINABLE ENERGY  
ASSOCIATION**

50 MILES STREET,  
GREENFIELD, MA 01301  
413-774-6051

**NESEA.ORG**  
**PUBLISHER AND  
EDITOR-IN-CHIEF**  
FLORENCE MACGREGOR



*Magazine printed on 10 percent  
PCRF, triple certified FSC, SFI  
and green-e paper with 70# text  
weight made and 70# cover.*

**PUBLISHED BY**  
**NAYLOR**  
ASSOCIATION SOLUTIONS

5950 NW FIRST PLACE  
GAINESVILLE, FL 32607  
P: 352-332-1252 OR  
800-369-6220  
F: 352-331-3525  
**www.naylor.com**

**GROUP PUBLISHER**  
KELLY MAHEU

**CONTENT STRATEGIST**  
ROBIN LAMERSON

**PROJECT MANAGER**  
AMANDA GLASS

©2019 NESEA. All rights reserved. The contents of this  
publication may not be reproduced in whole or in part  
without the prior consent of the association.  
PUBLISHED SEPTEMBER 2019/ENE-A0019/1644

### NESEA STAFF

**EXECUTIVE DIRECTOR**  
MIRIAM AYLWARD

**PROGRAM & EVENT  
COORDINATOR**  
TRACY CAMPANY

**CONFERENCE MANAGER**  
SUSAN FARBER

**MARKETING MANAGER**  
JENNY GOLDBERG

**INFORMATION TECHNOLOGY  
MANAGER**  
LARRY KUTTNER

**SENIOR PROGRAM &  
COMMUNITY ENGAGEMENT  
MANAGER**  
FLORENCE MACGREGOR

**OFFICE MANAGER**  
DIANE ROBINSON

**MEMBERSHIP MANAGER**  
KATIE SCHEDEL

**BUSINESS MANAGER**  
GINA SIEBER

**EDITORIAL COMMITTEE**  
KEITH BOHLING  
ANDY BUCCINO  
BILL FREEMAN  
MARIEL HOFFMAN  
COURTNEY MCCrackEN  
EMMA REIF  
DANNY VEERKAMP

**MARKETING MANAGER**  
AUSTIN DUNN

**ADVERTISING DIRECTOR**  
MARJORIE PEDRICK

**ADVERTISING SALES  
SPECIALISTS**  
NATHAN BURGMAN  
TRACY HARRIS  
SHANE HOLT  
ANTHONY LAND  
MIKE SROKA  
MATTHEW YATES  
CHRIS ZABEL

**PROJECT COORDINATOR**  
ALEXANDRA MUNDREANU

**DESIGNER**  
PANKAJ KUMAR BHARTI

**COVER PHOTO CREDIT**  
ECOPILOT CANADA INC.

**8 From the Board Chair**  
NESEA's new Board Chair on the points of engagement that have the most impact on our mission – the places where the organization will focus most moving forward.  
*By Lauren Brust Moss*

**12 From the Executive Director**  
NESEA's new Executive Director shares our plan for quantifying the engagement of the community before we set goals for growth.  
*By Miriam Aylward*

**14 Energy Shift – A Utility-Scale Path from Gas to Renewable Thermal**  
Could gas-pipe replacement funds move us to renewables? The Massachusetts non-profit HEET believes the answer is yes.  
*By Zeyneb Magavi and Audrey Schulman*

**18 A Methodology for Deep Energy Retrofits of Mid-Century Campus Facilities**  
DERs of older buildings on campuses in New York State and beyond represent a huge opportunity for energy savings. This opportunity needs to be approached systematically.  
*By Matthew Broderick AIA, NCARB, LEED A+P BD+C*

**22 Building Efficiency via Electrification of Domestic Water Heating**  
Heat pumps are the most viable carbon-free solution for domestic water heating and can help make ambitious sustainability goals a reality.  
*By Richard Gerbe*

**26 The Process of Changing the Process**  
We need to stop looking at the constraints as limits. Instead, we need to look at them as information to feed the process itself.  
*By Jodi Smits Anderson*

**30 Using Artificial Intelligence to Reduce Energy Consumption**  
Thanks to the explosion of "internet of things" devices and the data they provide, artificial intelligence (AI) applications will evolve our buildings into sophisticated and intelligent ecosystems.  
*By Jennie King and Cheri D'Eon*

**34 Getting Smarter – and Better – About Materials & Health**  
With healthier materials, we don't need new technology because the solution is information.  
*By Matt Root and Charley Stevenson*

**38 Passively Promoting Passive House**  
The two passive house standards can – and must – peacefully coexist.  
*By Blake Jackson, AIA, LEED/WELL Faculty, CPHC*

**40 Celebrating Our Leaders**  
A conversation between the recipients of this year's NESEA awards.

**42 NESEA Business Member Directory**  
This premier resource for sustainability professionals in the Northeast and beyond is just a few pages away. To have your organization listed in next year's directory, become a Business or Academic member by visiting [nesea.org/join](http://nesea.org/join).

**69 Index to Advertisers**

## ABOUT NESEA AND BUILDINGENERGY® MAGAZINE

NESEA advances the adoption of sustainable energy practices in the built environment by cultivating a community where practitioners share, collaborate and learn. After an open call for proposals, the content in this magazine was selected by an Editorial Committee comprised of NESEA Members. Most of the articles are peer reviewed; peer reviewers are NESEA Members recommended by the Editorial Committee for their content expertise. To learn more about NESEA's programs or events, contact Florence MacGregor at [fmacgregor@nesea.org](mailto:fmacgregor@nesea.org). To learn more about membership, contact Membership Manager Katie Schendel at [kschendel@nesea.org](mailto:kschendel@nesea.org).





MAKING BUILDINGS BETTER

## SmartGATE™

Evaluates and optimizes incoming power for the entire building – reducing downtime, costs and energy.

## SmartGATE Insights™

Ensures all the energy information is available to you and your systems to run your businesses more effectively.



Find out more at  
[legendpower.com/products](https://legendpower.com/products) or call 1-866-772-8797

# Water & electricity do mix

Electric energy has become the sustainable choice.

Pair solar PV with an **Accelera® E** heat pump water heater.

- › Less than 1.5 kW of solar electric can offset annual hot water energy costs
- › The source of energy used by a heat pump is sustainable energy from the ground, water, air, or waste heat sources
- › Heat pump water heater technology can reduce carbon footprint considerably, 50-70%\*

› Reduces hot water costs by up to 80%\*



German Engineering

\*Based on NRDC's Annual Energy Report 2018 and Energy Star cost savings for heat pump water heaters



**Accelera® 220 E**  
58-gallon  
heat pump water heater  
for 2-3 people (possibly 4)

**Accelera® 300 E**  
80-gallon  
heat pump water heater  
for 3-5 people (possibly 6)

## **STIEBEL ELTRON**

**Simply the Best**

Engineering & manufacturing excellence  
since 1924

800.582.8423

[www.stiebel-eltron-usa.com](http://www.stiebel-eltron-usa.com)

# IMPACT & ENGAGEMENT IN A CHANGING ORGANIZATION



BY LAUREN  
BRUST MOSS

I am frequently reminded that “change is the only constant in life.” And NESEA has had a very busy 2019 with an unusual amount of change. This change has resulted in wonderful opportunities for the organization. We have appointed an Executive Director, Miriam Aylward, who has a known commitment to NESEA, a track record of success directing our programs and a fundamental understanding of the organization and our mission. In January, I stepped into my new role as Board Chair. Five new members have joined the NESEA Board of Directors, increasing the board’s gender balance and geographic distribution to better reflect NESEA’s membership. The new board members have taken on active roles in our committees to create new processes, programs and support for the staff. And BuildingEnergy NYC has moved to a new venue, where it will continue to serve as a platform to build the community, deliver content and provide more opportunities for idea exchanges.

As a reminder to readers, NESEA’s mission is to advance the adoption of sustainable energy practices in the built environment by cultivating a community where practitioners share, collaborate and learn. To build upon Phil Kaplan’s message in the last issue of the magazine, at the board-level, we are instilling a sense of vigilance and self-examination to better understand how NESEA can fulfill its mission while meeting member expectations and growing our community to be more inclusive in terms of programming, geography and member composition. It was with these ambitious goals in mind that the board met for our May retreat in Providence, RI.

We participated in a rigorous exercise to identify what each of us thinks of when we think of NESEA, which NESEA points of engagement we believe are the most important and where each board member believes there is opportunity for growth and development. We then spent two days reviewing all existing programs, financials and staffing and working with Miriam to develop a plan that focuses the staff on meeting NESEA’s mission.

The results of our exercise were both surprising and exciting, and they provided clear direction for

NESEA staff to build upon our collective thoughts. The five points of engagement that we all decided are the most important:

- 1. Participate in Bottom Lines.** Bottom Lines is a gateway to deep involvement with NESEA. With its focus on rich, deep engagement and community building, this program epitomizes what is important to NESEA. Many Bottom Lines members have continued on with NESEA as Board members, Bottom Lines leaders, conference presenters and more.
- 2. Attend a Pro Tour.** The Pro Tour program is a very accessible point of entry to NESEA and immediately engages people in direct learning. Many people who attend a Pro Tour continue on to attend future events, become members, or serve on committees.
- 3. Attend BuildingEnergy NYC.** BENYC has grown every year for the past six years and the consistent feedback is that it’s a show not to be missed. It has created a footprint for NESEA in New York City to build upon with other programming. This year, at its new location, the conference will bring people up to speed on what new solutions exist, what projects and policies are in place today and how these forces are shaping the work that we all do. Through this shared learning, the conference will further cultivate our community in the tri-state area.
- 4. Attend BuildingEnergy Boston for two days.** When members and other attendees have the opportunity to spend two days at the conference, the result is more meaningful engagement both technically and socially. We believe it increases the likelihood that they will engage in community building activities (e.g. NESEA Night) beyond the content and sessions.
- 5. Become an Academic Member.** NESEA launched a new membership level recently to further cultivate community and bring more practitioners together. This membership creates a funnel for new people to engage with NESEA and provides NESEA staff with a constant point of contact at the school/department. The Academic Membership extends member

*Continued on page 10*

# BUILDING COMMISSIONING

NEW BUILDING COMMISSIONING

EXISTING BUILDING COMMISSIONING

BUILDING ENVELOPE COMMISSIONING

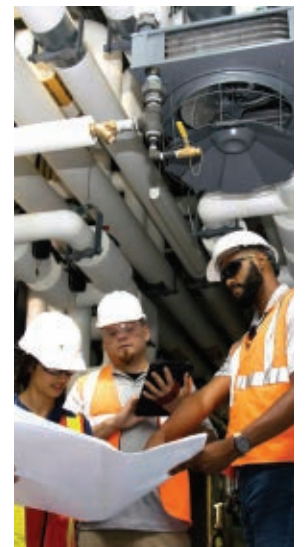
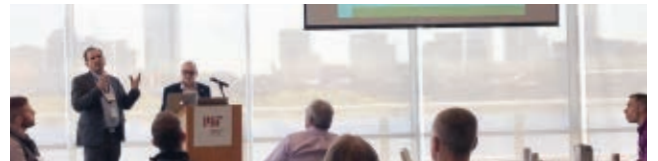
ENERGY AUDITING

FACILITY ASSESSMENT

MONITORING-BASED COMMISSIONING

HIGH PERFORMANCE BUILDING TRAINING

ENHANCED OPERATIONS & MAINTENANCE PLANNING



Now in our 10th year, we've worked on some of the most exciting high performance building projects in the world:

- International FIFA stadium
- The largest neurocognitive research facility world-wide
- LEED® Platinum, Gold, and Northeast CHPS rated facilities
- Net Zero schools and facilities
- Campus wide CMMS implementation at a premier research institution

317 Hope Street, Providence  
RI 02906, United States  
401.273.1935  
[www.buildingcommissioning.com](http://www.buildingcommissioning.com)



**STEPHEN TURNER INC.**  
Building Better Performance



# Online Store Now Open

[retrotec.com](http://retrotec.com)

## Talk to rCloud



### Upgrade your gauge & connect to the cloud

+ \$995 =

Retrotec's **rCloud testing platform** is the new industry standard for blower door & duct testing.

TEC equipment owners can connect to rCloud by upgrading to Retrotec's DM32 WiFi.



Trade in your TEC DG-700 Pressure & Flow Gauge for a DM32 WiFi while offer lasts for only \$995.

[retrotec.com](http://retrotec.com) | [sales@retrotec.com](mailto:sales@retrotec.com) | 1-855-738-7683

### FROM THE BOARD CHAIR...

*Continued from page 8*

benefits (and student pricing) to both students and faculty, which increases accessibility. This membership has the potential to increase emerging professional engagement and also diversity within the organization.

The NESEA staff has now been tasked with quantifying these five points into tangible, trackable metrics. This will help us to understand where NESEA stands today and what success could and should be for each action as we continue to grow and develop our community in an equitable, dynamic, long-term process. As always, your feedback is incredibly important to me, to the board and to the staff, so I encourage each of you to reach out with your ideas and thoughts to support Miriam and her fantastic team as they continue to help each of us work towards NESEA's mission.

### ABOUT THE AUTHOR

**Lauren Brust Moss** is the Program Director of the NORESCO Sustainability Services New York City office. Lauren joined NORESCO after seven years with another New York City-based energy and sustainability consulting firm. As Program Director of Commercial Building Energy Services, Lauren managed a team that provided commissioning energy audit services on more than thirty million square feet of commercial space for both new construction and existing buildings. Lauren is also a part of the Urban Green Council speakers bureau (an active resource of New York City's U.S. Green Building Council® chapter) for New York City's Local Law 84 and Local Law 87. In this role, she helps building owners and managers understand local laws and achieve compliance with them.

High-performing buildings should be healthier buildings.



We provide tools and services to make that happen.

[MateriallyBetter.com](http://MateriallyBetter.com)

## SECOND STREET ASSOCIATES'

has built a 28 unit Certified PH – also LEED certifiable at Platinum. A 37 unit PH on the boards!

[www.distillerynorth.com/GoSouthie!](http://www.distillerynorth.com/GoSouthie!)

# Q How do you | make buildings more efficient?

Reduce property energy consumption and simplify analysis and reporting while keeping tenants comfortable with Yardi Pulse, a suite of automated energy management solutions.



A SINGLE CONNECTED SOLUTION  
FOR ENERGY INTELLIGENCE  
AND AUTOMATION

Energized for Tomorrow



800.866.1144  
Yardi.com/Pulse

# HOW DO WE MEASURE OUR IMPACT?



BY MIRIAM AYLWARD

I'm lucky to have thirteen bosses – and I don't say that in jest. The NESEA Board of Directors is made up of thirteen incredibly dedicated NESEA Members, all of whom have extensive experience in building science, business development, renewable energy and more. To make the best use of this resource, we have a mantra: *the board is the what, the staff is the how*. In other words: the board determines what they want staff to be accomplishing, and the staff supports the board by figuring out how to make their vision a reality.

This mantra comes into play as we think about what kind of impact NESEA is having and what we can do to strengthen that impact. In order to answer these questions, we need data, and in order to gather data, we first need to ask, "What do we measure?"

At the board retreat in May, I asked the board to think through the points of engagement that we currently have at NESEA – the ways that people can interact with our programs and resources. We came up with over 60! Then I asked them to vote on which points of engagement they thought had the most impact on NESEA's mission, and five floated to the top. Some surprised us, and some we expected. In all cases, the data were helpful in guiding our conversation and making decisions. By identifying the points of engagement they believed have the highest impact, the board answered the question of what to measure.

So now staff are faced with a new question: how do we measure our impact? We have always expected our conference sessions to be data-driven; now, we're taking that same approach with NESEA program development. Our first order of business is to establish baseline data over the next six months. The following list contains the five points of engagement the board identified as the most impactful to our mission, and the information we will be taking the time to learn about each:


- 1. Participate in Bottom Lines.** What types of businesses are participating in the Bottom Lines program, where do they come from and how big are they, both in terms of revenue and number of employees?
- 2. Attend a Pro Tour.** Over the last two years, how many members have attended a Pro Tour and how many non-members? What percentage of Pro Tour attendees were attending their first-ever NESEA event? What kinds of actions did people take after attending a Pro Tour

(joining or renewing membership, attending a conference, participating on a committee, etc.)?

- 3. Attend BuildingEnergy NYC.** How many people have attended over the last two years and what have their roles been (speaker, sponsor, general attendee, exhibitor, etc.)?
- 4. Attend BuildingEnergy Boston for Two Days.** What's the percentage of people who have attended BuildingEnergy Boston over the last two years for the full event, versus one day or special events only?
- 5. Become an Academic Member.** Who are the current Academic Members and how many students and faculty are connected with each of these memberships?

We will also create an interactive map of NESEA's territory that includes locations of individual and business members, as well as the location of event attendees, which will help us to understand where the people we currently serve are coming from.

Using the data we collect, we plan to sit down with the board again in early 2020 to think about where we have room to grow and where the new opportunities are. Ultimately, this will help us set goals for the years ahead that are in line with our mission and have the greatest impact.

We frequently hear from our 3,000+ members with ideas about new events to run, content to cover and projects to visit. We are also lucky to have partners throughout the region whose work is aligned with our own and with whom we collaborate. There is certainly no shortage of work to be done, but our resources and time are also finite. Our hope is that the work we are doing now to measure our impact will allow us to address the challenges presented by our built environment with an acuity equal to the urgency with which we must respond. 

## ABOUT THE AUTHOR

**Miriam Aylward** joined NESEA in 2014 after completing a Masters of Business Administration at Antioch University New England. She most recently held the position of Program Director at NESEA prior to her appointment as Interim Executive Director in 2019. Before joining the NESEA team, she worked as a project manager at the Clarke Schools for Hearing and Speech, ran an event planning business in Montana and led backpacking trips in Wyoming and Utah.  BUSINESS MEMBER



# DAIKIN

AIR INTELLIGENCE™



*A revolutionary side discharge system that won't compromise on comfort. Featuring a quiet, high-efficiency inverter compressor, easy installation and a smaller footprint, the Daikin Fit™ system offers solutions where a traditional residential system falls short.*

*Daikin VRV LIFE systems bring inverter driven VRV technology to solve some of the age-old HVAC challenges. Precision engineered for flexibility, zoning, low sound and space saving, with the ability to mix and match ducted / duct-free indoor units with a gas furnace. VRV LIFE is an ideal choice for a premium solution.*



**Come visit the Daikin Boston Regional Office & Training Center!**

150 Presidential Way, Suite 140  
 Woburn, MA 01801  
 Office Phone - 781-298-8040

To find out more, visit [www.daikincity.com](http://www.daikincity.com) or email [BostonVRV\\_LC@daikincomfort.com](mailto:BostonVRV_LC@daikincomfort.com)

# ENERGY SHIFT — A UTILITY-SCALE PATH FROM GAS TO RENEWABLE THERMAL

BY ZEYNEB MAGAVI  
AND  
AUDREY SCHULMAN

PEER REVIEWED BY  
DR. KAVITA RAVI

## THE CHALLENGE OF OUR EXISTING SYSTEM

Massachusetts has one of the oldest natural gas distribution systems in the country, with 26 percent of the state's gas pipes currently slated to be replaced.<sup>1</sup> These aging pipes leak unburned methane into our atmosphere; as a greenhouse gas, methane has 84 times the impact of CO<sub>2</sub> in the first 20 years.<sup>2</sup> Boston methane emissions from natural gas were recently measured and were double the EPA estimate.<sup>3</sup>

The gas companies are replacing these pipes, which total 5,408 miles across the state. The costs are likely to total over \$9 billion dollars.<sup>1</sup> This investment in new fossil-fuel infrastructure will be paid by gas customers through depreciation over decades, past the point when (in order to meet our state's emissions reductions) most of Massachusetts will have switched off gas.<sup>4</sup>

Consumers with means and motivation are already switching to electricity for heat. Nationally, 40 percent of all HVAC units sold are electric heat pumps, with that percentage increasing annually.<sup>3</sup> Over the next few years, as gas customers continue to transition to electricity, each remaining gas customer will be left paying an increasing

percentage of that \$9 billion. The last gas customers remaining will likely be those who cannot afford a new heating system.

Our regulated gas utilities do not have a way out of this predicament, since their mandate is to deliver only gas and the state's pathways to renewable energy are all designed for our electric utilities.

Massachusetts must make a decision: do we want to invest \$9 billion in infrastructure that was considered cutting edge in the 1870s or should we invest in more modern, safe renewable infrastructure, building the energy system we want for the coming century?

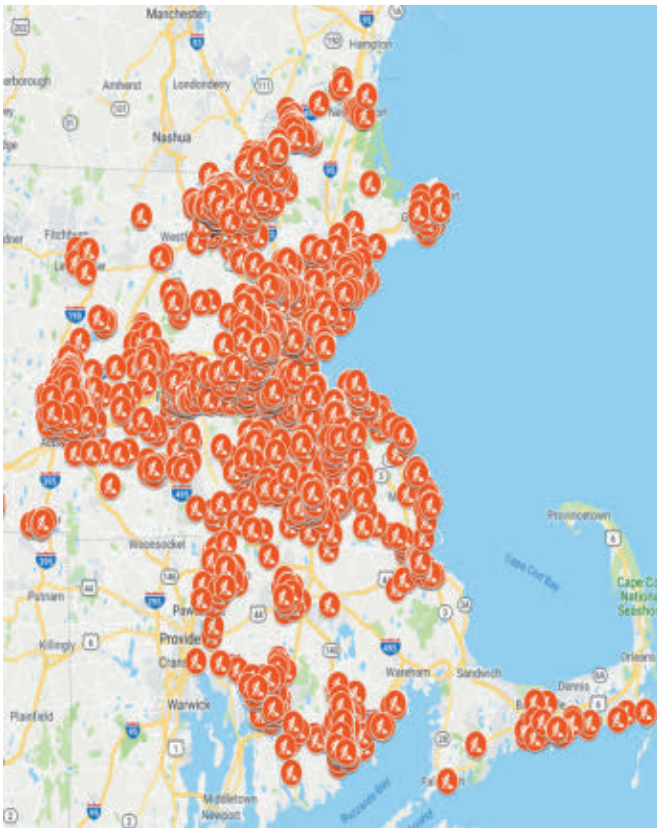
## THE OPPORTUNITY FOR AN ENERGY SHIFT

Here at HEET (the Home Energy Efficiency Team), we mapped the gas companies' public pipe replacement plans to identify street segments that could begin the transition from gas to renewable energy. Approximately 20 percent of the segments are dead ends or noncritical pipes that can be 'pruned' and replaced with renewable energy infrastructure.

HEET believes that the replacement infrastructure should be safe and reliable, provide renewable energy at low cost and be accessible



FIGURE 1: A MAP OF EXISTING GAS LEAKS IN THE GREATER WORCESTER, MA AREA TOGETHER WITH A PHOTO OF SOME RUSTY PIPES  
CREDIT: HEET



**FIGURE 2: A MAP OF PIPE REPLACEMENT PLANS FOR NEXT FIVE YEARS IN BOSTON**  
CREDIT: BUROHAPPOLD

to all. With these goals in mind, we propose to replace leaking gas pipes with ambient temperature water loops in existing gas company corridors in the street. These micro-district loops connect to linear arrays of closed-loop vertical boreholes in the street, using the earth to maintain the water temperature, making it a 'GeoMicroDistrict.'

The heat, recorded as BTUs, is delivered to customers via service loops, transforming the gas utility into a thermal energy utility. The BTUs are metered as they are extracted by the building's heat pump, with heating or cooling distributed through the building's existing HVAC system.<sup>5</sup> For this to work, all gas appliances must also transition to electric or other renewable ready alternatives.

Single-home ground source heat pumps typically require a large initial investment and take up valuable real estate. Having existing utilities install boreholes in the street re-purposes utility corridors and uses the standard public utility financing model of large-scale infrastructure investment with long term payback for the public benefit.

The utility scale approach allows all customers on the street to access renewable energy, not just the wealthy. The thermal network utility is grown from the bottom up by interconnecting GeoMicroDistricts. Interconnection increases efficiency through load cancelling and management of thermal sources and sinks over space and time. This approach fuses distributed generation via geothermal with centralized efficiency and optimization.

District energy is older than our gas system and modern iterations in Europe use lower temperature water to improve efficiency. Ground source heat pumps have been around for forty years. MicroDistricts powered by deep or 'hot-rock' geothermal are popping up in the suburbs of Paris, with the Clichy-Batignolles district providing 83 percent geothermal energy to 7,500 homes.<sup>6</sup> However, the system specifically proposed has never been built in Massachusetts.

HEET hired BuroHappold Engineering to analyze the feasibility of the "GeoMicroDistrict" for Massachusetts. What would happen to efficiency, performance and cost when you move from individual household geothermal to a GeoMicroDistrict?

BuroHappold's analysis of the GeoMicroDistrict concept showed reasonable payback periods for both utility and customer under varying scenarios of street density and energy use diversity.<sup>7</sup> The cost of energy for both residential and commercial customers was determined to be lower than gas.

The analysis used existing data for Massachusetts, with input from Eversource Gas, MassCEC and others. Many potential benefits and efficiencies were not included in this analysis, including opportunities for waste heat capture and connection to existing sources and sinks, because there were few case studies upon which to base estimates of expected system synergies.

Not included were the expected benefits to the electric grid through peak cutting in summer cooling months nor the long-term storage of low-cost energy. Nor was the value of resilience considered, although the independent micro-districts can provide heating or cooling if one mechanical breaks, and they are more protected from weather extremes in the ground. Health impacts of shifting away from gas cooking are also not yet quantified, but may prove of value.

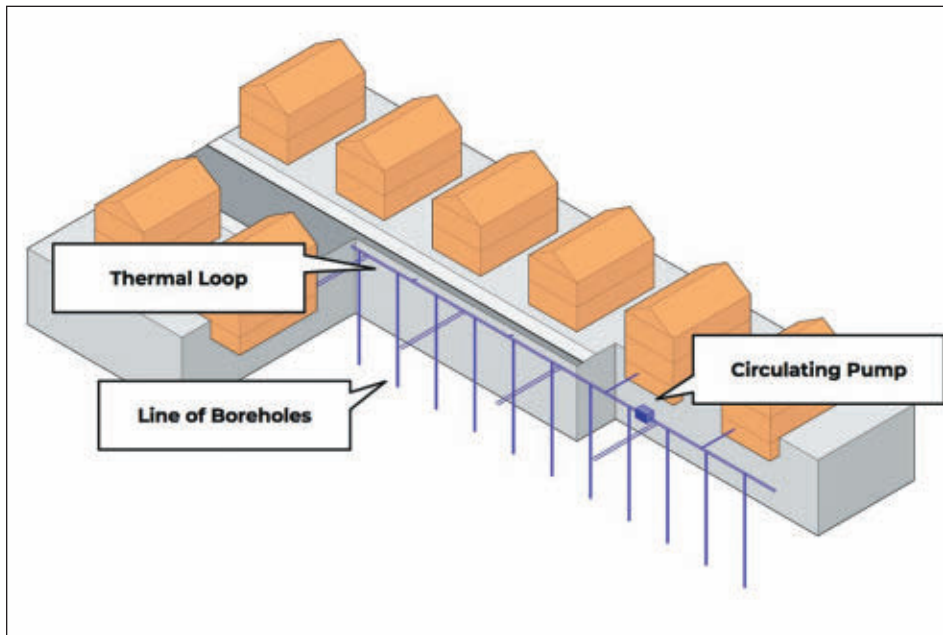
A similar system installed at Colorado Mesa University provides encouraging data. Currently a 4000 ton system serving 1.2 million square feet, the system performance improved as they added buildings, demonstrating gains from load cancelling. The gas backup hasn't fired in eight years and cooling tower water use dropped from 14.5 MM gallons per year to 4.5 MM gallons per year,<sup>8</sup> a benefit the authors had not initially considered.

The BuroHappold study found the idea of MicroGeoDistricts in Massachusetts is an economically reasonable and technically viable design, allowing the pilot to move forward.

### LEGISLATIVE & REGULATORY CHANGE NEEDED

The proposed system is a natural monopoly and therefore it would be reasonable to be run as a public utility. Some imagine a future without utilities; however, specifically transitioning gas utilities into thermal utilities allows for a rapid and simultaneous energy shift that could not happen otherwise. The gas utility workers, accustomed to installing and caring for underground pipes are well positioned to apply their expertise to the green jobs this project would create. With their existing pipe workers, customers, right-of-ways and utility structure and financing, our gas utilities themselves could become a bridge to our renewable future by evolving beyond gas.

Several legislative and regulatory changes are needed. HEET advised the Gas Leaks Allies (a coalition of over 20 nonprofits and researchers) in the drafting of the F.U.T.U.R.E. Act.<sup>4</sup> If passed, this first in the nation legislation will permit gas companies to bill



**FIGURE 3: A CROSS SECTION OF THE PROPOSED GEOMICRODISTRICT RENEWABLE THERMAL UTILITY**  
CREDIT: BUROHAPPOLD

for BTUs and direct the \$9 billion of gas pipe replacement funds towards renewable infrastructure (like GeoMicroDistricts).

### WINNING THE WILL OF THE PEOPLE

Even with the technology, the will of the utilities and the blessing of the state, this energy transition cannot happen without consumers.


HEET has found that the key barrier to household electrification is the common assumption that gas cooking is best. This idea is even in our language – “We’re cooking with gas now!” – and, in comparison to older electric stoves, it is not surprising many declare they “love” their gas stove. However most haven’t tried, or even heard of, induction cooking.

Europe has used induction-electric cooking for decades, and many US chefs favor induction as “precision cooking.” Induction is much faster than gas and it is more efficient than electric cooktops. Furthermore, it is a safer technology for seniors and the visually impaired, as the cooktop is not hot if a pot is not on the burner.

To introduce people to induction cooking, HEET developed “Taste the Future” cooking events. We have donated 700 induction cooktops to low-income homes and demonstrated the cooktops to hundreds of high-income homes. We find that all are excited and surprised by this technology. Induction stoves are an excellent demonstration of the better, faster, safer future we can have.

HEET is a learning and innovation organization, convening the experts needed to design, test and iterate this system-scale solution to the climate crisis. We believe it is possible to provide equal access to clean, safe and renewable heating and cooling at the speed and scale necessary.

To do so will require that the public, the state, the utilities, designers, engineers, pipe workers and climate activists work together. HEET is grateful that so many stakeholders and allies have joined this effort, including our gas utilities, state agencies, scientists and grassroots organizations. As we pull out the gas pipes laid in the 1800s, let’s take the opportunity and build a better future.

*This work is licensed under a Creative Commons Attribution 4.0 International License and is the co-creation of the HEET team and our collaborators.* 

### ABOUT THE AUTHORS

**Zeyneb Magavi** led HEET’s Large Volume Leak Study, which developed a method to rapidly cut emissions from leaking pipes in half. She has worked at BBN Technologies, Harvard University, in multiple start-ups, and her healthy home renovation in 2008 was in a USGBC Greenbuild tour on PBS NOW. She is committed to creating and driving forward just and wise solutions to the urgent challenge of climate change through multidisciplinary problem solving, co-creation and innovation.

**Audrey Schulman**, an experienced grassroots activist, has performed energy assessments on everything from homeless shelters to historic churches. She has also led HEET’s work on gas leaks by mapping the utility-reported gas leaks across Massachusetts. With Metropolitan Area Planning Council, she led the FixOurPipes.org study to find how to fix gas leaks faster and at less expense through increased municipal/utility coordination. She was also the instigator of the Large Volume Leak Study. Schulman is the author of five novels, which have been translated into 11 languages, and reviewed by the New Yorker and CNN.

### ABOUT THE PEER REVIEWER

**Dr. Kavita Ravi** is the Senior Director of Utility and Technical Services at BlueWave Solar where she is responsible for the interconnection and storage aspects for BlueWave’s projects. Prior to this, she was Director of Emerging Markets at MassCEC responsible for promoting emerging markets such as energy storage, clean transportation, and grid modernization in Massachusetts. From 2011 through 2013, she served as a Fellow of the American Association for the Advancement of Science at the U.S. Department of Energy where she led market transforming programs to promote energy efficiency. Kavita has a Ph.D in Computer Engineering from the University of Colorado at Boulder.

## FOOTNOTES

1. Report to the Legislature on the Prevalence of Natural Gas Leaks in the Natural Gas System, 2018, D.P.U. 18-GLR-01
2. Working Group I's contribution to the IPCC's Fifth Assessment Report (2013), Table 8.7, pg 714. [https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5\\_Chapter08\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf)
3. Plant et al., Large Fugitive Methane Emissions from Urban Centers along the U.S. East Coast, Geophysical Research Letters, 2019.
4. Carbon Free Boston. Summary Report, 2019. <https://www.greenribboncommission.org/wp-content/uploads/2019/01/Carbon-Free-Boston-Report-web.pdf>
5. Most distribution systems are compatible, however steam radiators are not.
6. <http://www.thinkgeoenergy.com/new-geothermal-heating-plant-started-operations-in-paris-france/>
7. This analysis to be published soon at HEET's website, [www.HEETma.org](http://www.HEETma.org).
8. Grey Edge Group installation at Colorado Mesa University, data provided by Cary Smith.

## ENDNOTES

1. Cost calculated using publicly available utility-supplied Gas System Enhancement Program data (multiplying the miles or leakprone pipe left to be replaced, 5,408 miles, by the current average cost per mile of replacing that pipe, \$1.722 million per mile).
2. In October 2018, Columbia Gas overpressurized a pipe, leading to 81 simultaneous housefires and loss of service for 8000+ homes. One young man lost his life and many others were injured. The community is still reeling.
3. Heat Pumps in North America – 2017 Regional Report, Melissa Lapsaa, Gannate Khowailedb, Karen Sikesb, Van Baxtera. Oak Ridge National Laboratory, page 3. <http://hpc2017.org/wp-content/uploads/2017/05/P.2.1.3-Heat-Pumps-in-North-America-%E2%80%93-2017-Regional-Report.pdf>
4. For a Utility Transition to Using Renewable Energy, Massachusetts H.2849 & S.1940



**FIGURE 4: COMMUNITY MEMBERS LEARNING ABOUT INDUCTION COOKING**

CREDIT: COLLEEN BRANNEN, PHOTOGRAPHER

[www.logicwd.com](http://www.logicwd.com) High Performance European Style Windows - Made in the U.S.A. 207.588.6590



**LOGIC**  
WINDOWS & DOORS

Kaplan Thompson Architects | Bowley Builders

# A METHODOLOGY FOR DEEP ENERGY RETROFITS OF MID-CENTURY CAMPUS FACILITIES

BY MATTHEW  
BRODERICK AIA,  
NCARB, LEED  
A+P BD+C

PEER REVIEWED  
BY JESSE SELMAN



SCIENCE IV AT BINGHAMTON UNIVERSITY BEFORE RENOVATION

CREDIT: ASHLEY MCGRAW ARCHITECTS

In her 2019 State of the University System address, Chancellor Kristina M. Johnson of the State University of New York (SUNY) said, “Because SUNY operates 40 percent of the buildings owned by New York State...we are a key part of the Governor’s Green New Deal, to make the state’s energy 100 percent carbon-free by 2040.” The commitment by a university system that owns 89 million square feet<sup>1</sup> of space to significantly reduce carbon emissions represents a paradigm shift in thinking about the built environment on college campuses. While great work along these lines has been done on many campuses throughout America, SUNY’s initiative offers a view of what this could look like if scaled-up in a major way.

Perhaps the most compelling piece of this vision is its emphasis on existing buildings. In years past, renovations of college facilities focused on program spaces, selective upgrades to mechanical/electrical systems and critical maintenance for envelopes. A more comprehensive treatment was rare. But in July 2018, New York State issued a directive, “Net Zero Carbon New Buildings and

Deep Energy Retrofits (DER) of Existing Buildings,” which outlined specific requirements for improving the energy performance of existing facilities, calling for achieving “a 50 percent reduction of the building’s current annual site energy consumption and a 25 percent reduction of the building’s current annual site carbon consumption.”

One can imagine SUNY’s initiative acting as a stone dropped into a pond, creating ripples that will help spread the idea of campus DER to the mainstream. Sixty-eight percent of SUNY’s facilities are at least 40 years old.<sup>1</sup> Because of the major expansion of US colleges from the 1960s through the mid-1970s, many other campuses are in a similar position.

As architects, engineers and construction professionals begin to approach DERs of campus buildings at a much larger scale, a clear design framework will be valuable. This article outlines the process in three phases: assessment, exploration and optimization.

Before the design process begins, some key expertise and tools must be in place. An experienced energy modeler is critical. ANSI/ASHRAE Standard

209-2018, “Energy Simulation Aided Design for Buildings Except Low-Rise Residential Buildings,” provides guidance on the modeling steps. Adopting a formal Integrative Process (IP) using the 2012 ANSI Consensus National Standard Guide is encouraged. Successful DERs rely on the thoughtful integration of multiple design disciplines, and IP brings valuable structure to those efforts.

## 1: ASSESSMENT

The Assessment phase focuses on aesthetic and functional considerations of the building envelope. Aesthetically, our first question relates to historic significance. In New York, any renovation to a building over 50 years old that involves public money must be reviewed by the State Historic Preservation Office. Regardless of the involvement of state agencies, a decision must be about the exterior appearance of the building and whether it is of historic value or has some importance to the campus. These findings will shape the envelope improvement strategy.

In the case of Science IV, a project at Binghamton University, it was determined that the design team shouldn’t be constrained by the original appearance of the building. In fact, the school desired a transformation of the façade, freeing the designers to consider a full spectrum of options. Science IV is being designed as a two-part deep energy retrofit. Phase 1, which includes a recladding, HVAC upgrades and partial interior renovation, is complete. Phase 2, with its additional HVAC upgrades and completion of interior renovations, is in design.

When evaluating the aesthetics of the façade, we simultaneously examine the function and condition of the envelope. As with many facilities of this age, deficiencies may be discovered. At Science IV, some of the masonry veneer ties were significantly deteriorated. Science IV was also a prime example of a common energy-related sin of its era: exposed structure. Not only were the concrete frame, columns and beams fully exposed to the elements, but cantilevered sections exposed entire floor slabs, resulting in some faculty members having very cold feet.

The HVAC system will get a similarly close look while envelope investigation is proceeding. At over 40 years, many of these systems will be operating beyond their useful lives. Ventilation may be too little, or in some cases, like science facilities, too much, and it almost certainly won’t include energy recovery. Controls – and hence, thermal comfort – may be suboptimal. There may not be air conditioning.

Once the existing conditions are assessed, it is time to set some goals. For SUNY, that will be a 50 percent reduction of the building’s current annual site energy consumption and a 25 percent reduction of the building’s current annual site carbon consumption. With luck, information on existing energy usage will be readily available, but many older facilities are not separately metered. They may be part of a larger complex or connected to a central heating and/or cooling plant.

Science IV was connected to a central plant as part of a five-building complex. In such cases, it may be necessary to model the baseline condition. The HVAC engineer for Phase 2 of Science IV, Pathfinder Engineers & Architects, modeled the existing building using eQUEST energy simulation software to establish the baseline energy use. This was estimated to be an annual EUI (energy use intensity) of 160 kBtu per square foot. To meet the SUNY goal of 50 percent reduction, this gave us a target EUI of 80 kBtu/ft<sup>2</sup>.



RENOVATED SCIENCE IV AT BINGHAMTON UNIVERSITY  
CREDIT: DAVID LAMB PHOTOGRAPHY



RENOVATED SCIENCE IV AT BINGHAMTON UNIVERSITY  
CREDIT: DAVID LAMB PHOTOGRAPHY

Another approach for non-SUNY DER projects is to target a specific EUI. SUNY takes this approach for new structures which must be net-zero carbon ready and meet an annual kBtu per square-foot EUI limit specific to building typology: 50 for classrooms, 150 for laboratories and 32 for residence halls. The net-zero requirement assumes the remaining energy will be supplied by renewable energy, likely off-site. A similar approach can be applied to existing buildings.

For SUNY, EUI is based on site energy rather than source energy, and compliance with the EUI target should be measured without accounting for any renewable energy. The carbon calculation does not account for embodied carbon, but this could certainly be looked at as an additional goal.

## 2: EXPLORATION

Entering the Exploration phase, we know what we are dealing with and have clear goals. Throughout this phase, modeling of different iterations continues as the team homes in on the best combination of strategies.



RENOVATED SCIENCE IV AT BINGHAMTON UNIVERSITY  
CREDIT: DAVID LAMB PHOTOGRAPHY



RENOVATED SCIENCE IV AT BINGHAMTON UNIVERSITY  
CREDIT: DAVID LAMB PHOTOGRAPHY

Envelope solutions should address air tightness first, followed by insulation. Insulating falls into two key categories: insulate from the inside or from the outside. At Science IV, the desire for a new aesthetic combined with masonry deterioration and significant thermal bridging made insulating from the outside the best choice.

For facilities with historic or other aesthetic considerations, or perhaps budget constraints, insulating from the inside may be a better approach, even though it introduces more potential risk into the project, particularly involving moisture. Without proper moisture control, the risk of mold can increase. In masonry buildings, poor moisture control combined with freeze-thaw cycles can lead to veneer damage. Hygrothermal modeling is particularly important in analyzing interior insulation strategies, as an understanding of liquid and vapor movement is critical.

Simultaneously with the envelope analysis, the team reviews the HVAC system and its reconfiguration. Decoupling the heating/cooling mechanicals from ventilation will likely

be considered, since moving energy through liquid is more efficient than moving energy through air. Ensuring energy recovery is vital. Achieving carbon reduction goals may necessitate an all-electric system. Some technologies, like ground source heat pumps, are now common and well understood, while others, like air source heat pumps, are being refined for institutional applications.


### 3: OPTIMIZATION

In the final phase, Optimization, we look to take full advantage of synergies between the various systems. For example, what is the optimal amount of insulation and what impact might that have on HVAC sizing? One goal is to optimize lifecycle costs. Ideally, more money invested in upgrading the façade will result in savings on HVAC equipment. A more fundamental change, like the elimination of perimeter heating due to envelope improvements, can help balance the project budget.


We also look to optimize the individual systems themselves. Envelope optimization, for example, should aim to reduce or eliminate thermal bridging where possible. Additional considerations could include the carbon footprint of materials and even the global warming impact of the insulation.

For Science IV, current modeling, more than halfway through design of Phase 2, predicts a 63 percent reduction in EUI, from 160 to 60, and a 52 percent reduction in carbon emissions, from 1,250 metric tons to 604 metric tons, exceeding the SUNY goals of 50 percent and 25 percent respectively.


Of course, work does not stop at the end of the design phase. Following through during construction, HVAC and envelope commissioning and post-construction with Post-Occupancy Analysis, is critical to the ultimate success of the project.

As we confront climate change, we are on the cusp of a historic, radical change in how we think about our existing building stock. By increasingly implementing DER in campus renovations, university planners and architects can take the lead by providing a sustainable solution to the crisis. 

### ABOUT THE AUTHOR

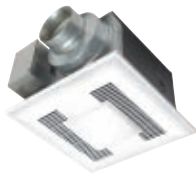
**Matthew Broderick, AIA, NCARB, LEED AP BD+C**, *President of Ashley McGraw Architects, leads the firm as they strive to be an agent of change, and are constantly working to expand the sustainability conversation to create not just better buildings, but stronger communities and more effective learning environments. An expert in innovative sustainability solutions, Matt's design experience includes Deep Energy Retrofits, a Living Building in progress and multiple LEED facilities.*  BUSINESS MEMBER

### ABOUT THE PEER REVIEWER

**Jesse JW Selman, CPHC, AIA** *is a partner at CGH Architects in Amherst, MA. With a dedication to place-based design, Jesse applies a life as a builder, farmer and educator to the profession of architecture. He enlivens CGH with his passion to restore, re-build and transform the built environment in the Northeast. A graduate of Vassar College & the University of Massachusetts architecture program, Mr. Selman lives on a small farm in Western Massachusetts where he builds resilience, soil and community with insulation and insolation.*  BUSINESS MEMBER

### ENDNOTE

1. The State University of New York Financial Fact Book for the June 30, 2018 Fiscal Year.



# 10% OFF\*

YOUR ORDERS UNTIL NOVEMBER 1<sup>ST</sup>!

Use promo code **NESEA10** at checkout and get 10% off your order!

[wholesale.poweredbyefi.org](http://wholesale.poweredbyefi.org)

\*New Customers Only. Not all categories are eligible. Expires 11/1/19

# BUILDING EFFICIENCY VIA ELECTRIFICATION OF DOMESTIC WATER HEATING — THE NEXT FRONTIER OF SUSTAINABILITY

BY RICHARD GERBE

PEER REVIEWED  
BY KEITH BOHLING

The commercial and residential building stock consists of many structures that are energy inefficient, resulting in serious pollution, supply challenges and excess emissions contributing to global warming. These buildings are responsible for approximately 40 percent of the energy and 70 percent of the electricity used annually in the U.S.,<sup>1</sup> as well as 39 percent of the carbon dioxide (CO<sub>2</sub>) emitted each year in the nation.<sup>2</sup>

Although steps are being taken to make buildings more efficient, such as better lighting, ventilation and air tempering, these efforts don't cover all building efficiency opportunities. Initiatives are falling short in a key area: domestic water heating. Making up this deficit could push building efficiency to new levels. This is the next frontier of building sustainability.

Heat pump water heaters (HPWHs) provide a relatively simple solution to resolve the shortfalls of water heating in most buildings. When combined with electricity supplied by renewables, these systems support carbon-reduction efforts, such as New York City's 80x50 plan to cut greenhouse gas (GHG) emissions 80 percent by 2050<sup>3</sup> and Boston's goal to be carbon-neutral by 2050.<sup>4</sup>

Electric HPWHs could bolster the efficiency and sustainability of all buildings currently using fossil fuels to heat water. Given their higher efficiency, their use of grid power that is becoming cleaner and the decreasing costs of renewable energy, HPWHs are an option that we must embrace to meet our GHG reduction goals.

## CHALLENGES OF CONVENTIONAL DOMESTIC WATER HEATING

Domestic water heating poses sustainability challenges because the majority of hot water in North American cities is produced via conventional gas-fired heaters. These older systems emit large amounts of CO<sub>2</sub> and have a low coefficient of performance (COP) since they expend considerable energy to heat water, thereby wasting energy. They are in direct contrast to carbon-reduction initiatives.<sup>5</sup>

Further, gas-fired heaters require extensive investments by utilities to establish and maintain costly gas lines. The reality is that many new urban housing projects, particularly multifamily buildings, will be built in areas with undersized gas lines and, in some instances, places where gas lines aren't feasible.

## MULTIFAMILY BUILDINGS FACE MANY HURDLES

Domestic water heating poses acute challenges for multifamily buildings due to sizeable hot-water needs and a reliance on fossil fuels,<sup>6</sup> which is a big problem for the environment. Domestic water heating alone is responsible for 22% of the GHG emissions discharged by New York City's multifamily buildings.<sup>7</sup>

The energy needs of multifamily housing are significant. For example, in New York City, the sector represents over 40 percent of the total building area and nearly 30 percent of GHG emissions.<sup>8</sup> With apartment construction at a 30-year high in the city,<sup>9</sup> multifamily developments are sprouting up everywhere.

## ELECTRIC HPWHs AS THE SOLUTION

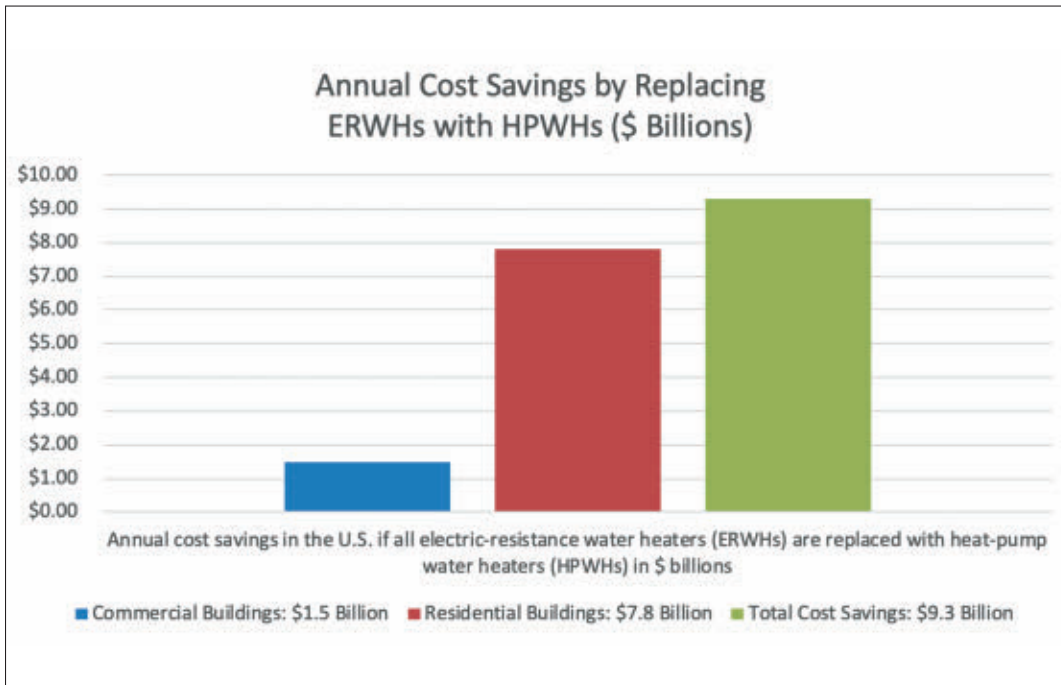
There's a better way to provide domestic hot water and that's via electric HPWHs. This technology offers commercial, residential and industrial users of sanitary hot water an energy-efficient means of heating water to temperatures as high as 185°F in a single pass, without using any natural gas.

Electric HPWHs use the same operating principle as air conditioners and domestic refrigerators. The heat pump gathers energy from the surrounding air, and, through the refrigeration cycle, deposits the energy into water at a useable temperature.

Moving energy with a heat pump, rather than generating it via fossil fuels or electric resistance, makes HPWHs the best energy-conservation choice. Depending on the temperature of the source air or water, domestic water can be heated using one-third to one-fourth of the energy required by electric resistance or gas.

**ANNUAL COST SAVINGS  
IN THE U.S. BY REPLACING  
ERWHs WITH HPWHs IN \$  
BILLIONS<sup>16</sup>**

CREDIT: U.S. DEPARTMENT OF  
ENERGY (DOE)



Electric HPWHs are a strong complement to carbon-reduction programs being adopted in many cities in the Northeast and across North America. So much so that utilities, such as New York’s Con Edison, are increasingly eyeing electrification of domestic water heating as a way to reduce customer gas demand.<sup>10</sup>

HPWHs historically were less efficient in colder temperatures, but technological advances have enabled them to excel in cold climates. No technology is without challenges, and HPWHs can have higher upfront costs than conventional water heaters; however, HPWHs also have lower operating costs that offset initial expenses in time.<sup>11</sup>

**RESULTS OF USING HPWHs**

Implementing electric HPWHs will lead to many positive results, including:

- **No gas:** Electric HPWHs eliminate all gas needs for domestic water heating.
- **Fewer emissions:** GHG emissions from buildings are reduced.
- **Downsized HVAC equipment:** Eliminating the complex infrastructure associated with gas enables HVAC equipment to be minimized.
- **Furthering carbon-reduction efforts:** Key support is provided for carbon-reduction initiatives throughout the Northeast and North America.
- **Increased efficiency:** The amount of energy transferred by electric heat pumps can be three or four times larger than the power consumed, thus giving heat pumps a COP of 3-4, as opposed to just 1 for electric-resistance water heaters (ERWHs).<sup>12</sup> The best gas-fired boiler fares even worse with an efficiency rating of .90.<sup>13</sup> In other words, heat pumps are 300-400% more efficient than ERWHs or gas boilers.
- **Massive cost savings:** The U.S. Department of Energy (DOE) found that if all ERWHs were replaced with HPWHs in the U.S., commercial buildings would save \$1.5 billion<sup>14</sup> and residences \$7.8 billion in annual costs.<sup>15</sup>

**IN SUMMARY**

Domestic water heating via conventional heaters is inefficient, costly and polluting. Such antiquated systems are holding back efficiency efforts and run counter to emissions-reduction goals dependent on more efficient and sustainable buildings. There is a better way to heat water in our commercial, residential and institutional buildings.

Electric HPWHs are the solution since they don’t use gas and can produce hot water using a quarter of the energy used by traditional equipment. By implementing these systems in North American cities, GHG emissions will be substantially curbed and all buildings can take their efficiency performance to the next frontier of sustainability. ♻️

**ABOUT THE AUTHOR**

**Richard Gerbe**, CEO and Co-Founder of HIGHMARK NY, is a 2017 ENR New York Top Young Professional and a 2016 Consulting-Specifying Engineer 40 Under 40 Award Winner. As a visionary HVAC authority with two decades of experience, his robust knowledge and expertise in the best and most innovative technologies available today for boosting building efficiency are unparalleled. Gerbe is committed to challenging the HVAC industry’s status quo and bringing efficiency to the built environment. To learn more, visit: [www.highmark-ny.com](http://www.highmark-ny.com).

**ABOUT THE PEER REVIEWER**

**Keith Bohling**, Senior Project Manager with NYSERDA, has 30 years of experience remodeling homes, performing diagnostic examinations and designing improvements for existing homes. His background includes working with Habitat for Humanity on new construction and remodeling projects, work as a remodeling contractor and as a project manager. Keith’s current position combines a Master’s degree in Communication with his experience to help homeowners understand what’s performing well with their homes and what efficiency opportunities will pay the most dividends. BUSINESS MEMBER



## ENDNOTES

1. "About the Building Technologies Office," U.S. Department of Energy, <http://energy.gov/eere/buildings/about-building-technologies-office>.
2. "Buildings and Climate Change," U.S. Green Building Council, <https://www.eesi.org/files/climate.pdf>.
3. "80 x 50," NYC Sustainability, <https://www1.nyc.gov/site/sustainability/codes/80x50.page>.
4. "Reducing Emissions," City of Boston, Mayor Martin J. Walsh, Department of the Environment, <https://www.boston.gov/departments/environment/carbon-free-boston>.
5. "80 x 50," NYC Sustainability, <https://www1.nyc.gov/site/sustainability/codes/80x50.page>.
6. "New York City's Energy and Water Use 2013 Report," The City of New York, Mayor Bill de Blasio, Mayor's Office of Sustainability, August 2016, [https://www.urbangreencouncil.org/sites/default/files/nyc\\_energy\\_water\\_use\\_report\\_2016.pdf](https://www.urbangreencouncil.org/sites/default/files/nyc_energy_water_use_report_2016.pdf).
7. "NYC Carbon Challenge Handbook for Multifamily Buildings," New York City Mayor's Office of Sustainability, October 2016, [http://www.nyc.gov/html/gbee/downloads/pdf/nyc\\_carbon\\_challenge\\_handbook\\_for\\_multifamily\\_buildings.pdf](http://www.nyc.gov/html/gbee/downloads/pdf/nyc_carbon_challenge_handbook_for_multifamily_buildings.pdf).
8. Ibid.
9. Betsy Kim, "NYC Apartment Construction Highest in 30 Years," GlobeSt.com, February 27, 2018, <https://www.globest.com/2018/02/27/nyc-apartment-construction-highest-in-30-years>.
10. "Gas Demand Response Pilot Implementation Plan, 2018-2021," Con Edison, April 26, 2018, <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B22BB3E67-11BC-445F-AE14-3DBB8568A0D0%7D>.
11. "Heat Pump Water Heaters," Energy Saver, U.S. Department of Energy (DOE), <https://www.energy.gov/energysaver/water-heating/heat-pump-water-heaters>.
12. "Heat pump," Wikipedia, [https://en.wikipedia.org/wiki/Heat\\_pump](https://en.wikipedia.org/wiki/Heat_pump).
13. "Types of Heating Systems," SmarterHouse, <https://smarterhouse.org/heating-systems/types-heating-systems>.
14. "Heat Pump Water Heaters," Better Buildings Initiative, U.S. Department of Energy, <https://betterbuildingsinitiative.energy.gov/heat-pump-water-heaters>.
15. Carl Shapiro and Srikanth Puttagunta, "Field Performance of Heat Pump Water Heaters in the Northeast," U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, February 2016, <https://www.nrel.gov/docs/fy16osti/64904.pdf>.
16. Two sources were used to compile this chart: 1) "HEAT PUMP WATER HEATERS," Better Buildings Initiative, U.S. Department of Energy, <https://betterbuildingsinitiative.energy.gov/heat-pump-water-heaters> and 2) Carl Shapiro and Srikanth Puttagunta, "Field Performance of Heat Pump Water Heaters in the Northeast," U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, February 2016, <https://www.nrel.gov/docs/fy16osti/64904.pdf>.



**DIETZ & COMPANY ARCHITECTS** DESIGN THAT LOOKS GOOD, DOES GOOD



**Parsons Village - Easthampton, MA**

*Parsons Village is a 38-unit affordable housing project that is zero-net energy capable. Dietz & Company Architects designs all of our projects with both our clients' budgets and sustainability in mind.*

*Sustainable and affordable don't have to mean different things.*

Creating sustainable designs for:

**Housing • Historic • Education • Healthcare  
Institutional • Commercial**

55 Frank B. Murray Street Suite 201  
Springfield, MA 01103

(413) 733-6798  
[www.dietzarch.com](http://www.dietzarch.com)

Dartmouth, MA



0.57 ACH50 Air Leakage

0.0kBtu/sf/yr Predicted Energy Use Intensity

100% Better Than Code



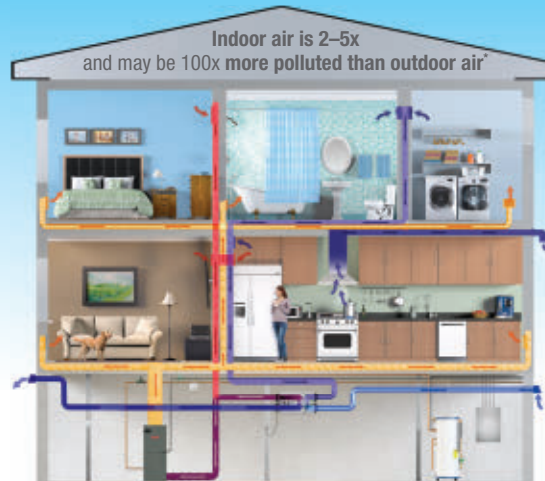
ARCHITECTURE & CONSULTING  
PASSIVE HOUSE | NET ZERO

617.720.5002

ZEROENERGY.COM

# IMPROVE INDOOR AIR QUALITY WITH SL SERIES ERVs

Passive House guidelines mandate the use of balanced heat and moisture recovery ventilation. RenewAire Energy Recovery Ventilators (ERVs) provide enhanced IAQ through increased/balanced ventilation and the reduction of indoor air contaminants, thus creating a cleaner and healthier indoor environment.



## COMFORT

Enhanced IAQ  
Balanced ventilation

## EASE

Easy installation  
Easy maintenance  
Fits in drop ceilings & bulkheads

## EFFICIENT

High-efficiency core  
EC fans

## CONTROL

Continuous operation  
with boost mode  
On-board controls

\* "Why Indoor Air Quality is Important to Schools," U.S. Environmental Protection Agency (EPA), [www.epa.gov/iaq-schools/why-indoor-air-quality-important-schools](http://www.epa.gov/iaq-schools/why-indoor-air-quality-important-schools).



RSTThermal.com  
781.320.9910



# THE PROCESS OF CHANGING THE PROCESS

BY JODI SMITS  
ANDERSON

PEER REVIEWED BY  
MICHAEL MAINES

One of my professors at RPI insisted that creativity and innovation never occur without constraints. Anyone can do anything – and they often do – when there are no limits. Often this limitless approach creates a result that is underwhelming: because no problem is solved, there is no moment of revelation and there is no pride in achievement.

There are several constraints that we are all facing and that many of us are finally recognizing.

- one is the need to eliminate fossil fuel use to potentially mitigate further climate change chaos;
- another is the fact that we need to develop the ability to respond and adapt to the changes we know will occur and those we don't yet understand;
- a final one, much more mundane and esoteric, is the procurement processes under which we deliver publicly funded projects.

It is, therefore, time to be creative.

Through creative problem-solving, we have already discovered approaches for good engagement in an integrative process, tools for moving to ultra-low energy use and communication adjustments to build better teams.

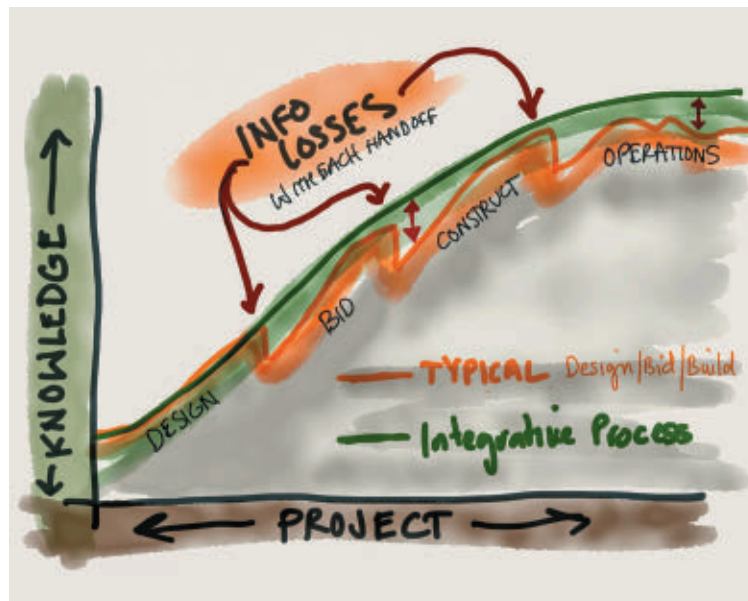
## DEFINING THE CONSTRAINTS

In the public realm, project delivery typically comes from a design/bid/build approach. Imagine a process where a team creates a design and illustrates

that design through contract documents including material specifications and detailed drawings on assembly and final product. That set of documents, created by at least tens of professionals, is “put out on the street” for a contractor team to bid on. The contractors have never seen these documents. They have a month – maybe – to develop a bid that they will then be under contract to deliver. They may manage to devote almost two weeks to this task. The lowest qualified bid is selected, and the selected contractor spends significant time trying to find where the documents can be misinterpreted, so change orders can help her improve her profit margins. Each hand-off creates a connection loss. An adversarial relationship between the contractor and the design team has been created.

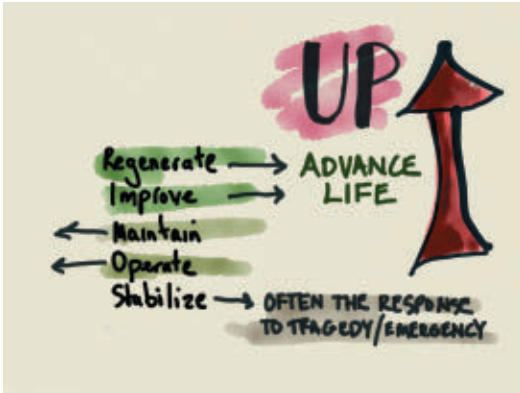
Another limit is that the procurement phase is “hands-off,” meaning the potential bidders or concept submitters cannot engage in conversation with the owner entity. All communication must go through a designated request for proposal (RFP) coordinator in writing. Also, we tend to use shorthand in how we speak about projects. We talk about overall project cost or per square foot cost, and total square feet or total occupancy related to numbers of beds in a hospital or a residence hall.

Many state projects are part of a capital planning system under the single-year state budget. Even though some entities engage in five-year planning, this means information on costs, programmatic needs and even technological goals may be as many

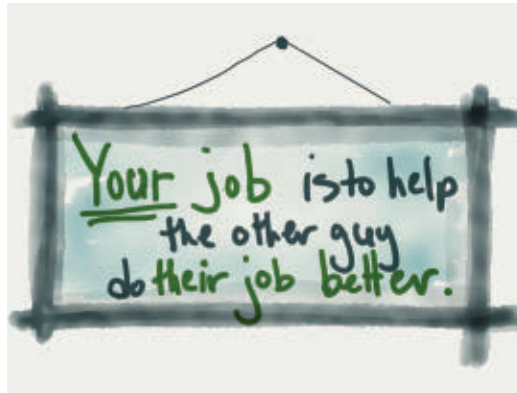


**FIGURE 1: CONVENTIONAL DESIGN/BID/BUILD PROJECT LOSES INFORMATION AT EACH HAND-OFF**

CREDIT: FROM AUTHOR'S NOTEBOOK



**FIGURE 2: IF WE LIMIT TO GOAL-SETTING, WE LIMIT THE ACHIEVEMENT**  
CREDIT: FROM AUTHOR'S NOTEBOOK



**FIGURE 3: BUILD THE CAPACITY OF THE TEAM**  
CREDIT: FROM AUTHOR'S NOTEBOOK

as five years out-of-date. And often, little is done to incorporate the long-term goals of these typically long-lived institutions.

As part of a better way forward, I am currently engaged in work that uses design/build to improve access to construction-based knowledge and market awareness. Design/build puts contractor and designer on the same team from the start.

**WHAT CAN WE DO WITHIN THESE CONSTRAINTS?**

We need to stop looking at the constraints as limits. Instead, look at them as information to feed the process itself. Rather than identifying what is stopping us from communicating, talking with the teams or designating goals, we can ask discovery and solution-based questions: “How can we do this thing as best we can in this situation?”

**WHAT TOOLS CAN WE USE TO IMPROVE ACHIEVEMENT?**

Bridging Documents (BD) – In design/build we use bridging documents, containing pre-schematic design level information, as part of the issued RFP. I have long-feared bridging documents as restrictive; I’ve read repeatedly that they undermine project innovation. The owner is hiring a team of experts to design and build a project, yet this prescriptive document precedes any work by that team. So how do we use the bridging documents well? We must simply state the big ticket “no” items and the absolute “must-haves,” and then detail the performance parameters through the Owner’s Project Requirements for energy, durability, user engagement, etc. Cite only what needs to be clear.

Post-Occupancy Evaluation (POE) – Instead of a performance guarantee, which creates risk for the design/build team, we rely on a post-occupancy evaluation process with several deliverables to

1. define where we may have missed any goals and why
2. determine what approaches could be used to improve performance further

3. produce training modules and white papers to inform future work for that owner and throughout state procurement

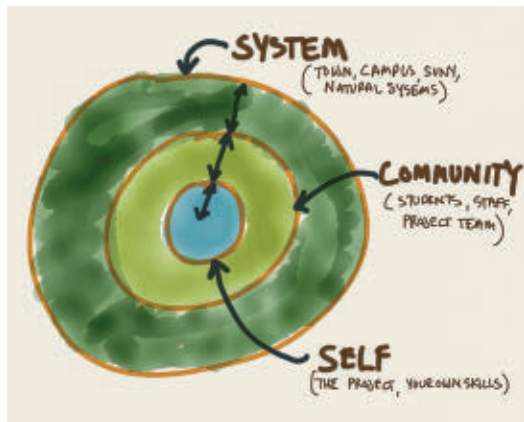
**WHAT IF ONE-ON-ONE COMMUNICATION IS LIMITED?**

We typically put out the RFP with the bridge documents, hold a two-hour pre-proposal meeting to address any lack of clarity in the RFP and then have a written submission of questions. This leaves no space for discussion of how to achieve the goals or for a deeper understanding of the project context within systems or society. Having individual discussions with each potential team creates the risk of inequitable delivery of information, so we explored hosting a group discussion so that everyone received the same information. We feared that actual discussion would be restricted by the competition.

The results were greatly improved by hosting a two-day facilitated workshop session to train the teams on integrative process, including concepts such as discovery, collaborative goal setting and nested

Standards and tools: suggested for use in design and for proof of performance.

- **ASHRAE Energy Modeling Standard 209**, which defines 11 distinct cycles of modeling from siting level to reconciliation of energy model with actual performance.
- **LEED building standard**, citing specific credits for which discovery and documentation is wanted.
- **WELL rating**. In our case, as an alternate, asking for a summary of what credits should be explored, cost for the effort and how this effort would support the defined owner goals.



**FIGURE 4: AN INTEGRATIVE PROCESS WORKSHOP**  
CREDIT: FROM AUTHOR'S PHONE



**FIGURE 5: INSTEAD OF COMPROMISE, USE THE RESTRAINING INFORMATION TO INFORM THE WORK AND EXCEL**  
CREDIT: FROM AUTHOR'S NOTEBOOK



**FIGURE 6: A HALF-BAKED COOKIE IS WHAT WE NEED**  
CREDIT: DELICIOUS COOKIE FROM THE PLACID BAKER, TROY, NY

systems of influence. It included exercises for the teams to help them discover the owner's genuine goals for the work and to further define their own team's capacity to create a successful proposal. Each team worked through these exercises independently and shared only their own process revelations with the other teams, not any design approaches. Our intent for this two-day meeting was to support every team in producing the best proposals possible. We were there to build their capacity.

**COMMUNICATION ADJUSTMENTS TO BUILD BETTER TEAMS.**

Change is hard, and there is no reason for us to make it any harder with our language. Let's consider this concept using plug loads in a college residence hall as an example. Controlling plug loads is paramount

for achieving zero net carbon (ZNC) performance (eliminating all on-site use of fossil fuels with the intent of purchasing any electrical use from renewable energy sources offsite). Even the best-meaning owner may say something like "Well, the EUI goal is tight and the students won't want to live there when we limit them to one laptop and one table lamp."

We must think of the constraints as information that can inspire greater achievement. The plug load challenge might better be phrased as "How can we make the building energy use transparent and engaging so that students can understand how to manage their energy use?" Generation Z students, for example, prefer smaller personal spaces and more access to community work and play areas; these preferences should be considered when developing plug load management strategies.

We can also be more transparent in our communication. For this article, we are sharing our process in a general way to provide value to pending and future projects while protecting the integrity of the current procurement. Lessons do not have to be fully baked to be of use; in fact, a three-fourths baked cookie is yummier, all gooey and warm, and sharing a three-fourths baked lesson not only gets thought processes moving, but will often garner solutions from other sources. We must work together in the face of climate peril. We don't have the time to be defensive of our mistakes; we must learn quickly and improve. 🌱

**ABOUT THE AUTHOR**

**Jodi Smits Anderson** is the Director of Sustainability Programs for DASNY. She is an architect, LEED AP BD+C, AIA member, NESEA Lifetime member and has served the USGBC in local and national committees. She has spoken at the ILFI unconference in Seattle, at Greenbuild and at the NYS GBC. She has been a speaker at NESEA's BuildingEnergy Boston and is serving as a co-chair for BuildingEnergy NYC. She is a Conquer the Energy Code trainer and has assisted in research and writing for Project Drawdown. Current work includes

## KEY TAKEAWAYS

We need to change our process if we are to change the results.

- First, we must understand that the parameters within which the project must be delivered are not the enemy, but the friend providing valuable insights and information. **Build your solutions on what you learn in a way that stays open to the opportunities, rather than devolving into restrictions.**
- Second, we must use an Integrative Process to help us understand and employ information to its fullest use. **If they are identified early and considered holistically, multiple challenges or shift in existing parameters can be addressed together.**
- Third, be aware of your communications, not only in terms of what you are saying, but in terms of how it will likely be received by the listener. **Saying “we know this is going to cost more” almost ensures that it will cost more!**
- Finally, learn to love the three-fourths baked solution. **Realize that transparency is not a baring of your soul, but a real tool for improving your work, while you are improving the work of us all.**

resilience planning for NY state, and Integrative Process work as Design PM from a zero-net carbon renovation. Her goal is to incorporate sustainable practices into design, construction and living and to share whatever she has learned and learn still more from whomever will talk with her.  LIFETIME MEMBER

### ABOUT THE PEER REVIEWER

**Michael Maines** earned a BS in engineering before working as a carpenter, building designer

and project manager at various companies and on his own for twenty years, usually following a design/build model. He now designs and consults on high performance, low-carbon homes and renovations through his company Michael Maines Residential Design. He writes the “Building Matters” column as contributing editor for Fine Homebuilding magazine and the “Building Science 101” column for Green & Healthy Maine Homes magazine.  BUSINESS MEMBER



Valley Home Improvement, Inc. DESIGN + BUILD RESIDENTIAL REMODELING

Valley Solar PV DESIGN & INSTALLATION

REMODELLING WEATHERIZATION PV INSTALLATION

GAZETTE Readers' CHOICE 2019 WINNER

Thank you!

Our team is proud to be recognized for our hard work and commitment to our clients in the Pioneer Valley.

- Steven Silverman  
Valley Home Improvement & Valley Solar / Owner

413-584-7522 info@valleyhomeimprovement.com

LOVE YOUR HOME

413-584-8844 info@valleysolar.solar

# USING ARTIFICIAL INTELLIGENCE TO REDUCE ENERGY CONSUMPTION



FIGURE 1: HALIFAX CROMBIE REIT CHANGING THE AI LANDSCAPE

CREDIT: ECOPILOT CANADA INC.

BY JENNIE KING  
AND CHERL D'EON

PEER REVIEWED  
BY ALEXANDER LEIGHTON

Our city buildings have evolved into far more than just brick and mortar. Thanks to the explosion of the “internet of things” (IoT) devices and the data they provide, artificial intelligence (AI) applications are evolving our buildings into sophisticated and intelligent ecosystems.

So, what is artificial intelligence? In simple terms, it’s the ability of machines to mimic human cognition, to think and learn without encoded commands.

The term “artificial intelligence” was first coined by John McCarthy at the Logic Theorist event in 1956 (*Editor’s note: Logic Theorist is a computer program developed in the 1950s; it is described as the first artificial intelligence program*). Top researchers, scientists, mathematicians and philosophers from around the world gathered at Dartmouth College to discuss the concept of AI. The conclusion was that while AI was indeed achievable, it would prove to be challenging due to the lack of computer storage, processing and funding. For perspective, in the

1950s, only the largest institutions could afford a computer. Leasing costs were about \$200,000 per month and the required space was roughly one hundred square meters. They required thousands of vacuum tubes, consumed over a hundred kilowatts and needed a full-time operating and maintenance staff.<sup>1</sup>

Fast forward six decades, and artificial intelligence is commonplace in our everyday lives: from mobile banking, to social media to online shopping, AI is routinely around us, though often invisible. In the built environment, it’s transforming how facility managers are controlling buildings, including power demand prediction, management of lighting, elevators, water, HVAC, tenant comfort and even alerting maintenance teams when the toilet paper runs low. AI platforms capture and process relevant data, analyze, alert, notify and control; enabling real-time decision-making and improved operational efficiencies.

One of the factors driving these initiatives in building management is the commercial readiness

of AI platforms, many of which have been driven by the movement for responsible energy efficiency. In 2018, global investments in clean energy totalled more than \$332 billion.<sup>2</sup> Companies like California-based Verdigris, who leverage AI to optimize energy consumption by using meters that collect data to pinpoint electrical anomalies and create energy usage reports and Israeli based PointGrab, who track occupancy for improved workplaces, are amongst many playing a significant role in creating smart buildings.

One company taking advantage of the new technology is Crombie REIT, based in Halifax, Nova Scotia. They took the step of installing AI software into their large office complex, Cogswell Tower.

The company had made a commitment to focus on environmental sustainability as part of their everyday decision-making. “We felt that AI is a large step towards a smarter facility and by taking advantage of powerful analytics, we could significantly reduce energy consumption and make great strides in achieving our carbon reduction goal,” said Dan Bourque, Crombie’s Director of Operations, Atlantic.

Mr. Bourque is just one of many early automation adopters. According to a recent study published by the IBM Institute for Business Value, an astounding seventy-six percent of Chief Operating Officers reported that increasing automation in both facility and asset management will have a positive impact on operational efficiency. Energy efficiency and renewables rank among the highest priorities as global initiatives and government mandates seek to drastically reduce the impacts of climate change. On a global scale, buildings and building construction sectors combined are responsible for 36% of global final energy consumption and nearly 40% of total direct and indirect CO<sub>2</sub> emissions.

In June 2018, Crombie REIT’s Cogswell Tower became the first commercial building in North America to integrate and control their building management system (BMS) using AI technology that harnesses the thermal mass of a building for heating, cooling and ventilation. There are few solutions which utilize a building’s thermal inertia currently on the market and Crombie REIT chose to install Ecopilot<sup>®</sup>, an AI system that intelligently controls their BMS.

The technology provides an offset to the BMS to make automatic and continuous energy management decisions based on the short and long-term heating and cooling needs of the building. This AI offering is housed in the cloud and communicates to the BMS via a secure gateway.

Most control systems in use are set to instantly compensate and react for each temperature variation that occurs in a building, but these systems often work against the buildings natural thermal inertia, which can lead to the overlapping and waste of both cooling and heating capacity. The application behind this AI product harnessing the



**FIGURE 2: ECOPILOT DASHBOARD**

CREDIT: ECOPILOT AB

existing thermal energy is simple and is based on the building being partitioned into different thermal zones, each with its own thermodynamic properties. Each zone’s local time constant is the length of time it takes for the natural release of heat from the building, given the building’s construction materials and contents. These partitions also take into consideration factors such as sunlight, the effect of the wind and other known heating and cooling loads. Using temperature sensors and other contributing factors in each zone, the AI technology collects all the data and proactively adjusts each zone’s internal temperature in accordance with the client comfort requirement. Essentially, these AI systems are comparable to recommissioning a building every few minutes based on ever-changing internal and external climate variables.


The results of the AI integration are impressive. In just four months, Cogswell Tower reduced energy consumption by 29 percent and delivered 22 percent in dollar savings compared to the two previous years. There was a noticeable improvement in internal climate, measured by the reduction in tenant temperature complaints. Most importantly, Crombie has significantly reduced their carbon footprint, something Mr. Bourque acknowledges is an important consideration for their Canadian Maritimes-based tenants when assessing office space.

Nova Scotia is aiming to reduce greenhouse gas emissions by 45 to 50 percent of 2005 levels by 2030, and Canada has issued ambitious climate change objectives to reduce greenhouse gas emissions by at least 30 percent of the 2005 levels.<sup>3</sup> According to the Canada Green Building Council, focusing on how to retrofit old buildings will be key to reaching these aggressive goals and Crombie REIT is on board to be a corporate leader in the field. They’re showcasing what’s possible by the integration of IoT and AI to reduce energy consumption.

“I was skeptical about using artificial intelligence to control our building management system as a

means of energy reduction,” reflected Pat Poirier, Manager of Engineering & Sustainability. Crombie’s goal for Scotia Square and their associated office properties, including Cogswell Tower, is to reduce energy consumption by 1,000,000 kWh per year. “As a result of our AI integration and creating a more intelligent building, we are well on our way to achieving those savings, reducing consumption by 246,487 kWh in the first four months of operation just in Cogswell Tower – almost a quarter of our goal,” Poirier added.

As the world becomes increasingly aware of earth’s environmental challenges, business and government are leveraging the potential of AI to be a real game changer in transformative environmental solutions.


Access to big data, processing power and a connected globe are the factors converging to bring AI from research labs to our everyday lives. As technology pioneers move forward in the research, development and investment of AI, the future of energy solutions is endless with possibilities. Imagine what the next six decades will bring. 

### ABOUT THE AUTHORS

**Jennie King** stands at the forefront of the fastest moving technology industry trend: artificial intelligence. She leads the North American business development initiatives for EcoPilot Canada/USA which guarantees real-time energy savings utilizing AI technology. Jennie holds a Bachelor of Commerce, with a minor in Marketing from Saint Mary’s University and Certificate of Training from the International Trade Research. EcoPilot is headquartered in Halifax, NS and a sales office in Cambridge, MA.

**Cherl D’Eon** brings over 18 years of multi-disciplinary business and operations management experience with her background in the creative, artistic, architectural and technical fields to the EcoPilot Canada/US team. A resourceful problem solver, Cherl is enthusiastic about energy efficiency and is constantly learning about AI technology and how it’s changing our world.

### ABOUT THE PEER REVIEWER

**Alexander Leighton** is a Senior Energy Engineer who has led energy studies covering over 15 million square feet of existing buildings. His expertise includes energy modeling, engineering design and retro commissioning for a variety of energy efficiency upgrades and capital improvement projects at complex, large-scale facilities. Alexander also oversees the development of building automation services such as integration with mechanical capital improvements and new building management systems (BMS). He has specified and installed control systems ranging from localized controls to building wide management systems.  BUSINESS MEMBER

### ENDNOTES

1. Garner, Robert, Early Popular Computers, 1950 – 1970, Engineering and Technology History WIKI, [https://ethw.org/Early\\_Popular\\_Computers,\\_1950\\_-\\_1970#Citation](https://ethw.org/Early_Popular_Computers,_1950_-_1970#Citation)
2. BloombergNEF, Clean Energy Investment Exceeded \$300 Billion Once Again in 2018, ©2019 Bloomberg Finance L.P. January 16, 2019, [https://about.bnef.com/blog/clean-energy-investment-exceeded-300-billion-2018/#\\_ftn1](https://about.bnef.com/blog/clean-energy-investment-exceeded-300-billion-2018/#_ftn1)
3. Tutton, Michael. CTV News Atlantic. Tuesday, October 23, 2018.



**TURN GREEN**

At Preferred Utilities, we believe you don’t have to sacrifice performance to go green. Interested in converting your boiler room to renewable fuel and exceeding your sustainability goals? Give us a call!

**Learn More**  
[www.preferred-mfg.com](http://www.preferred-mfg.com)

 MADE IN THE USA

A Proud Member of 

**PREFERRED UTILITIES MFG CORPORATION**  
 People. Products. Results.

  31-35 South Street Danbury, CT 06810 (203) 743-6741 [www.PREFERRED-MFG.com](http://www.PREFERRED-MFG.com)

**PREFERRED UTILITIES CAN PROVIDE:**

-  Renewable liquid fuels for your boilers
-  Reduced carbon emissions up to 90%
-  Fuels made from organic feedstocks
-  Renewable fuels delivered by truck or rail

THE LARGEST MIXED-USE  
PASSIVE HOUSE IN  
NEW ENGLAND



THE DISTILLERY NORTH | SOUTH BOSTON, MA

## The Most Efficient Heat and Energy Recovery Ventilation Systems



We custom design projects, offer installation support and commission our systems.

For your next project, call us for a free HRV or ERV system design quote  
at (888) 778-6701.

Zehnder America, Inc. • 6 Merrill Industrial Dr., Suite 7 • Hampton, NH 03842  
T (888) 778-6701 • [www.zehnderamerica.com](http://www.zehnderamerica.com)



# GETTING SMARTER — AND BETTER — ABOUT MATERIALS & HEALTH

BY MATT ROOT AND  
CHARLEY STEVENSON

PEER REVIEWED  
BY NADAV MALIN

Many members of the NESEA community have contributed to tectonic changes within our industry, including in the arenas of solar power and passive house and net-zero energy buildings, to name a few. Each change started small, then exploded with growth. Early leaders went through the process of gaining experience, learning lessons, addressing consequences and making improvements so that these concepts could be broadly implemented: and then soon enough, we were on a well-trod path. The leadership of those early pioneers has resulted in major evolutions in our industry.

The examples of solar adoption, passive house and net-zero energy achieved hockey stick growth after the right mix of technological, political and financial solutions were developed. The adoption of healthier materials appears to be on a similar growth trajectory; this is made evident by increasingly larger projects – some larger than 500,000 square feet – pursuing the Living Building Challenge Materials Petal and by the healthier materials public commitments that have been made by huge players such as Google.<sup>1</sup> However, the pursuit of healthier materials is different from the previous examples; the current obstacle is a lack of rigorous adherence

to a strategic methodology. Moving the products marketplace requires procedures *and* will power.

This approach to driving change should look familiar, as NESEA Members have used these basic steps to achieve a variety of ambitious goals:

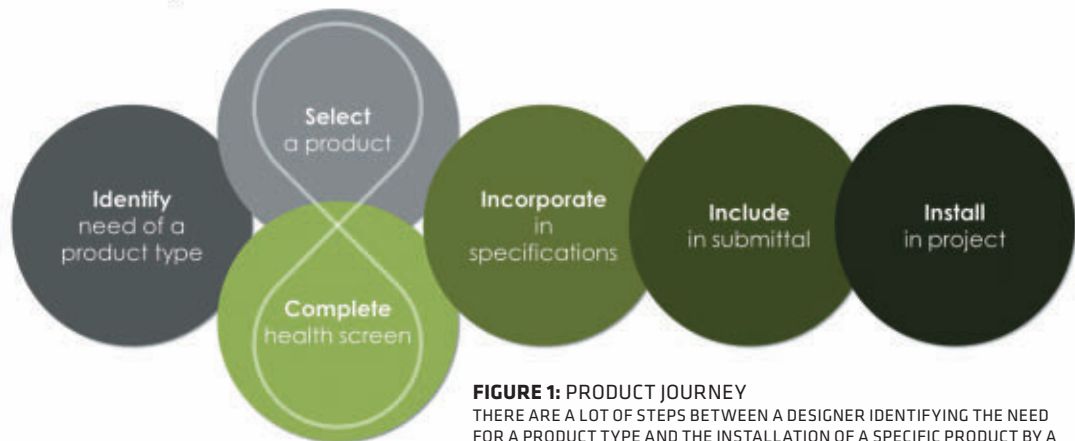
1. Define a goal
2. Define a process
3. Execute the process
4. Measure and report on the outcomes
5. Define a new goal

Not getting bogged down in picking the absolute best goal (Step #1) is the key. Instead, set a healthier material goal and develop a replicable process for installing products that have undergone a health screen. Then, as your definition of “healthier” evolves, your practice does not change, because you have a well-developed process that achieves product implementation. The health screen can be modest at first (see the sidebar for examples) and ratcheted up over time with the only change being a new answer to the question of what is healthy rather than a change to the overall process.

## INDOOR ENVIRONMENTAL QUALITY

The easiest place to start is with products that impact Indoor Environmental Quality (IEQ). A project team may want to deal with bigger

## A Product's Journey



**FIGURE 1: PRODUCT JOURNEY**  
THERE ARE A LOT OF STEPS BETWEEN A DESIGNER IDENTIFYING THE NEED FOR A PRODUCT TYPE AND THE INSTALLATION OF A SPECIFIC PRODUCT BY A TRADESPERSON – EACH STEP CARRYING THE POTENTIAL FOR THE HEALTHIER PRODUCT TO BE DROPPED FROM THE PROJECT. THE SOLUTION IS A GOOD PROCESS. FIRST, GET A PROCESS IN-PLACE THAT ACHIEVES THE GOAL OF IMPLEMENTATION. THEN FOCUS ON STRENGTHENING THE HEALTH SCREEN.

CREDIT: INTEGRATED ECO STRATEGY

## THREE SIMPLE “HEALTH SCREENS”

Pick five products that meet one of the following disclosure programs and incorporate them into your next project.

1. Health Product Declaration (over 4,500 published HPDs are available)
2. Declare Labeled products (606 products available)
3. Cradle to Cradle Certified (371 building supply and interior design products available)

Note: Within these programs, there are varying levels of transparency and elimination of chemicals of concern. But these distinctions can be clarified as one gets deeper into it.

issues (for example: there are social justice and ethical motivations for expanding the scope to include residents who live in communities around manufacturing plants or the installers), but the workload quickly becomes significantly more complex. In the beginning, it is best to focus on the health of the occupants both because it is a clear concept that the client and the project team can easily support and because there are already many known solutions.

The first step is to reduce the load (an old NESEA adage). This strategy applies whether one is addressing heating/cooling loads, water use or pollutants. Unfortunately, our industry has traditionally focused on ventilation as the primary driver of health in buildings. This ventilation-centric solution does not holistically address the objective of creating a healthy space and inadequately addresses how chemicals affect the body.

Occupants are exposed to many pollutants beyond simply gases and fumes. Harmful chemicals such as flame retardants can separate from host products and collect on surfaces and in dust where they can be inhaled, ingested (especially with babies/toddlers through hand/object to mouth behavior) or even absorbed through the skin. Regulations won't – and can't – protect us. Of roughly 85,000 human-made chemicals in the US, approximately 300 have been tested for human health safety.<sup>2</sup> Fewer than 20 have enforceable regulations.

Typically, we consider IEQ from a negative perspective, focusing on the harmful health impacts such as asthma triggers or carcinogens. But we should also think of positive effects, such as creating spaces where people are healthier and more creative and productive.

A 2015 Harvard School of Public Health study, investigating cognitive function after exposure to pollutants like carbon dioxide and volatile organic compounds, found that lowering total volatile organic compound (TVOC) concentrations by 90 percent compared to typical building concentration resulted in a 61 percent average increase in cognitive function scores.<sup>3</sup>

### PRODUCT TYPES

Each project team can advance the efforts to reduce the use of toxic chemicals by

1. seeking transparency from manufacturers

2. advocating for the elimination of certain chemicals
3. purchasing healthier products

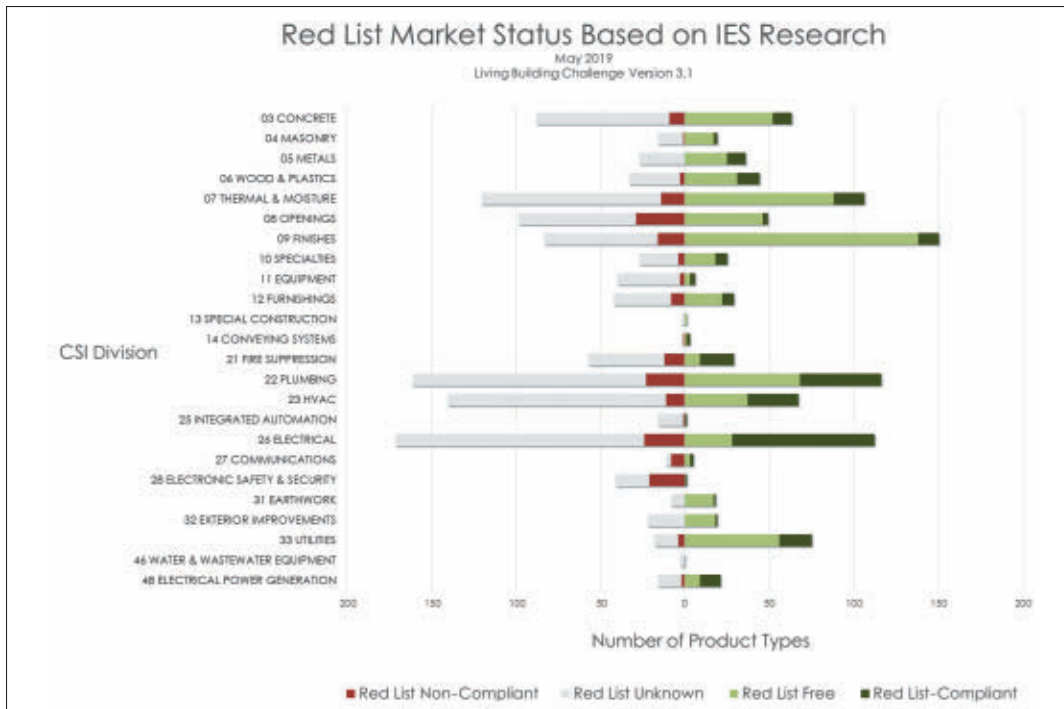
By asking for information in a common language, pressuring the manufacturers to avoid particular components and rewarding manufacturers through purchases motivated by transparency and compliance, every project can play a role in accelerating market transformation. Unlike climate change, where absolute solutions are the only ones that make sense, healthier materials lend themselves to an incremental approach: lock in the easy wins, identify the next areas ripe for transformation, advocate there and move toward an even healthier palette.

At Integrated Eco Strategy, we use the Living Building Challenge Materials Red List because it provides discipline with a rigorous scientific backing<sup>4</sup> while maintaining flexibility given the market reality. Perfection cannot be the only criterion that indicates success. The reality is that no project will be perfect in avoiding all chemicals of concern because the market is not there yet. Furthermore, “healthy materials” is a nebulous term, which is why we prefer the word “healthier.” The criteria used to define “healthy” will continue evolving as science advances.

We think in terms of Product Types, which we define as a category of products required to meet the goals of a project: rigid insulation, for example. The chart in Figure 2 shows that there are a significant number of product types for which compliant products are readily available.

For well-researched product types, such as primer, paint, carpet and cabinet-grade plywood, there is no need for teams to compromise on material health. The big takeaway from this chart is that you don't need to compromise on finishes because there are lots of options. There are also solutions in thermal and moisture, plumbing and electrical. Everyone has a right to know what is in their products and we as an industry need to work together to change the colors of the grey bars. The worst outcome is to use a red or grey product type when you could have used a green one. Only choose a red product type when you must, and know that grey is no better than red because there is no transparency.

The gap between agreeing with the principle of healthier materials and taking meaningful action to change our exposure is created both by a lack of




**FIGURE 2: RED LIST MARKET STATUS HEALTHIER MATERIALS OPTIONS ABOUND IN SOME CSI DIVISIONS AND LAG IN OTHERS. THIS GRAPH OFFERS AN OVERVIEW OF COMPLIANCE BY CSI DIVISION AND HIGHLIGHTS THAT THERE ARE KNOWN COMPLIANT SOLUTIONS FOR MANY PRODUCT TYPES.**  
 CREDIT: RED2GREEN

clarity on how to do it and a fear of change and increased costs. The key is to identify a framework and move forward. For us, what began as five to six or more hours researching each product is now reduced to about two hours of materials researcher work. In 2014, IES began work on the Hitchcock Center for the Environment in Amherst, MA, which recently achieved full LBC certification. We budgeted 10 minutes for each researched product (there were over 500), simply to inform manufacturers about the Living Building Challenge. On an active project started this year at Williams College in Williamstown, MA, we find that roughly 5 percent of manufacturers need background on LBC. Similar leaps in progress abound.

### WE CAN DO THIS


Design and construction teams make many product selection decisions affecting human health. We know the repercussions of past mistakes (e.g., lead or urea-formaldehyde foam insulation). But what mistakes are we making now that we will come to regret in the future?

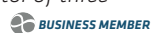
It is up to us as design and construction professionals to drive the marketplace toward healthier materials. It will not happen all at once, but by starting with a goal (even a modest one) and a process, one can develop a roadmap for ratcheting progress. If individually each project has set a small goal, many projects working together can speak with a voice that will change the available options for everyone.

Experience will drive success. Often, we are able to simply recycle knowledge from the first projects to the benefit of the later ones. It is much easier to do the second project, but we must start somewhere. Once again, we are quickly seeing the development of the well-trod path. 


### ABOUT THE AUTHORS

**Matt Root**, Senior Project Manager at Integrated Eco Strategy, manages healthy materials and energy related projects for buildings pursuing Living Building Challenge certification, or at least inspired by the program's intent. He works closely with design and construction teams to implement processes that support projects in

achieving their healthier materials goals. Matt is an active NESEA Member, serving as Co-Vice Chair of NESEA's BuildingEnergy Boston 14 and Co-Chair of BuildingEnergy Boston 15. 

**Charley Stevenson** has been delving deeper and deeper into healthier building materials since beginning work on his first Living Building Challenge project in 2011. With the team at IES, he has developed process and software to integrate better materials selections into all project types and to transform the market as quickly and easily as possible. The Red2Green platform has reduced Red List research and documentation effort by a factor of three while building up a library of over 10,000 products. 

### ABOUT THE PEER REVIEWER

**Nadav Malin** is a passionate facilitator, leading workshops and retreats to help organizations of all types find alignment and inspiration. He convenes peer networks of Sustainability Leaders, and he helps project teams with charrette facilitation and design process support to achieve optimal outcomes. As president of BuildingGreen, he oversees the company's industry-leading web resources BuildingGreen.com and LEEDuser and he provides thoughtful perspective on the materials and design solutions that define sustainable building practice. 

### ENDNOTES

1. Allen, Joseph G., et al. "Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments." National Institute of Environmental Health Sciences, U.S. Department of Health and Human Services, June 2016, ehp.niehs.nih.gov/15-10037.
2. EPA Staff. "TSCA Chemical Substance Inventory." EPA, Environmental Protection Agency, 11 July 2019, www.epa.gov/tsc-a-inventory.
3. ILFI Staff. "Living Building Challenge 4.0 Meets Market Demand for Increased Scalability and Accessibility: Trim Tab." Trim Tab Online Magazine, 8 May 2019, trimtab.living-future.org/press-release/lbc4.
4. ILFI Staff. "The Red List." International Living Future Institute, International Living Future Institute, 18 June 2019, living-future.org/declare/declare-about/red-list.



ENERGY DATA SYSTEMS FOR BUILDINGS



WONDERING ABOUT ASHRAE 90.1? DISAGGREGATE WITH QLIC!

- Multi-Channel Energy Meter
- ASHRAE 90.1 - 2016 Compliant
- Ideal for in-panel installation
- Real-time energy data

Call (212) 930-9300, email [info@quadlogic.com](mailto:info@quadlogic.com) or visit [www.quadlogic.com](http://www.quadlogic.com) today!



FastFlash is the **FIRST & ONLY** fluid-applied flashing to have its own ESR from the ICC-ES.

That means **VERIFIED CODE COMPLIANCE.**

Plus the features you already love

- BONDS TO DAMP SURFACES**
- VAPOR-PERMEABLE**
- VOC-COMPLIANT**
- FASTER INSTALLATION**
- SELF-SEALS AROUND FASTENERS**
- 98% SOLIDS TO AVOID SHRINKAGE**



To get FastFlash on your project  
**800-255-4255**



# PASSIVELY PROMOTING PASSIVE HOUSE

BY BLAKE JACKSON,  
AIA, LEED/WELL  
FACULTY, CPHC

## INTRODUCTION

The US passive building movement is gaining momentum, and with all the attention given to Passive House in 2019, it certainly feels like a rising wave is cresting. Passive House began in Germany in the 1980s as a concept for ultra-energy efficient buildings and has been adapted for all ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) climate zones to reduce site energy use 65-80%, while also promoting water conservation and improved indoor air quality (IAQ). It offers something for everyone. End users benefit from lower utility bills, noise reduction and increased thermal comfort. Designers benefit from a streamlined design process that uses prescriptive performance to improve thermal envelopes while promoting mechanical systems that are simpler to operate and maintain. Municipalities champion it as a tool for leveraging development to curb greenhouse gas (GHG) emissions while providing social equity through increased resiliency: more durable building stock and via “passive survivability” by maintaining longer periods of indoor thermal comfort, anticipating power disruptions and extended/more severe heat waves in the future. Passive House is being codified in cities like Vancouver, Toronto and Edmonton, while US states, including Pennsylvania, New York and Massachusetts, are incentivizing single- and multi-family pilot projects to promote the concept.

## SCHISM

Shouldn't green building advocates be jumping for joy? I wish that were the case, but alas, the sustainable design community is doing what it always does – getting bogged down in semantics. You may be aware that there are two versions of Passive House certification. That's right: two versions of the same idea. As if it weren't complex enough, we had to go down this route. My understanding for this schism between Passive House ideologies is a disagreement between the International establishment, Passive House Institute (PHI) and Passive House Institute US (PHIUS), regarding the methodology for how to adapt the system for US climate zones.

I first learned about Passive House as a graduate student in the United Kingdom in 2007. Our class visited Germany and Austria where we learned about Passivhaus and toured several K-12 Passivhaus structures. We attended a day-long seminar on the system and saw 1:1 dioramas of construction details showing how to build the Passivhaus way. I was inspired by the system, immediately seeing

how it could alleviate the guesswork of designing for high-performance; however, when I asked when we would see Passivhaus in North America, I was promptly told by our host, “Passivhaus is not achievable outside Europe and is only meant for Alpine climates in Germany, Austria and Switzerland.” He went on to talk about construction quality and material certifications, which made me realize how much he was probably correct in his assessment. I never knew if he was stating a fact or an opinion, that Passive House couldn't work in North America, but based on research on the topic, it seems this was the prevailing dogma until the PHI/PHIUS schism in 2011.

## SAME DIFFERENCE

In researching this article and based on my personal experience, I think the reasons for the schism and differences between the two versions have already been thoroughly covered, so I won't spend time describing those things here.

In my professional opinion, no one – especially our clients – cares why these differences exist. We have larger problems than who owns Passive House with the looming climate crisis affecting our cities and way of life. It's sad when the smartest in our industry get wrapped up in asinine arguments, and that's exactly what has been done through all the infighting. While we argue semantics, thousands of buildings are being built without the benefit of the wisdom and inherent good of either standard. Just the fact that there are two Passive House standards makes everyone roll their eyes, as if to say, “they (the green folks) have done it yet again: made something good complex, cumbersome and uninteresting.”

Our clients only care about results (drastic energy savings and carbon reductions, greater resiliency, better air quality and thermal comfort, etc.). We don't have time to waste taking sides or worse, fighting among ourselves over turf. Rather, Passive House professionals should be concerned with getting either version out to mass market because there are only 10.5-years until 2030 – the “no turning back” date for climate catastrophe. We're running out of time.

I became motivated to get accredited in 2019 because finally, after 12 years, we had a mechanism to deliver Passive House in North America, rather than trying to perfect a methodology that could have taken several more years to reach consensus. This cost \$2,100 and approximately 150 hours of personal time preparing for and earning my



RADOVANI/SHUTTERSTOCK.COM

credential. I was elated, after four months of study, to finally be accredited. It was when I started marketing these services among peers that I learned of the schism between PHIUS and PHI, with each side simulating trench warfare. Instead of praise, in some circles, I was met with criticism, a first in all my years of certifications and credentialing work. I've met LEED-haters and WELL non-wishers, but never has there been such infighting about two standards proclaiming roughly the same results. I began to question if I had made a mistake, which is not how one should feel after investing so heavily and having their heart in the right place – wanting to make better buildings.

### PLENTY OF ROOM TO GO AROUND

When visualizing the two bickering Passive Houses camps, I'm reminded of the Looney Tunes cartoons where Duck Dodgers and Marvin the Martian are both trying to claim a planet. Each keeps blasting the other with larger weaponry until there's but a pebble of the planet left with both balancing upon it, arms flailing, trying to plant their flags on the tiny stone remaining. I fear this schism will do the same to Passive House in a market where there is still lacking mainstream demand for enhanced performance and construction despite the dire need. In trying to claim everything, both may end up frustrating their audience, designers and clients, and we all know standards who do this lose market share, especially when clients only care about results, not certifications.

We cannot lose sight of this, as this is what makes Passive House so appealing: ultra-low energy use and greenhouse gas reductions, greater resilience, better thermal comfort, noise mitigation and better, more valuable assets. Passive house buildings are places for people to thrive. Rather

than PHI and PHIUS – and their followers – fighting over turf, they should be focused on disseminating Passive House to the masses, lowering construction, certification and credentialing costs, reducing complexity and marketing the collective results – the only thing that truly matters. LEED and BREEAM get along, as do WELL and Fitwel, even though they cross-reference and piggyback off one another. Finding a way to coexist should be the primary objective. If the fighting continues, it is obvious that neither standard will find a fast-enough pathway into the North American market, the largest opportunity for Passive House. They will continue to systematically miss the mark – in an area where we are already playing 30 years of catchup.

We cannot risk further delaying the adoption of what is perhaps the residential market's greatest tool for combating climate change, when it is feasible for it to become mainstream soon. I'll conclude that I don't want to have any more PHI-vs-PHIUS conversations because that energy should be spent making buildings better. We spend more energy bickering than rolling our sleeves up on Passive House projects, and this must change before it's too late. 🌱

### ABOUT THE AUTHOR

**Blake Jackson, AIA** is a Sustainability Design Leader with Stantec Architecture & Engineering in Boston, MA. His work focuses on the nexus of sustainability, wellness and resiliency across a multitude of building types, particularly where third-party certifications are being pursued. He is a prolific author and speaker on these topics, an adjunct faculty with both the Boston Architectural College and UMass Dartmouth's Interior Design program and he was named a BD+C Magazine "40 Under 40" AEC professional in 2015.

# CELEBRATING OUR LEADERS: 2019 AWARDS RECIPIENTS



LEFT TO RIGHT: FRED DAVIS, LAUREN BRUST MOSS AND MARIEL EISENBERG HOFFMAN ARE PICTURED HERE AT THE AWARDS CEREMONY AT NESEA NIGHT  
CREDIT: MATT CAVANAUGH

**E**arlier this year, after an open call for nominations, committees of NESEA Members chose two members of our community to honor at the annual NESEA Night awards ceremony:

- Mariel Eisenberg Hoffman was the inaugural recipient of the Kate Goldstein Emerging Leader Award, which recognizes a NESEA Member early in their career for their current engagement and their demonstrated potential to continue to meaningfully affect the future of NESEA.
- Fred Davis joined a long list of individuals celebrated for their dedication as the recipient of the Distinguished Service Award, which recognizes a NESEA Member who has made a significant contribution of time and service to the organization.

Recently, NESEA brought Fred and Mariel together to interview each other about topics ranging from the history of NESEA, to what inspires

them, to their career paths and the urgency of climate change. Highlights from their conversation appear here; you can read more excerpts from their discussion by visiting [nesea.org/conversations](http://nesea.org/conversations). Read more about the awards and learn how to nominate someone for 2020 by visiting [nesea.org/awards](http://nesea.org/awards).

## ON GETTING STARTED WITH NESEA

**FRED:** I heard about NESEA through a colleague and maybe there was a flyer posted somewhere. At that time it was the kind of thing where, “wait, there are other people interested in this?!” It was a real revelation to find out that there was – you couldn’t call it a community yet – but that there were others with similar interests...But there was no concept of a career at that point...There were many more advocates than professionals at that stage.

**MARIEL:** When do you think that change happened from advocates to professionals?

**FRED:** [T]he fun answer would be: when people started paying us!

## ON WHAT INSPIRES THE NEXT GENERATION

**FRED:** Is climate a driver, would you say, with your generation?

**MARIEL:** I would say absolutely. It's a huge driver. I think the awareness now, of environmental impact, plays a huge part in what we do. And I think I see a lot of young professionals who want to find a way to have a career, whatever profession that may be, and to do it in a more sustainable way or in a climate conscious way.

## ON MOTIVATING CHANGE

**MARIEL:** [W]hat advice would you give to help be a motivator and communicator of energy efficiency and sustainability to people in outside of our professional world – to try to help communicate that cause?

**FRED:** I think it touches on what I said earlier that, "Hey, what if NESEA already was making that huge marketing pitch all the time? That we are the climate solvers." We could use that anywhere we go...[S]tart from emotion; when I start from emotions and connect the emotions to actions, for me, it really helps.

**FRED:** Three years ago, most people were concerned if they thought about climate change at all. Today, if they think about it at all, horror, at least, and horror to the point of, "I have no idea what to do about it. There's nothing that can be done. It's too big. It doesn't matter what I do. The federal government, this, that and the other." This huge burden that so many people carry could and should be motivators, but is becoming a de-motivator because I don't think that there's an awareness of what we do. So I don't know if that's a partial answer for you, to start from emotion. But when I start from emotions and end up with – you can connect the emotions to actions, for me, it really helps

**MARIEL:** Yes! And I guess the challenge is, to get from de-motivation to motivation by filling that gap with the knowledge that we have solutions moving forward. And I think just trying to help educate people on that is hopefully the key to flip that switch and to say, "Actually there are solutions that we have that can help make an impact." And I think my philosophy always is that it's okay if it's an incremental solution. It doesn't have to be huge and grand all the time. It's okay if it's small – small, incremental baby steps to get there.

## ON SEIZING OPPORTUNITIES

**FRED:** As I keep saying, as we see the enormous opportunity that's in front of us, we're going to look back at this moment and realize that we were a very small organization, that we were very few at the beginning of a very large progression.

**MARIEL:** I think it's important then for my generation and the younger professionals to remember that you guys had to fight for that transition from advocate to professional. And that our generation is lucky enough to have the opportunity to make a profession of what is our passion in what we think is really critical for the world, but also not to be complacent in that and to make sure we continue to think outside the box and drive and push that boundary.

## ON LOOKING TO THE FUTURE

**MARIEL:** I'm optimistic by nature and I am lucky enough to be able to incorporate that into my career...I'm optimistic that we're gonna hit that acceleration and we're gonna get where we need to be hopefully in the near future. So, I would just ask Fred, what's your outlook?

**FRED:** You just gave the answer that I need to hear...I think Mariel, you're a leader and hearing you say that you're optimistic, I hope you can help continue to inspire folks going forward and I hope your optimism will be catching. 🌱

Recently, NESEA brought Fred and Mariel together to discuss topics ranging from the history of NESEA, to what inspires them, to their career paths and the urgency of climate change.

## Stress-Free Energy Code Compliance



**POWERHOUSE**  
ENERGY CONSULTING

HERS Ratings  
Blower Door Testing  
Duct Testing  
Energy Audits

Matt Turcotte, Energy Analyst  
413-835-5162  
matt.turcotte@gmail.com

Ask about Mass Save rebates!



Read more excerpts from this discussion by visiting [nesea.org/](http://nesea.org/) conversations. You can read more about the awards and learn how to nominate someone for 2020 by visiting [nesea.org/awards](http://nesea.org/awards).

# Business Member Directory

# Fall 2019



NESEA's Business Member Directory is the premier referral resource for high-performance building and renewable energy professionals in the Northeast. Listings are current as of July 2019 and are member-generated.

Inclusion in this directory is a NESEA Business and Academic Member benefit. If you would like your organization to be included in next year's edition, become a member at: [nesea.org/membership](http://nesea.org/membership)

You can access the online directory year-round at: [nesea.org/business-member-directory](http://nesea.org/business-member-directory)



# NESEA

NORTHEAST SUSTAINABLE ENERGY ASSOCIATION

# NESEA BUSINESS MEMBER DIRECTORY

## By State and Country

### C

#### Colorado

Solaris

#### Connecticut

A.W. Hastings/Marvin  
Atelier Ten, LLC  
Bantam/Wesson  
Block Design | Build  
BPC Green Builders, Inc.  
CED Greentech East  
Celebration Green Design  
& Build  
Centerbrook Architects  
and Planners, LLP  
Chris Green, LLC  
Clark Construction of Ridgefield  
Connecticut Green Bank  
Eco Windows USA  
Fine Homebuilding  
George Penniman  
Architects, LLC  
Greentec, Inc.  
Home Energy Technologies  
Hudson Valley  
Preservation Corp.  
Mercer Bertsche  
Vernott Architects  
Neighborhood Housing  
Services of New Haven, Inc.  
Old Mill Builders  
RJ Aley Building Contractor  
Sellars Lathrop Architects, LLC  
Trillium Architects, LLC  
United Illuminating Company  
Wolfworks, Inc.  
Wyeth Architects, LLC

### D

#### Delaware

World Class Supply

### G

#### Georgia

Yanmar America

### M

#### Maine

Allied Engineering, Inc.  
Benjamin & Company, Inc.  
BRIBURN  
BrightBuilt Home  
CHA Architecture  
David Matero Architecture  
Dominic Paul  
Mercadante Architecture  
East Brown Cow  
Management, Inc.  
Ecocor, LLC  
Emerald Builders  
GO Logic, LLC  
Good Earth Works, Inc.  
Kaplan Thompson Architects  
Kolbert Building  
Maine Passive House, LLC  
Michael Maines  
Residential Design  
Net Zero Builders  
passivhausMAINE (phME)  
Peacock Builders  
Performance Building Supply  
Pinnacle Window Solutions  
Rachel Conly Design, LLC  
Richard Renner | Architects  
Ripcord Engineering  
Sparhawk Group  
Taggart Construction, Inc.

Thompson Johnson Woodworks  
Thornton Tomasetti, Inc.  
Warren Construction Group, Inc.  
Zachau Construction

#### Maryland

Global Wholesale Supply

#### Massachusetts

377 Builders  
A Yard & A Half Landscaping  
Cooperative, Inc.  
A9 Green/Total Green Energy  
Solution, LLC  
Abode Energy Management  
Action for Boston Community  
Development, Inc. (ABCD)  
Advanced Building Analysis, LLC  
Aegis Energy Services  
atE Store, Inc.  
Andy Cole Builders  
Architerra, Inc.  
Aspen Environmental  
Services, LLC  
Auburndale Builders  
Aurora Custom Builders, Inc.  
Bales Energy Associates  
Basnett Design-Build-Remodel  
Berkshire Photovoltaic  
Services (BPVS)  
Beyond Green Construction  
Brisette Electric, Inc.  
Building Shelter, Inc.  
Byggmeister, Inc.  
C&H Architects  
Casaceli Construction, LLC  
Center for EcoTechnology (CET)  
Center for Sustainable Energy  
Clark + Green Architects  
CLEAResult  
Corcoran Management  
Company  
Cotuit Solar, LLC  
Coughlin & Associates Energy  
Consulting, LLC  
DEAP Energy Group, LLC  
Decumanus Green  
Design/Build, Inc.  
Demand Management  
Institute, Inc. (DMI)  
Dietz & Company  
Architects, Inc.  
Donnell Carpentry  
E2 Solar, Inc.  
E4TheFuture  
Energia, LLC  
Energy Engineering  
and Design, Inc.  
Energy Federation, Inc. (EFI)  
European Architectural  
Supply (EAS)  
EvB Design  
Fitch Architecture  
& Community Design  
Fred Davis Corporation  
Geoffrey H. Richon  
Company, Inc.  
Godfrey Design-Build  
Grand Banks Building Products  
Green River Architecture  
Hardwick Post & Beam  
HomeBase, LLC  
ICON Architecture, Inc.  
Infrared Diagnostic, LLC  
Insight Solar  
Integrated Eco Strategy  
Jack Miller Contractors, Inc.  
JB Solutions, Inc.  
Jim Muka, Window Sales  
John Fülöp Associates,  
Architects and Planners  
Jones Whitsett Architects, Inc.  
Kendall Sustainable  
Infrastructure

Ken Hicks  
Construction Company  
Kuhn Riddle Architects  
Landmark Services, Inc.  
Light Hill Property  
Management, LLC  
M.J. Moran, Inc.  
Maloney Properties, Inc.(MPI)  
Maple Hill Architects  
Mary Kraus Architect  
Maryann Thompson Architects  
Massachusetts  
Audubon Society  
Massachusetts Clean Energy  
Center (MassCEC)  
McCauley Lyman, LLC  
N Sabella, Inc.  
National Grid  
New Ecology  
Next Phase Studios, Inc.  
Nossotto Homes, Inc.  
October Engineering, LLC  
Paul Lukez Architecture  
Pavers By Ideal  
Pioneer Valley Habitat  
for Humanity  
Placetaylor, Inc.  
Preservation of Affordable  
Housing (POAH)  
PV Squared Solar  
Quebec Government Office  
in Boston  
r3construction\_inc.  
Rodman CPAs  
RST Thermal  
SAF Systems, Inc.  
Sage Builders, LLC  
Scenic Window Company, LLC  
Second Street Associates, LLC  
SegoDesign  
Shoreline Builders, Inc.  
SolaBlock  
Solar Store of Greenfield  
Solar Wave Energy, Inc.  
Solect Energy Development  
South Mountain Company  
Spartan Solar  
Stevevorks, LLC  
Stiebel Eltron, Inc.  
studioWEBSTER  
Sublime Windows, LLC  
SunBug Solar  
Sustainable Comfort, Inc.  
Sustainable Energy Analytics  
SWZ Architects, LLC  
Symmetry Electric  
Tecogen, Inc.  
The Green Engineer, Inc.  
The Valle Group  
Thoughtforms Corporation  
Threshold Building Co.  
Timeless Architecture  
Treehouse Design, Inc.  
Two Storey Building  
Uncarved Block, Inc.  
Urban Habitat Initiatives Inc.  
Valley Home Improvement  
Valley Solar, LLC  
Village Carpentry  
and Landscaping  
Wagner Development  
Warren Design Build  
Wood to Stone LLC  
Wright Builders, Inc.  
Yule Development Co., Inc.  
ZeroEnergy Design

### N

#### New Hampshire

603 Solar

Bensonwood  
Brooks Post & Beam, Inc.  
Bruss Project Management, LLC  
Earthshare Construction, LLC  
Eco-Logical Building Solutions  
Foard Panel, Inc.  
Garland Mill  
Granite State Solar, LLC  
Mighty Roots  
Petersen Engineering, Inc.  
RH Irving Homebuilders  
RL Benton - Builder  
Smart Energy of  
New England, Inc.  
Unity Homes  
Walker Cellar Works  
Water Energy Distributors  
Yankee Thermal Imaging  
Zehnder America, Inc.

#### New Jersey

Noveda Technologies, Inc.  
Public Service Solar, LLC  
Steele Kellogg AIA

#### New York

475 High Performance  
Building Supply  
Adirondack Battery  
& Solar, LLC  
Air Barrier Solutions, Inc.  
Alfandre Architecture  
Anthony J Musso Architect  
Apex Solar Power  
Aris Energy Solutions  
Ashley McGraw Architects, DPC  
Association for Energy  
Affordability (AEA), Inc.  
Baukraft Engineering  
Baxt Ingui Architects, PC  
Black Mountain Architecture  
BR+A Consulting Engineers  
Bright Power  
BuildingLogic, Inc.  
Community Preservation  
Corporation (CPC)  
Consolidated Edison Company  
of New York, Inc.  
Crowl Construction, LLC  
Daikin North America  
Danish Cleantech Hub  
eco\_logic STUDIO, architecture  
& engineering, PLLC  
EDSL USA, Inc.  
EN-POWER GROUP  
G.S. Dunham, LLC  
Gotham 360  
Hudson River Design  
Integral Building + Design, Inc.  
Klepper, Hahn & Hyatt  
KOW Building Consultants  
Legend Power Systems  
Magnusson Architecture  
and Planning (MAP)  
Mavrik European Windows  
New Energy Works  
Timberframers  
North River Architecture  
& Planning, PC  
Northern Manhattan  
Improvement  
Corporation (NMIC)  
NYSERDA  
Pathfinder Engineers  
& Architects, LLP  
Right Environments  
RSP Systems  
RXR Realty  
Steven Winter Associates, Inc.  
Sullivan Cty. Off. of  
Sustainable Energy  
The Pakatar Group

Tim McCarthy Architect, PC  
Tishman Speyer  
Tri-Star Equities, Inc.

#### North Carolina

Huber Engineered Woods

### O

#### Ohio

RBI Solar, Inc.

#### Oregon

Ventacity Systems, Inc.

### P

#### Pennsylvania

Energy Opportunities, Inc.  
H2O Degree-Global Water  
& Energy Solutions  
SOTA Construction  
Services, Inc.  
Whole Forest

### R

#### Rhode Island

DeMetrick Housewrights  
Heartwood Group, Inc.  
Stephen Turner, Inc.  
Truth Box, Inc.

### T

#### Texas

Halfen USA, Inc.

### V

#### Vermont

Bellwether Craftsmen, LLC  
Bontrager Custom Builders, Inc.  
BuildingGreen, Inc.  
Energy Futures Group  
HELM Construction Solutions  
Lewis Creek Builders  
Maclay Architects  
Mindel and Morse Builders, LLC  
New Frameworks  
Pill-Maharam Architects  
SunCommon  
TimberHomes Vermont  
Vermont Energy Investment  
Corporation (VEIC)  
Vermont Integrated  
Architecture, PC  
VSECU  
West Hill Energy  
And Computing  
Yestermorrow Design/  
Build School  
Zone 6 Energy

#### Virginia

INTUS Windows  
Pearl Certification

### W

#### Washington

Retrotec, Inc.

## CANADA

#### British Columbia

Cascadia Windows & Doors

#### Quebec

Minotair  
Québec International

## #

**377 Builders**

Housatonic, Massachusetts  
413-429-6075  
377builders.com

We are a member-owned general contracting company based in the Berkshires of Western Massachusetts. Our expertise is in residential and light commercial construction, including additions and full-scale renovations for your home or building. We also specialize in custom cabinetry and sustainable practices. As a tech-savvy group we use web-based project management tools that make collaboration an easy and enjoyable experience. We'll present you with the best options to suit your vision and resources whether innovative, traditional, or a blend of both.

**Specialties:** Carpentry/Cabinetry, Design/Build, General Contractor, Remodeling/Renovation

**475 High Performance Building Supply**

Brooklyn, New York  
917-837-8487  
foursevenfive.com

475 High Performance Building Supply (475) provides essential building knowledge and components to building professionals. 475 helps make more durable, resilient, ecological, and energy-efficient buildings that optimize occupant comfort and health. We enable the building improvements required to dramatically reduce our energy demand and address our climate crisis. We are an ecommerce-based catalyst in the transformation of US construction to high-performance, low-energy, and Passive House buildings. The name "475" is a reference to the heat demand requirement of the Passive House Standard, 4.75 kilo BTUs per square foot per year. Passive House is the gold standard for high performance construction today.

**Specialties:** Building Supply, Healthy Materials, Insulation, Passive House, Windows

**603 Solar**

Portsmouth, New Hampshire  
603-570-2607  
603solar.com

603 Solar is a solar energy service based in Portsmouth, NH. We wanted to begin a solar company based on the values of integrity and honesty, providing an amazing customer experience and getting people the best return on investment. We pride ourselves on our educative approach to showing people the advantages of solar, and strive to get people the best return on investment.

**Specialties:** Photovoltaics

## A

**A Yard & A Half Landscaping Cooperative, Inc.**

Waltham, Massachusetts  
781-788-8855  
ayardandahalf.com

A Yard & A Half Landscaping Cooperative, Inc. was formed in 2013 to preserve and continue to develop a locally-owned, safe, just, and democratic workplace in an industry where workers often face exploitation, wage theft, and hazardous working conditions. Participation in the cooperative is a financial and career investment for members, not just a job. Worker-owners participate in professional development, learning transferable skills and creating economic growth and self-sufficiency. We also share in the profits of our labor, allowing us to reinvest in our own local economy, communities, and families.

**Specialties:** Consulting, Landscape Design, Pavement/Masonry

**A.W. Hastings/Marvin**

Enfield, Connecticut  
800-966-2784  
awhastings.com

As a leading distributor for Marvin, A.W. Hastings & Co partners with its retailer network to bring their customers' vision to life throughout the northeast.

Made in the USA and sold and serviced locally, Marvin windows and doors are manufactured with sustainability in mind, starting with design and continuing through the entire life cycle of every project, always with an emphasis on long-term durability, efficiency and quality. Whether your project is passive house, Net Zero, or a home that simply uses elements of sustainable design, AW Hastings, representing Marvin, provides solutions you need - including dual pane and tri-pane options yielding total window U-Factor values as low as .15.

**Specialties:** Net Zero, Passive House, Windows

**A9 Green/Total Green Energy Solution, LLC**

Lexington, Massachusetts  
781-357-2454  
A9Green.com

Since 2009, A9 Green has delivered HERS Ratings and energy efficiency consulting to developers, architects, and builders of single and multi-family residential projects in over 85 towns across eastern Massachusetts. Our expertise in energy modeling, architecture, and building science help build better homes while reducing costs and environmental impact.

**Specialties:** Consulting, Energy Auditing, Energy Modeling, HERS Rater

**Abode Energy Management**

Concord, Massachusetts  
339-707-0918  
abodeem.com

Abode Energy Management is a boutique energy consulting firm driving efficiency improvements for New England's built environment. We are passionate about helping our industry grow through a training-based, collaborative approach. Our collective experience in building performance, renewables, clean energy financing, utility program implementation, community engagement, and workforce development form the foundation that enables us to deliver data-driven results for our partners and clients.

**Specialties:** Building Envelope, Certification/Commissioning, Consulting, Consumer Information, Deep Energy Retrofit, Education, Energy Auditing, Energy Modeling, Finance, Geothermal, HERS Rater, HVAC, Incentives, Insulation, Mechanical Systems, Net Zero, Photovoltaics

**Action for Boston Community****Development, Inc. (ABCD)**

Boston, Massachusetts  
617-348-6000  
bostonabcd.org

ABCD is a non-profit human services organization that provides low-income residents in the Greater Boston region with the tools and resources needed to transition from poverty to stability and from stability to success. Offering a number of heating and energy services to income eligible residents of Boston, Brookline, Newton and the Mystic Valley cities and towns of Malden, Medford, Everett, Melrose, Stoneham, Winchester and Woburn, ABCD can help you stay warm in winter and cool in summer. We'll even help you go green!

**Specialties:** Affordable Housing, Consumer Information, Energy Auditing, Incentives, Social Services

**Adirondack Battery & Solar, LLC**

Potsdam, New York  
315-212-2114  
adirondackbatteryandsolar.com

**Specialties:** Energy Storage, Photovoltaics  
Our mission is to provide the very best renewable, reusable and recyclable batteries to everyone in the North Country and beyond. Our Services: Battery & Energy Storage Specialist Solar Design, Service & Consulting.

**Advanced Building Analysis, LLC**

Amesbury, Massachusetts  
978-270-3911  
advancedbuildinganalysis.com

ABA is an industry leader of energy analysis, diagnostic, and verification services in Massachusetts and southern NH. We are an ENERGY STAR partner who helps builders of new single family and multi-family homes cost effectively meet the challenges of higher energy efficiency standards. ABA consults with architects and builders to improve building energy efficiency to meet or exceed program goals established by EPA's ENERGY STAR, MA Residential New Construction programs, as well as Building Code consultation and verification.

**Specialties:** Certification/Commissioning, Energy Auditing, Energy Modeling, HERS Rater, Passive House

**Aegis Energy Services**

Holyoke, Massachusetts  
413-536-1156  
aegischp.com

Aegis Energy Services is an innovative, full service Combined Heat and Power (CHP) company based in Holyoke, MA. Founded in 1985, Aegis Energy Services' modular systems are currently utilized across the Northeast and Mid-Atlantic providing sustainable, clean power options for a wide array of customers. Aegis assists a variety of facilities in reducing both energy costs and emissions, from healthcare and assisted living facilities, to recreational and multi-unit residential complexes, and hotels. There are also institutional, educational, and industrial facility applications.

**Specialties:** Cogeneration/CHP, Energy Monitoring

**Air Barrier Solutions, Inc.**

Crown Point, New York  
518-597-4503  
airbarriersolutions.com

We provide air barrier and insulation inspection/audit services, including bulk foam installation, across the U.S. and Canada. All of our projects begin with a state-of-the-art diagnostic evaluation. Customized retrofit plans are developed for each building. The scope of the work is implemented by Air Barrier Solution's own crews and project managers, using proprietary, quality assurance, and measurement verification methodologies.

**Specialties:** Building Envelope, Deep Energy Retrofit, Energy Auditing, Energy Monitoring, Insulation

**Alfandre Architecture**

New Paltz, New York  
845-255-4774  
alfandre.com

Alfandre Architecture specializes in the design of energy, resource-efficient, healthy buildings. Get the space that's right for you, designed around how you live and work. One team that does it all, from sustainable design to complete construction. Creating spaces and places of lasting beauty.

**Specialties:** Architecture, Design/Build

**Allied Engineering, Inc.**

Portland, Maine  
207-221-2260  
allied-eng.com

Allied Engineering, Inc. (AEI) has been providing multi-discipline engineering support to our clients since 1958. Our experience lies in our knowledge and understanding of structural, mechanical, electrical, and technology systems for new buildings and renovation design projects. Our expertise is demonstrated in our attention to detail, integrated designs, and our excellent reputation.

**Specialties:** Certification/Commissioning, Consulting, Electrical, Engineering, Lighting, Mechanical Systems

**altE Store, Inc.**

Boxborough, Massachusetts  
877-878-4060  
altestore.com

Founded in 1999, AltE, Inc. has catered to customers on every continent of the globe. A 2006 Inc. 500 awarded company, AltE aims to continue to fulfill its motto, "Making Renewable Do-able," by offering cost competitive and high-quality renewable energy related products to Solar Installers and Do-It-Yourselfers.

**Specialties:** Building Supply, Photovoltaics, Solar Thermal, Wind

#### **Andy Cole Builders**

Gill, Massachusetts  
413-325-1383

Andy Cole started Andy Cole Builders 16 years ago. Our team's focus is on energy efficiency and quality construction. We concentrate on building a better, healthier building that uses less energy and is more comfortable to live in. We have been at the cutting edge of the green building wave since our beginnings.

**Specialties:** Deep Energy Retrofit, Design/Build, Healthy Materials

#### **Anthony J Musso Architect**

Huntington, New York  
631-367-8626  
ajmarchitect.com

An architectural firm practicing sustainable architecture, interior architecture, landscape design and Passive House design. "The architecture for today, respects the past; while solving our contemporary needs in a responsible sensible design."

**Specialties:** Architecture, Design/Build, Landscape Design, Passive House

#### **Apex Solar Power**

Queensbury, New York  
518-788-8439  
apexsolarpower.com

Over the past decade, Apex Solar Power has established itself as a premier solar energy provider in the solar industry. We have expanded from an Upstate NY-based solar electric/thermal company to a regional company providing clean and green energy to more than 900 cities and towns in 7 different states – and we continue to grow. In fact, Apex Solar Power was rated by Solar Power World as the 2017 #1 Rooftop Solar Contractor in New York.

**Specialties:** Energy Storage, Photovoltaics, Roofing, Solar Thermal

#### **Architerra, Inc.**

Boston, Massachusetts  
617-778-2470  
architerra-inc.com

Architerra is an architecture, community design, and development advisory firm dedicated to sustainable design and smart growth. Founded in 2004, by Ellen Watts, the firm is committed to comprehensive design solutions for any project in the built environment. The firm's environmentally sensitive work is distinguished by design creativity, interdisciplinary collaboration, and funded research. 100% of Architerra's full-time professional staff is LEED accredited.

**Specialties:** Architecture, Community Planning, Net Zero

#### **Aris Energy Solutions**

Mount Vernon, New York  
914-663-2747  
ariswind.com

Aris Wind, the wholly owned subsidiary of Aris Renewable Energy, is a metropolitan New York City based renewable energy firm that has partnered with Airsynergy to promote, sell and service its Remote Power Unit (RPU) and Total Energy Solution (TES) products in North and South America.

**Specialties:** Cogeneration/CHP, Energy Storage, Wind

#### **Ashley McGraw Architects, DPC**

Syracuse, New York  
315-425-1814  
ashleymcgraw.com

For us, architecture is about people. When done well, it stirs up an emotional connection to a place and a glimpse into who we are, what we believe, what we value. It reaches beyond just designing buildings. Great architecture contributes to a just, sustainable, and equitable future. We believe that architecture is a tool for positive change, and we choose to lead by example. Our work has been able to positively impact the lives of children, educators, administrators and the community for over 30 years.

**Specialties:** Architecture, Community Planning, Living Building Challenge, Net Zero, Passive House

#### **Aspen Environmental Services, LLC**

Methuen, Massachusetts  
978-681-5023  
aspenenvironmentalservices.com

Aspen Environmental is the Premier Company for mold remediation in Massachusetts, New Hampshire, Greater Boston, and New England. We have the professional certifications and experience not only for cleaning mold and removing mold that you may have, but for taking the corrective measures to ensure it won't happen again. Most companies are not certified in toxic mold removal. All they do is a "cleaning". This usually does not kill mold spores, and they grow back in a short time. We follow the strict standards of NORMI (National Organization of Remediators and Mold Inspectors) and the IICRC (Institute of Inspection, Cleaning, and Restoration Certification).

**Specialties:** Indoor Air Quality

#### **Association for Energy Affordability (AEA), Inc.**

Bronx, New York  
212-279-3902  
aea.us.org

The Association for Energy Affordability Inc. is dedicated to achieving energy efficiency in new and existing buildings in order to foster and maintain affordable and healthy housing and communities, especially those of low-income. AEA representatives engage in a broad range of educational, technical and construction management activities and services to promote this mission and develop the industry that advances and sustains it.

**Specialties:** Affordable Housing, Certification/Commissioning, Community Planning, Deep Energy Retrofit, Education, Energy Auditing, Energy Modeling, HERS Rater

#### **Atelier Ten, LLC**

New Haven, Connecticut  
203-777-1400  
ateliertenc.com

As environmental design consultants and building services engineers we are committed to high-performance and sustainable design within the built environment. Our core objective is to meet the needs of our clients by developing well-integrated buildings with simple systems that work with natural laws of physics to increase well being, reduce energy consumption and contribute back to the greater environment.

**Specialties:** Certification/Commissioning, Consulting, Engineering, Indoor Air Quality, Lighting, Mechanical Systems

#### **Auburndale Builders**

Newton, Massachusetts  
617-467-4171  
auburndalebuilders.com

We are passionate about high-performance: new construction, renovation, Passive, and Net-Zero homes. Our team knows the integrated process necessary for high-performance home and work 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:** Construction Management, Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

#### **Aurora Custom Builders, Inc.**

Medford, Massachusetts  
617-320-8287  
Aurorabuilds.com

We will recommend and specify sustainable materials that have a long life cycle whenever possible – products and construction that harmonize with your environment – both aesthetically and practicality to create energy-efficient and responsibly built spaces. We embrace great design – form, function, color, and materials – whether we are working with your architect or if we are retained as your design team. We see to it that everything (and everyone!) works together to build a space that is as unique as you.

**Specialties:** Construction Management, Deep Energy Retrofit, Design/Build, Healthy Materials, Remodeling/Renovation

## **B**

#### **Bales Energy Associates**

Greenfield, Massachusetts  
413-863-5020  
balesenergy.com

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

**Specialties:** Community Planning, Consulting, Consumer Information, Design/Build, Energy Auditing, Photovoltaics

#### **Bantam/Wesson**

Waterbury, Connecticut  
203-756-7041  
bantamwesson.com

Bantam/Wesson is a progressive energy partner specializing in modern, high-efficiency solutions and comprehensive home comfort service. We help homeowners and businesses integrate alternative energy sources, including solar and biofuel.

**Specialties:** Energy Auditing, Energy Monitoring, HVAC, Insulation, Windows

#### **Basnett Design-Build-Remodel**

Littleton, Massachusetts  
978-952-2552  
basnettdbr.com

Basnett Design/Build/Remodel is a 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:** Deep Energy Retrofit, Design/Build, Indoor Air Quality, Mechanical Systems

#### **Baukraft Engineering**

Beacon, New York  
347-674-4287  
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. Cramer Silkworth, the founder & principal of Baukraft, is a Professional Engineer (PE) and PHI & PHIUS Certified Passive House Consultant (CPHC) and PHI Instructor.

**Specialties:** Building Envelope, Consulting, Engineering, HVAC, Mechanical Systems, Passive House

#### **Baxt Ingui Architects, PC**

New York, New York  
212-233-6740  
baxtingui.com

Baxt Ingui Architects, P.C., is an architecture and interior design firm with extensive experience in residential, institutional, and commercial projects.

Residential projects include townhouses, apartments, lofts, and country homes. Commercial projects include retail facilities, galleries, and multi-floor law offices. Institutional projects include educational and child-centered facilities.

**Specialties:** Architecture, Passive House

#### **Bellwether Craftsmen, LLC**

Huntington, Vermont  
802-777-3059

bellwethercraftsmenvt.com

Bellwether Craftsmen advances the building industry through intelligent design and innovation. Encouraging a culture of positive cooperation dedicated to environmental stewardship, social responsibility, true sustainability within the built environment. We endeavor to provide unique timber frames with revered spirit. Working closely with clients our custom buildings provide inspiring living spaces that deliver exceptional energy performance. We specialize in achieving the highest value to cost ratio believing everyone deserves the benefit of healthy sustainable shelter.

**Specialties:** Building Envelope, Carpentry/Cabinetry, Construction Management, Consulting, Deep Energy Retrofit, Design/Build, Development, Energy Auditing, Healthy Materials, Net Zero, Passive House

#### **Benjamin & Company, Inc.**

Brunswick, Maine  
207-729-7171

benjamin-co.com

We care deeply about what we build and how we build it, and strive to leave our clients with beautiful, comfortable, and functional spaces that will be cherished for generations to come. With decades of combined expertise in hand-cut timber frames, advanced green building techniques, custom design and drafting, and efficient project management, we are proud to offer boutique frame-to-finish services to clients in Mid-Coast Maine and beyond. From traditional mortise and tenon timber frame barns, to Net Zero Energy custom homes, Benjamin & Company can work with you to bring your dreams to life.

**Specialties:** Design/Build, Net Zero

#### **Bensonwood**

Walpole, New Hampshire  
877-203-3562

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, craft, ecology, wise resource use, simplicity, and elegance.

**Specialties:** Design/Build, Passive House, Timber Framing

#### **Berkshire Photovoltaic Services (BPVS)**

North Adams, Massachusetts  
413-664-0152

bpvs.com

Since 1985, Berkshire Photovoltaic Services Inc. (BPVS) has provided the highest quality design and installation of efficient and durable photovoltaic systems for residential, commercial & institutional customers. We have a long history providing innovative solar plus storage design/installation services for off grid, stand by and dedicated load applications as well as turnkey utility interactive PV systems.

**Specialties:** Photovoltaics

#### **Beyond Green Construction**

Easthampton, Massachusetts  
413-529-0544

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:** Deep Energy Retrofit, Energy Modeling, Energy Storage, Insulation, Photovoltaics, Remodeling/Renovation

#### **Black Mountain Architecture**

Saranac Lake, New York  
518-354-8340

blackmountainarchitecture.com

Black Mountain Architecture 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, BMA 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:** Architecture, Consulting, Landscape Design, Net Zero

#### **Block Design | Build**

Hadlyme, Connecticut  
860-575-0845

erikblock.com

We are a family owned business based in Hadlyme, CT. Erik Block founded the company in 2003 and a few years later he was joined by his brother Haldan. Most recently their father John was added to the crew after a career as an automotive tech. We specialize in unique design and quality construction. We have the ability to handle all aspects of your construction project small or large. We enjoy pushing the boundaries of modern design as much as we enjoy honoring the past with traditional construction. We look forward to hearing from you as you start planning your next project.

**Specialties:** Carpentry/Cabinetry, Design/Build, Remodeling/Renovation, Timber Framing

#### **Bontrager Custom Builders, Inc.**

Bridgewater Corners, Vermont  
802-356-1856

bontragercustombuilders.com

Bontrager Custom Builders offers general contractor services and will guide you through the designing, budgeting, and building phases, to ensure that your home reflects your lifestyle and suits your needs for beauty, comfort, energy efficiency and durability. Our comprehensive approach to design, project management and construction assures each client that their project has complete continuity and our devoted attention from concept to completion. We work with you through the entire process.

**Specialties:** Carpentry/Cabinetry, Design/Build, General Contractor, Project Management, Remodeling/Renovation

#### **BPC Green Builders, Inc.**

Wilton, Connecticut  
203-563-9909

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 (EPA) and Zero Energy Ready Homes (DOE). PHIUS Passive House, LEED

for Homes (USGBC). PHIUS Certified Passive House Consultant services available.

**Specialties:** Consulting, Deep Energy Retrofit, Design/Build, Indoor Air Quality

#### **BR+A Consulting Engineers**

New York, New York  
212-840-0060

brplusa.com

BR+A creates environments that make a difference. We engineer responsive, high-performing buildings where people and ideas thrive. Our diverse and talented team is dedicated to becoming a true partner to clients and a vital part of their organization, by fostering a culture where creativity is celebrated and collaboration fuels mutual success.

**Specialties:** Certification/Commissioning, Consulting, Electrical, Energy Modeling, Engineering, Mechanical Systems, Project Management

#### **BRIBURN**

Portland, Maine  
207-774-8482

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.

**Specialties:** Architecture, Design/Build, Education, Indoor Air Quality, Net Zero, Passive House, Prefab/Modular

#### **Bright Power**

New York, New York  
212-803-5868

brightpower.com

Bright Power provides strategic energy solutions to building owners and operators across the nation. Specializing in multifamily apartment buildings, Bright Power's suite of services saves clients' energy, money and time. Bright Power's energy management solutions include EnergyScoreCards benchmarking software, energy audits, energy procurement, onsite generation, green building design services, turnkey installation of energy improvements, and ongoing energy management.

**Specialties:** Certification/Commissioning, Cogeneration/CHP, Construction Management, Consulting, Energy Auditing, Energy Monitoring, Engineering

#### **BrightBuilt Home**

Portland, Maine  
207-842-2888

brightbuilthome.com

On the leading edge of sustainability and design, award-winning firm Kaplan Thompson Architects founded BrightBuilt Home with the goal of providing more beautiful, healthy and low-energy homes for the American homebuyer. To optimize affordability, we rely heavily on supreme geekery married with years of custom design experience and construction knowledge. Sketches and cost spreadsheets are used hand-in-hand with energy models in order to optimize each home and reduce its carbon footprint. As a partnership between design professionals, modular builders, and site contractors, we can keep our fingers on the pulse of the industry at large. As a team, we stay current on all aspects of home-building, from design innovations to pricing projections to best construction practices to more!

**Specialties:** Design/Build, Indoor Air Quality, Net Zero, Prefab/Modular

**Brissette Electric, Inc.**

West Tisbury, Massachusetts  
508-693-0764  
briselectric.com

*Brissette 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 Management, Electrical

**Brooks Post & Beam, Inc.**

Lyndeborough, New Hampshire  
603-654-3210  
brookspostandbeam.com

*Brooks Post & Beam has been building energy efficient, sustainable homes throughout New England for over 40 years. Our custom and kit homes wrapped in stresskin panels compete in efficiency and cost to a highly efficient air sealed and super insulated conventionally framed structure...except for one thing, you get a timber frame!*

**Specialties:** Design/Build, Timber Framing

**Bruss Project Management, LLC**

Concord, New Hampshire  
603-856-8218  
nhpreservation.org/directory-of-products-and-services/bruss-project-management-llc

*Bruss Project Management provides project management services from project start to completion. We will work with owners to tailor a scope of services uniquely suited to their project needs. These services include project feasibility studies, project budget management, estimating, design and constructability review.*

**Specialties:** Construction Management, Consulting

**Building Shelter, Inc.**

Vineyard Haven, Massachusetts  
508-693-7734  
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:** Consulting, Design/Build, Passive House, Remodeling/Renovation

**BuildingGreen, Inc.**

Brattleboro, Vermont  
802-257-7300  
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:** Certification/Commissioning, Consulting, Education, Healthy Materials, Research

**BuildingLogic, Inc.**

Gardiner, New York  
845-443-0657  
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, Net-Zero Energy design.*

**Specialties:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House

**Byggmeister, Inc.**

Newton, Massachusetts  
617-527-7871  
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:** Deep Energy Retrofit, Design/Build, Indoor Air Quality, Remodeling/Renovation

**C****C&H Architects**

Amherst, Massachusetts  
413-549-3616  
candharchitects.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, Building Envelope, Community Planning, Consulting, Deep Energy Retrofit, Energy Modeling, Energy Monitoring, Historic Restoration, Living Building Challenge, Net Zero, Passive House

**Casaceli Construction, LLC**

Marlborough, Massachusetts  
508-351-9400  
casaceliconstruction.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:** Deep Energy Retrofit, Design/Build, Net Zero, Remodeling/Renovation

**Cascadia Windows & Doors**

Langley, British Columbia  
647-746-0658  
cascadiawindows.com

*We innovate, commercialize and produce the most effective products to reduce energy consumption in buildings more than ever before. Cascadia Windows manufactures fiberglass windows, doors, and fiberglass cladding support systems, with uncompromising quality and physical performance. What does that mean? It means that when you explore one of our products for any specific reason – be it a sliding door with unsurpassed water penetration resistance, a commercial window with exceptional thermal performance, or a cladding support assembly that provides ASHRAE-compliance in the most cost effective manner available, you can count on every other aspect of the product to be top-performing.*

**Specialties:** Passive House, Windows

**CED Greentech East**

Enfield, Connecticut  
860-289-7711  
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*


**ASSOCIATION FOR ENERGY AFFORDABILITY INC.**

- **Leading-edge Training:** Energy Auditing, Energy Efficient Building Operations, Passive House construction. Hands-on, classroom, and distance learning courses available
- **Energy Consulting:** Energy efficiency, sustainability, and passive house consulting for new, high-performance multifamily buildings
- **Energy Technical Services** for local law compliance and upgrades to existing buildings
- **Direct installation of energy efficiency measures** in conjunction with Weatherization and utility programs

Contact us: [saveenergy@aea.us.org](mailto:saveenergy@aea.us.org)

105 Bruckner Blvd, Bronx, NY 10454

[aea.us.org](http://aea.us.org)

718.292.6733

 @aea\_us



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:** Building Supply, Community Planning, Education, Electrical, Energy Auditing, Incentives, Photovoltaics

### **Celebration Green Design & Build**

Madison, Connecticut  
203-627-6747  
celebrationgreen.com

We combine our passion with our extensive knowledge & experience utilizing many types of energy efficient construction practices to design and build high performance homes, including passive house and zero net energy. We are also committed to spread the word and teach other stakeholder groups "why, what & how" building this way matters for our future. As part of this effort, we are proud to be founding members of Connecticut Passive House (CTPH).

**Specialties:** Deep Energy Retrofit, Design/Build, Education, Net Zero, Passive House, Remodeling/Renovation

### **Center for EcoTechnology (CET)**

Florence, Massachusetts  
413-586-7350  
cetonline.org

The Center for EcoTechnology helps people and businesses save energy and reduce waste. We work with partners throughout the country to address climate change by transforming the way we live and work – for a better community, economy, and environment. For more than 40 years, our innovative non-profit organization has offered practical solutions to save money, increase the health and comfort of our homes, and help businesses perform better. We make green make sense.

**Specialties:** Consulting, Energy Auditing, Energy Modeling, HERS Rater, Incentives, Net Zero, Passive House

### **Center for Sustainable Energy**

Boston, Massachusetts  
858-244-1177  
energycenter.org

A nonprofit social enterprise, CSE has facilitated 44,000 energy projects for consumers, businesses and governments. Through our market outreach and technical and policy expertise over 130,000 people have been directly served by our programs and CSE has a well-established reputation as a point of statewide and regional coordination among utilities, end-users, industry, regulators and local governments. Today, our reach is expanding nationally. Our areas of expertise include clean transportation, distributed generation, building performance, energy efficiency, energy storage and renewable energy. We work with energy policy makers, regulators, federal, state and local governments, utilities, public agencies and business.

**Specialties:** Certification/Commissioning, Consulting, Education, Incentives, Public Policy

### **Centerbrook Architects and Planners, LLP**

Centerbrook, Connecticut  
860-767-0175  
centerbrook.com

Centerbrook has been a leading firm in the practice of green and sustainable design since the 1970s.

**Specialties:** Architecture, Carpentry/Cabinetry, Project Management

### **CHA Architecture**

Portland, Maine  
207-775-1059  
chaarchitecture.com

CHA Architecture provides community-based architectural, interior design, and planning services, specializing in sustainable, high-performance buildings in the education, healthcare, multi-family housing, office/corporate, and VA sectors. We provide design services across a broad spectrum of CHA engineering projects including structures for aviation and water/wastewater as well athletic facilities.

**Specialties:** Architecture, Community Planning, Construction Management, Engineering

### **Chris Green, LLC**

New Milford, Connecticut  
203-628-0539  
patternsinwood.com

A craftsman searching for good designs and artful solutions in residential construction. Since 1987, I

have restored old houses, made windows and doors, matched historic millwork, and designed and built kitchens, baths and room additions, while continually raising the bar on my own long-standing interest in energy efficiency. Influenced early on by Christopher Alexander's "A Pattern Language," creating a space that inspires and grows out of the user's experience is important to me. This, combined with a love of old and new buildings, has made achieving a balance between new designs and existing structures a worthy challenge.

**Specialties:** Architecture, Carpentry/Cabinetry, Design/Build, Remodeling/Renovation

### **Clark + Green Architects**

Great Barrington, Massachusetts  
413-528-5180  
clarkandgreen.com

Clark + Green 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, Historic Restoration

### **Clark Construction of Ridgefield**

Ridgefield, Connecticut  
203-431-2699  
clarkconstruction.net

Craftsmanship. Excellence. On time. You work hard and deserve a home that matches your lifestyle. We'll make getting there easy. The founding values and 5 step process on which the company was founded continue to guide us. Clear communication, with transparent pricing and a thorough explanation at every step of the way, is the backbone of our process and what allows us to repeatedly deliver a high quality experience and finished product.

**Specialties:** Design/Build, Remodeling/Renovation

### **CLEARResult**

Westborough, Massachusetts  
508-365-3292  
clearesult.com

CLEARResult is the leading provider of energy efficiency programs and services. Our building performance consulting and certification teams provide consultation and project management to advance high-performance buildings. We help owners and developers maximize performance and energy savings for commercial and residential buildings.

**Specialties:** Consulting, Consumer Information, Energy Auditing, Energy Modeling, Incentives

### **Community Preservation Corporation (CPC)**

New York, New York  
212-869-5300  
communitycp.com

Established in 1974, CPC is a nonprofit affordable housing and community revitalization finance company. We utilize our deep, strategic relationships with government agencies, local community groups, banks, and other lenders to create customized loan opportunities for our customers. As a trusted partner in your success, we work hand-in-hand with you to help maximize the potential of your multifamily project and its impact on the community.

**Specialties:** Affordable Housing, Community Planning, Development, Finance, Real Estate

### **Connecticut Green Bank**

Rocky Hill, Connecticut  
303-459-7840  
ctgreenbank.com

The Connecticut Green Bank is the nation's first green bank. We're creating a thriving marketplace

## FRED DAVIS CORPORATION

Efficient Lighting Wholesaler Since 1983

Info@FredDavisCorp.com  
Phone: 800-497-2970

### Announcing:

**THE LIGHTENING VOLT**  
an energy efficient lighting blog by Fred Davis Corporation

unique insights on energy-efficient lighting  
that every energy professional needs to know

[www.freddaviscorp.com/blog](http://www.freddaviscorp.com/blog)

Don't Miss an Article: text **LIGHTVOLT** to **22828** to join our mailing list

to accelerate green energy adoption in Connecticut by making green energy financing accessible and affordable for homeowners, businesses and institutions. We partner with private-sector investors to create low-cost, long-term, sustainable financing to implement green energy measures in the residential, commercial, industrial, institutional and infrastructure sectors.

**Specialties:** Affordable Housing, Development, Finance, Real Estate

**Consolidated Edison Company of New York, Inc.**

New York, New York  
212-460-4771

coned.com/energyefficiency

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](http://conEd.com/greenteam).

**Specialties:** Energy Distribution

**Corcoran Management Company**

Braintree, Massachusetts  
781-849-0011  
[corcoranapts.com](http://corcoranapts.com)

Whatever you're looking for in an apartment home, Corcoran has a warm and welcoming community that fits your active lifestyle. Amenity-filled yet functional, a Corcoran community puts your comfort and satisfaction at the top of our list. You'll value our proven commitment to customer service - professionally and personally executed.

**Specialties:** Affordable Housing, Community Planning, Development, Property Management, Real Estate

**Cotuit Solar, LLC**

Marstons Mills, Massachusetts  
508-428-8442  
[cotuitsolar.com](http://cotuitsolar.com)

We have over 30 years of experience installing solar systems on Cape Cod and the islands. We are passionate about renewable energy & conserving natural resources and believe small actions by many are the means to a sustainable future. We make going solar easy! Complete turnkey services including: system design, energy needs analyses, economic feasibility studies, installation, and commissioning. Our in-house expertise assures you are taken care of through the entire process.

**Specialties:** Certification/Commissioning, Energy Auditing, Photovoltaics

**Coughlin & Associates Energy Consulting, LLC**

Stow, Massachusetts  
978-501-3689  
[coughlinassociatesenergy.com](http://coughlinassociatesenergy.com)

Together, Coughlin & Associates brings over 40 years of industry experience to the table, offering solutions and results to the energy efficiency, renewable and sustainability companies. Our associates are well known and have worked in all aspects of the energy industry; from policy to generation to energy efficiency, and strategy development.

**Specialties:** Consulting, Public Policy

**Crowl Construction, LLC**

Keene, New York  
518-576-4255

Crowl Construction is a general contractor that offers green building, basement remodeling and more.

**Specialties:** Deep Energy Retrofit, Net Zero, Remodeling/Renovation

**D**

**Daikin North America**

New York, New York  
212-340-7400

[northamerica-daikin.com](http://northamerica-daikin.com)

Daikin is a leading innovator and worldwide provider of advanced, high-quality air conditioning and heating solutions for residential, commercial and

industrial applications. With more than 90 years of operation, Daikin has sold millions of systems throughout 140 countries. But what makes us great isn't just our HVAC systems. It's our personal service, commitment to quality and technological innovations that allow us to be a leading HVAC manufacturer.

**Specialties:** HVAC

**Danish Cleantech Hub**

Brooklyn, New York  
646-997-4087

[cleantech-hub.dk](http://cleantech-hub.dk)

Danish Cleantech Hub is concerned with energy efficiency, climate adaptation and resiliency. We focus on areas where we see clear links between the specific needs of New York and the Danish strongholds.

**Specialties:** Community Planning, Consulting, Education

**David Matero Architecture**

Bath, Maine  
207-389-4278

[davidmatero.com](http://davidmatero.com)

David Matero Architecture is a full service LEED AP architect specializing in residential, commercial, historic, green and restaurant architecture.

**Specialties:** Architecture, Historic Restoration, Remodeling/Renovation

**DEAP Energy Group, LLC**

Newton, Massachusetts  
617-775-4716

[deapgroup.com](http://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:** Consulting, Deep Energy Retrofit, Design/Build, Net Zero, Passive House

**Decumanus Green Design/Build, Inc.**

Lenox, Massachusetts  
413-281-0046

[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.

**Specialties:** Deep Energy Retrofit, Design/Build, Remodeling/Renovation

**Demand Management Institute, Inc. (DMI)**

Needham, Massachusetts  
781-449-5700

[dmiinc.com](http://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:** Certification/Commissioning, Consulting, Energy Auditing, Engineering, Incentives

**DeMetrick Housewrights**

Wakefield, Rhode Island

401-789-4712

[demetrickhousewrights.com](http://demetrickhousewrights.com)

DeMetrick Housewrights is a residential building company in Rhode Island that specializes in high-performance building, millwork, and high-end remodeling. At DeMetrick Housewrights, we really care about finding the right fit with our clients. We believe in trust and shared values. The things that are important to us when building a home include long term durability, great indoor air quality, low energy use, waste minimization, and providing a great value to our clients. We are excited to share our deep level of craftsmanship and expertise in building science with you to build an exceptional home.

**Specialties:** Carpentry/Cabinetry, Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

**Dietz & Company Architects, Inc.**

Springfield, Massachusetts

413-733-6798

[dietzarch.com](http://dietzarch.com)

For over 30 years, Dietz & Company Architects has been serving the architectural needs of private and public institutions including the housing, education, healthcare, commercial, and historic preservation sectors. We are dedicated to interpreting our clients' ideas while building healthy, sustainable communities. We routinely design high performance



Keep it cozy.

GEORGE PENNIMAN ARCHITECTS

[www.pennimanarchitects.com](http://www.pennimanarchitects.com) 860.767.2822

buildings and implement a "best practice" approach for energy conservation and sustainable materials whenever it can be determined to be cost-effective for our clients. Our sustainable design achievements include two recently built affordable housing developments that are designed to be zero net energy.

**Specialties:** Affordable Housing, Architecture, Education, Historic Restoration, Remodeling/Renovation

### Dominic Paul Mercadante Architecture

Belfast, Maine  
207-338-4089  
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, Consulting, Design/Build

### Donnell Carpentry

Amherst, Massachusetts  
413-522-2051

Licensed renovation, repair, and painting contractor.

**Specialties:** Carpentry/Cabinetry, Construction Management, Design/Build, General Contractor, Remodeling/Renovation

## E

### E2 Solar, Inc.

Dennis, Massachusetts  
508-237-3892  
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

### E4TheFuture

Framingham, Massachusetts  
774-777-5121  
e4thefuture.org

Bringing clean, efficient energy home for every American. E4 = energy, economy, equity, environment. E4TheFuture promotes residential clean energy and sustainable resource solutions to advance climate protection and economic fairness by influencing federal, state and local policies, and by helping to build a resilient and vibrant energy efficiency and clean energy sector.

**Specialties:** Consumer Information, Education, Public Policy

### Earthshare Construction, LLC

Lebanon, New Hampshire  
802-356-4383  
earthshareconstruction.com

Earthshare Construction specializes in high-performance, energy-efficient, and environmentally conscious building construction. We offer design, build, and consulting services for new construction and renovation projects including Passive House and Net Zero Energy building. We are committed to using best practices in sustainable design and construction, including site design; ecological landscaping; incorporating natural, local, and nontoxic materials; and waste disposal. We seek to constantly gain knowledge and expertise in contemporary environmentally responsible building methods, and to create buildings that merge energy efficiency with durability, beauty, and functionality.

**Specialties:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

### East Brown Cow Management, Inc.

Portland, Maine  
207-775-2252  
eastbrowncow.com

It's one thing to run a good building. Clean, comfortable, well cared for, well lit with tasteful fixtures, the warmth of varnished woods, with happy tenants and shoveled walkways. But it takes more to connect a building with a neighborhood and the city. How a management company like ours tends to the space around each building is the string that binds us with our neighborhood and our neighbors. As we work to help our tenants put their best foot forward, we help our neighbors do the same.

**Specialties:** Development, Property Management, Real Estate

### Eco Windows USA

Norwalk, Connecticut  
203-216-0799  
ecowindowsusa.com

Eco Windows & Doors, LLC, is a distribution partner of a leading European manufacturer of wooden, aluminum and PVC products. Our brand of window and door carpentry is produced by combining precisely selected materials, premium German hardware, latest technologies and long-term experience in production. All these aspects translate to the guarantee of the highest quality and best performance of use. Due to the variety of solutions in terms of shapes, sizes and colors our products are highly customizable to the individual needs of customers allowing for almost unlimited possibilities to arrange elevations and building interiors.

**Specialties:** Building Supply, Windows

### eco\_logic STUDIO, architecture & engineering, PLLC

Buffalo, New York  
716-834-9588  
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:** Affordable Housing, Architecture, Community Planning, Construction Management, Engineering

### Ecocor, LLC

Searsport, Maine  
207-342-2085  
ecocor.us

All of our construction details are certified Passive House components, certified though the Passive House Institute in Darmstadt Germany. Our foundation, wall and roof designs as well as all structural details are currently patent pending under (DRH File No.: 9036.2.P01PCT01).

**Specialties:** Certification/Commissioning, Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Prefab/Modular, Roofing

### Eco-Logical Building Solutions

Marlborough, New Hampshire  
603-876-4040  
ecologicalbuildingsolutions.com

Eco-Logical Building Solutions is a green building design, consulting and project management company. We specialize in implementing sustainable, energy efficient, environmentally friendly building and lifestyle practices that minimize waste of all resources. We strive to provide each customer with a wholly cooperative and personal experience. Whether you are building new, expanding, or remodeling an existing building we want to work with you to come up with eco-logical and cost effective solutions to your building needs.

**Specialties:** Consulting, Deep Energy Retrofit, Insulation, Net Zero

### EDSL USA, Inc.

New York, New York  
212-957-5415  
edsltas.com

EDSL is the company behind Tas, a complete solution for the dynamic simulation and thermal analysis of buildings. We serve designers, engineers, and sustainability specialists through our continually-improving software and responsive support. We support learning and research through free academic licenses and e-learning resources. EDSL



Commercial & Residential Installers  
for Southeastern MA, Cape Cod & The Islands

Photovoltaic Solar Installations



P.O. Box 89 Cotuit, MA • 508-428-8442 • www.cotuitsolar.com



Creative solutions that make "cents"

### Green Building & Consultation

- Energy Efficient Remodeling and New Construction
- Integration of Renewable Energy Technology
- Custom Carpentry and Project Management

603-876-4040

info@ecologicalbuildingsolutions.com

www.ecologicalbuildingsolutions.com

run workshops in NYC, check online for upcoming events: [edsitas.com/TasWorkshops](http://edsitas.com/TasWorkshops)

**Specialties:** Certification/Commissioning, Energy Modeling, Engineering, HVAC, Lighting

#### **Emerald Builders**

Bowdoinham, Maine  
207-841-2775  
[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:** Construction Management, Deep Energy Retrofit, Net Zero, Remodeling/Renovation

#### **EN-POWER GROUP**

White Plains, New York  
914-263-1199  
[enpg.com](http://enpg.com)

*As an integrated energy engineering firm, EN-POWER GROUP's services range from engineering design and implementation to energy consulting, managing, and financing. For all projects, our engineers and analysts focus on energy efficiency and resiliency in order to maximize project payback and aid long-term facility planning. Our expertise includes traditional HVAC systems, building green certification, code and law compliance, and on-site generation technologies including solar PV, cogeneration (CHP), battery storage, and emergency power generators. We assist our clients from all building-types in developing a thorough understanding of existing energy-related conditions and in developing solutions to improve efficiency and mitigate environmental impacts in their facilities.*

**Specialties:** Certification/Commissioning, Cogeneration/CHP, Consulting, Deep Energy Retrofit, Energy Auditing, Energy Monitoring, Energy Storage, Engineering, HVAC, Lighting, Mechanical Systems, Photovoltaics, Project Management

#### **Energia**

Holyoke, Massachusetts  
413-322-3111  
[energias.us](http://energias.us)

*Energia, LLC is a socially responsible employee-owned energy services company that provides energy efficiency upgrades for residential and commercial properties. We aim to reduce utility costs and energy use throughout western Massachusetts. Energia's mission is to create efficient and healthy buildings that transform our*

*communities and environments into thriving places to live and work.*

**Specialties:** Energy Auditing, HVAC, Insulation

#### **Energy Engineering and Design, Inc.**

Dedham, Massachusetts  
781-775-2698  
[energyengineeringinc.com](http://energyengineeringinc.com)

*We are an independent engineering consulting firm that provides comprehensive energy use reduction services for the commercial, education, municipal, federal and industrial sectors. EE&D has the ability to develop a customized facility improvement program that fits your individual needs in the most cost effective way.*

**Specialties:** Certification/Commissioning, Community Planning, Consulting, Energy Auditing, Energy Modeling, Engineering

#### **Energy Federation, Inc. (EFI)**

Southborough, Massachusetts  
800-876-0660  
[efi.org](http://efi.org)

*For over 30 years, EFI has assisted people in their efforts to use less energy and water by providing energy efficient products and delivering successful utility program services. Our mission is to encourage people to use our planet's limited energy and water resources wisely. We assist people in these efforts by offering high quality conservation products and services at affordable prices while communicating practical, objective information. EFI a leading promoter of residential energy efficiency-related products, distributing products directly through our Consumer and Wholesale Divisions, and administrating utility-sponsored rebate programs through our Incentive Processing Division.*

**Specialties:** Building Supply, Consumer Information, Incentives

#### **Energy Futures Group**

Hinesburg, Vermont  
802-482-5001  
[energyfuturesgroup.com](http://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:** Consulting, Energy Modeling, Project Management, Public Policy

#### **Energy Opportunities, Inc.**

Wellsville, Pennsylvania  
717-292-2636  
[sevengroup.com](http://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:** Certification/Commissioning, Community Planning, Consulting, Education, Research

#### **European Architectural Supply (EAS)**

Sudbury, Massachusetts  
617-647-4432  
[eas-usa.com](http://eas-usa.com)

*Supplier of high-quality Passive House certified windows, doors and curtain wall from Schuco and Makrowin. Products include entry doors, tilt-turn windows, lift-slide doors and are available in PVC, wood, aluminum, and commercial curtain wall.*

**Specialties:** Net Zero, Passive House, Windows

#### **EvB Design**

Somerville, Massachusetts  
617-623-2222  
[evbdesign.com](http://evbdesign.com)

*Welcome to EvB Design. We provide custom design services for a wide range of projects at all scales, from residential work (new homes, kitchens, additions, multi-family housing) and non-profit (accessibility, renovations) to commercial interiors (restaurants, offices, labs), from furniture design to site planning. Our sensitivity to issues of context, environment, sustainability, accessibility, individual client needs, and overall quality and craftsmanship is reflected in our work.*

**Specialties:** Architecture, Design/Build, Remodeling/Renovation

## F

#### **Fine Homebuilding**

Newtown, Connecticut  
800-926-8776  
[finehomebuilding.com](http://finehomebuilding.com)

*Expert home construction tips, tool reviews, remodeling design and layout ideas, house project plans, and advice for homeowners.*

**Specialties:** Consumer Information, Education

#### **Fitch Architecture & Community Design**

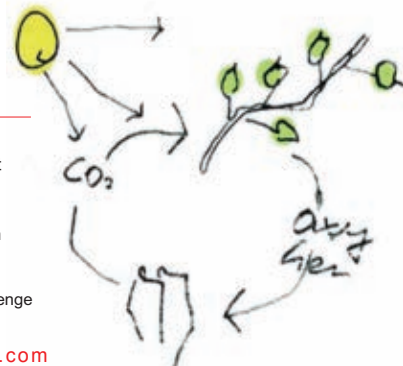
Amherst, Massachusetts  
413-549-5799  
[FACDarchitects.com](http://FACDarchitects.com)

*Fitch Architecture & Community Design 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*

## NEXT PHASE STUDIOS

- ❖ Deep Energy Retrofit
- ❖ Building Technology
- ❖ Regenerative Design
- ❖ Passive House
- ❖ Living Building Challenge

[nps-architects.com](http://nps-architects.com)



## STILL GREEN AFTER ALL THESE (19) YEARS!



for green design and smart growth development, are internationally recognized for our expertise in cohousing.

**Specialties:** Architecture, Community Planning, Deep Energy Retrofit, Net Zero

**Foard Panel, Inc.**

West Chesterfield, New Hampshire  
800-644-8885  
foardpanel.com

Foard Panel manufactures and installs structural insulated panels for residential and commercial construction. Our manufacturing process utilizes state of the art technology to assure we produce only the strongest, most energy efficient materials for your project. Our technicians are some of the best in the industry and they take great care in producing the highest quality SIPs for every customer.

**Specialties:** Building Envelope, Engineering, Insulation, Passive House, Timber Framing

**Fred Davis Corporation**

Medfield, Massachusetts  
800-497-2970

freddaviscorp.com

Fred Davis Corporation is a leading independent wholesale distributor dealing exclusively with energy-efficient lighting since 1983. We supply a full array of LED lighting products and controls. Markets: commercial/industrial, weatherization, multifamily, municipal. We always screen for the best in efficiency-worthy lighting products. The LED revolution provides a vast array - varying in efficacy, quality, price. Let us guide you between the worst & best in LEDs. Our blog, The Lightening Volt, covers developments in energy-efficient lighting of interest to the broader energy community. Don't miss an article: Text LIGHTVOLT to 22828 to join our mailing list. Fred Davis, President, is NESEA's 2019 Distinguished Service Awardee.

**Specialties:** Lighting

**G**

**G.S. Dunham, LLC**

Flushing, New York  
718-886-4232  
gsdunham.com

G.S. Dunham is New York Metropolitan Area's leading innovator for steam heating products and services. If your building has a steam heating system, we are the experts you should be working with.

**Specialties:** Building Supply, Deep Energy Retrofit, Energy Monitoring, Mechanical Systems

**Garland Mill**

Lancaster, New Hampshire  
603-788-2619  
garlandmill.com

Garland Mill is a small family-owned business, specializing in the design and construction of heavy timber framed 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.

**Specialties:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation, Timber Framing

**Geoffrey H. Richon Company, Inc.**

Gloucester, Massachusetts  
978-283-6063  
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:** Consulting, Deep Energy Retrofit, Design/Build, General Contractor, Net Zero, Passive House, Remodeling/Renovation

**George Penniman Architects, LLC**

Essex, Connecticut  
860-767-2822

pennimanarchitects.com

George Penniman Architects 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. George Penniman is a Certified Passive House Designer/Consultant and LEED for Homes professional.

**Specialties:** Architecture, Landscape Design, Net Zero, Passive House

**Global Wholesale Supply**

Grasonville, Maryland  
410-643-3495  
globalwholesale.biz

Global Wholesale Supply is the North American distributor of Steico wood fibre insulation products. Steico is the largest fiberboard manufacturer in the World and provides a full line of products from rigid insulation to flexible wood fibre batts to blown in insulation. Global Wholesale and Steico promote healthy, vapor open wall systems for healthy homes.

**Specialties:** Indoor Air Quality, Insulation

**GO Logic, LLC**

Belfast, Maine  
207-338-1566  
gologic.us

GO Logic is a full-service general contracting company with expertise that ranges from single-family homes to large-scale commercial and institutional projects. Our construction managers and builders deliver the highest levels of structural integrity, finish quality, and performance while exercising full control of budget and schedule. GO Logic is pleased to announce the launch of the GO Home - a breakthrough product line of high-performance, high-design prefab houses - and thegohome.us, a new website that makes the full line easily available to homebuyers anywhere in New England.

**Specialties:** Architecture, Construction Management, Design/Build, General Contractor, Passive House, Prefab/Modular

**Godfrey Design-Build**

Beverly, Massachusetts  
978-473-0987  
godfreydesign-build.com

Godfrey Design-Build is a full-service remodeling company serving the North Shore of Massachusetts. Our process allows clients to hire one company for all their design, scope development and construction services.

**Specialties:** Design/Build, Remodeling/Renovation

**Good Earth Works, Inc.**

Belfast, Maine  
504-914-2020

Developer for high energy efficiency homes.

**Specialties:** Development, Property Management, Real Estate

**Gotham 360**

New York, New York  
917-338-1023  
gotham360.com

Gotham 360 is a national energy management consultancy headquartered in New York City. Our 360-degree approach provides clients with complete coverage of their energy-related needs. Gotham



Engineering Today  
For Tomorrow

With over 20 years experience in MEP&FP  
Consulting Engineering for Multi-Family  
Residential Developments, Industrial,  
Commercial, Healthcare, Hotels & Corporate.

[info@peg-eng.com](mailto:info@peg-eng.com)

[www.peg-eng.com](http://www.peg-eng.com)

Tel. (203)810-4191

360 delivers innovative, fully-integrated, and cost-efficient programmatic solutions that reduce energy consumption and costs, maximize operational efficiency, and help clients navigate the complexities of deregulated energy markets.

**Specialties:** Cogeneration/CHP, Consulting, Energy Auditing, Energy Monitoring, Energy Storage, Photovoltaics, Solar Thermal

#### Grand Banks Building Products

Gloucester, Massachusetts

978-281-2421

grandbanksbp.com

For 30 years Grand Banks has been serving both builders and homeowners in the greater north shore of Boston. It all started with a man and an idea back in 1988. Armed only with his knowledge of the products and a pickup truck, Lansing Banks began the journey from millwork to kitchen design. Today Banks has been joined by other talented and passionate people and our family business has grown. We specialize in quality finish building products and design across a few categories: doors, windows, cabinetry, countertops, door hardware, stair parts, mouldings, decking, and flooring.

**Specialties:** Building Supply, Windows

#### Granite State Solar, LLC

Bow, New Hampshire

603-369-4318

granitestatesolar.com

Granite State Solar was founded in 2008. We are a design, sales, distribution and integrator of photovoltaic energy systems. We provide customized energy solutions and services to suit your needs, for optimum financial results. We provide leading edge products with innovative system designs. We provide solutions that conserve energy and save money all while reducing your carbon footprint. We offer a variety of renewable energy products and services to help you save money and reduce your carbon footprint. All systems are designed, installed, and maintained by certified technicians, electricians and engineers. We never contract our installations - they are all completed by our own electricians.

**Specialties:** HVAC, Photovoltaics

#### Green River Architecture

Great Barrington, Massachusetts

413-528-1108

buildzoom.com/contractor/  
green-river-architecture

Certified Passive House Consultant. Registered MA and NY. NCARB certified. Adaptive reuse, restorations, new and renovated buildings.

**Specialties:** Architecture, Deep Energy Retrofit, Design/Build, Historic Restoration, Passive House, Remodeling/Renovation

#### Greentec, Inc.

Branford, Connecticut

203-671-2160

greentechvac.com

Greentec, Inc. is a full service manufacturer's representative firm serving the heating, air conditioning, ventilating and refrigeration industry. Our sales professionals possess comprehensive product knowledge, extensive systems and applications expertise, the highest level of integrity, and an unending commitment to customer service. With a talented inside sales team, we are able to quickly react to our customer's needs and anticipate their future requirements.

**Specialties:** HVAC

## H

#### H2O Degree-Global Water & Energy Solutions

Bensalem, Pennsylvania

215-788-8485

h2odegree.com

H2O Degree uses a wireless based technology to monitor, control, and quantify utility consumption

in multifamily buildings. We provide sub-metering solutions for electric and hydronic heating and cooling, as well as toilet leak detection.

**Specialties:** Energy Auditing, Energy Monitoring

#### Halfen USA, Inc.

San Antonio, Texas

210-585-9342

halfen.com/us

With the company headquarters located in Langenfeld, Germany, HALFEN is one of the leading international companies in the following fields: anchoring technology, reinforcement technology, mounting/framing technology, facade fixing technology, transport anchor systems, and tension rod systems.

#### Hardwick Post & Beam

Hardwick, Massachusetts

413-426-6315

hardwickpostandbeam.com

We are a company of craftspeople. For 33 years we have designed and built beautiful, custom, timber frame structures for clients in Massachusetts, New England, and across the United States. A family company in its second generation of leadership, we have been employing a group of timber framers year-round for more than three decades, and are committed to our people. We are very eager to work with architects and builders who are in the front line of cutting edge energy sustainability and who want to pair their product with the beauty and tradition of a timber frame.

**Specialties:** Construction Management, Design/Build, Timber Framing

#### Heartwood Group, Inc.

Providence, Rhode Island

401-861-1650

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:** Consulting, Development, Photovoltaics, Real Estate, Wind

#### HELM Construction Solutions

Brattleboro, Vermont

802-225-8933

buildhelm.com

At HELM, we work with owners, designers and builders to create high performance and sustainable buildings and businesses. HELM provides a range of innovative services to help your business and your projects run smoothly and efficiently. We're here to help support your business in whatever way you need, by offering expertise in business planning, accounting, estimating, job costing, project management, hiring, technology, software, and marketing that is specific to the high performance design and construction industry and the small business world.

**Specialties:** Construction Management, Consulting, Design/Build, Net Zero, Passive House, Project Management

#### Home Energy Technologies

Chester, Connecticut

877-800-6440

homeenergytechnologies.com

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.

**NET ZERO**

Hitchcock Center for the Environment  
Living Building Challenge Certified  
60.5 kW Solar System in Amherst, MA  
Installed by PV Squared Solar in 2016

**PV SQUARED**  
HEART & SOLAR

Certified **413-772-8788**  
**PVSQUARED.COOP**  
MA ELEC. LIC. A13764 MA HIC 140077  
**SUNPOWER®** | Elite Dealer

Corporation

**Specialties:** Certification/Commissioning, Consulting, Energy Auditing, Energy Modeling, HERS Rater, Incentives

#### HomeBase, LLC

Wellesley Hills, Massachusetts  
508-533-8393

HomeBase is a member-based cooperative focused on creating ecologically sustainable, deeply resilient communities that are locally rooted, energy positive, globally connected, economically viable and diverse across age, race and income. Our mission is to demystify this process and make it accessible to anyone who wants to live in harmony with the biosphere and is willing to do the ongoing work of building community.

**Specialties:** Community Planning, Consulting, Design/Build, Net Zero, Real Estate

#### Huber Engineered Woods

Charlotte, North Carolina  
800-933-9220

huberwood.com

Huber Engineered Woods continually strives to create innovative products that suit their customers' needs. Each one delivers outstanding performance, easy installation and greater strength in single family, multifamily and light commercial projects. Huber's ZIP System Sheathing & Tape are structural wood panels with built-in protective barriers, eliminating the need for building wrap or felt and providing a continuous rigid moisture and air barrier that optimizes energy efficiency. Additionally, Huber's AdvanTech Subflooring product is proven to achieve a superior combination of strength and moisture resistance "for subflooring that won't swell, cup, delaminate or bounce even under the toughest conditions.

**Specialties:** Building Envelope, Building Supply, Insulation, Roofing

#### Hudson River Design

Saugerties, New York  
845-246-0725  
chucksilver.com

We design outstanding houses and commercial buildings that are energy and resource efficient. In recent years, it has become viable to produce structures that have energy requirements that are small enough to be met on-site by solar photovoltaic (PV) panels. But there is much more to a great building than its energy and resource efficiency. We strive to make homes that will be loved and appreciated for generations, and although our design vocabulary is not limited to a single architectural style, there are shared core principles that are represented in all our work.

**Specialties:** Design/Build, Indoor Air Quality, Net Zero

#### Hudson Valley Preservation Corp.

Sherman, Connecticut  
860-355-0906  
hvpcorp.com

Formed in 1991, HVP has become one of the foremost companies for historic and modern renovations in the Hudson Valley and Connecticut. We also offer historic preservation consulting expertise in the areas of architectural history and assessment, preservation planning, restoration and rehabilitation design, and grant writing.

**Specialties:** Construction Management, Consulting, Design/Build, Historic Restoration

#### ICON Architecture, Inc.

Boston, Massachusetts  
617-451-3333  
iconarch.com

ICON is a design firm motivated by a belief in design's ability to positively transform, empower and restore. We delight in the process, enriched by collaboration and a commitment to ongoing

dialogue and discovery. We champion innovative environments that strengthen connections to people and place, fortify communities and create enduring value. Our work integrates intelligent design and construction methods with high performance and passive strategies to reduce energy demand and improve comfort and performance. Our commitment to sustainable design, smart growth and resilience creates healthy communities that restore our environment.

**Specialties:** Architecture

#### Infrared Diagnostic, LLC

Sudbury, Massachusetts  
978-440-9900

infrareddiagnostic.com

Infrared energy audit, Duct Blaster and Blower Door testing. Certified Infrared Thermographer, HERS Rater. Provide consulting to builders, home owners on how to reduce energy consumption. Stretch Energy Code and 2015 IECC consulting.

**Specialties:** Certification/Commissioning, Energy Auditing, HERS Rater, HVAC, Mechanical Systems

#### Insight Solar

Easthampton, Massachusetts  
413-338-7555  
getinsightsolar.com

Insight Solar was started by industry professionals with decades of experience in home energy. We want to do one thing. Provide homeowners with the knowledge needed to make an informed decision about solar. In doing this, we know that we will have the greatest impact on our local and global world. We also recognize that the key to this impact is the people we choose to work with, lead and develop professionally and personally.

**Specialties:** Photovoltaics

#### Integral Building + Design, Inc.

New Paltz, New York  
845-255-0418

integralbuilding.com

Integral Building & Design is nationally affiliated with the Building Performance Institute (BPI), RESNET, the US Environmental Protection Agency (EPA), the US Department of Energy (DOE) and the Air-Conditioning Contractors of America (ACCA). Our firm provides a wide range of consulting services custom to your project, whether newly constructed or the retrofit of an existing building. We are specialists in the field of building science and welcome new opportunities to help design and construct better buildings. We serve as independent Energy Raters for a variety of energy efficiency standards and programs.

**Specialties:** Certification/Commissioning, Consulting, Deep Energy Retrofit, Energy Auditing, HERS Rater, Indoor Air Quality, Net Zero, Passive House

#### Integrated Eco Strategy

North Adams, Massachusetts  
413-884-2571

materiallybetter.com

Our brand, Materially Better, answers the question "Which materials should I use?" for architects, designers, engineers, building owners, and consultants who want to build great, healthy buildings. We provide education, software tools (Red2Green), and project consulting (Integrated Eco Strategy) that guide our clients to select healthier building materials. Our advice is based on our nearly ten years of experience helping clients, from homeowners to major corporations and universities across the United States, create Living Buildings and work to secure a healthier future for all.

**Specialties:** Certification/Commissioning, Consulting, Energy Auditing, Energy Modeling, Healthy Materials, Living Building Challenge, Net Zero, Project Management, Research

#### INTUS Windows

Fairfax, Virginia  
888-380-9940

INTUSwindows.com

INTUS creates high performing windows and doors that conserve energy, increase thermal performance, and reduce noise. By balancing superb energy efficiency, affordability, and versatility, INTUS is making sustainable building attainable for any type of commercial project in the U.S. The source of nearly 48% of the world's greenhouse gas emissions are from buildings; windows and doors are key to dramatically increasing the energy efficiency of buildings and decreasing wasted energy. INTUS is committed to providing innovative solutions whether for a modern multi-family building beside the New York City subway, a luxury hotel in Tennessee, or a school in Maine.

**Specialties:** Passive House, Windows

## J

#### Jack Miller Contractors, Inc.

Williamstown, Massachusetts  
413-884-6124

jackmillercontractors.com

Residential Contractors specializing in high-performance homes and remodeling. We're a full-service general contractor experienced in a variety of construction and energy retrofit strategies, including ICF, double-stud wall and exterior insulation, air, thermal and water management strategies and mechanical systems. Our goal is to combine traditional craftsmanship with high performance materials and techniques to achieve the holy grail of beauty, durability and performance for our clients.

**Specialties:** Deep Energy Retrofit, Design/Build, General Contractor, Passive House, Project Management, Remodeling/Renovation

#### JB Solutions, Inc.

Southampton, Massachusetts  
413-320-7306

j-b.solutions

JB Solutions is a father/son manufacturing company in Southampton MA, using their roots as a residential HVAC company (Orchard Valley Heating and Cooling) to develop and patent two unique products for home HVAC use. One device, The Humidicycle, recycles the massive amount of water typically wasted by home humidification systems and the 2nd, The HVACIV, uses a green biocide to treat drain systems in AC units, dehumidifiers, ventilation units to prevent mold, biofilm growth and subsequent damage from drain clogs and flooding.

**Specialties:** HVAC, Indoor Air Quality

#### Jim Muka, Window Sales

Leyden, Massachusetts  
413-774-6975

m-sora.si/en

Independent window and door sales representative. Over 36 years of experience in the residential and commercial window and door industry. Providing direct sales of M SORA Clad/Wood Passive House Tilt/Turn windows, Lift/Slide doors and Entrance doors. Direct Sales Representative. Builder and Architect direct price quotes, budget pricing, product service. Homeowner direct sales/service. Office 413-774-6975 Cell 413-834-7003

**Specialties:** Net Zero, Passive House, Windows

#### John Fülöp Associates, Architects and Planners

West Stockbridge, Massachusetts  
413-232-7122

fulopassociates.com

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

**Specialties:** Architecture, Deep Energy Retrofit, Net Zero, Passive House

### Jones Whitsett Architects, Inc.

Greenfield, Massachusetts  
413-773-5551  
joneswhitsett.com

Formed in 1984, we specialize in schools, civic/cultural buildings & historic preservation. We share a commitment to a collaborative design process, respect for the architectural traditions of our region & concern for future generations.

**Specialties:** Architecture, Design/Build, Historic Restoration

## K

### Kaplan Thompson Architects

Portland, Maine  
207-842-2888  
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, Deep Energy Retrofit, Net Zero, Passive House, Remodeling/Renovation

### Kendall Sustainable Infrastructure

Cambridge, Massachusetts  
617-374-3707  
kendallinvestments.com

Kendall Sustainable Infrastructure (KSI) invests in projects that generate regular distributions with attractive yields in excess of public markets though direct participate in energy and water projects that sell their production under long term contract to attractive counter parties, such as utilities, municipalities and large commercial entities.

**Specialties:** Development, Finance

### Kent Hicks Construction Company

West Chesterfield, Massachusetts  
413-296-0123  
kenthicksconstruction.com

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:** Deep Energy Retrofit, Design/Build, Healthy Materials, Historic Restoration, Net Zero, Passive House

### Klepper, Hahn & Hyatt

East Syracuse, New York  
315-446-9201  
khhpc.com

Klepper, Hahn & Hyatt is a multi-disciplinary design firm specializing in structural engineering, landscape architecture, and building envelope systems. We serve the northeastern United States from our office in Central New York. Our firm works in both the public and private sectors to develop projects which are cost-effective, sustainable, and responsive to the needs of our clients.

**Specialties:** Construction Management, Consulting, Engineering, Historic Restoration, Landscape Design, Project Management

### Kolbert Building

Portland, Maine  
207-799-8799  
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:** Consulting, Deep Energy Retrofit, Design/Build, Remodeling/Renovation

### KOW Building Consultants

Smithtown, New York  
631-757-5000  
kowbc.com

KOW Building Consultants has been a trusted provider of construction consulting services since 1978. We add value to traditional banks, private lenders, mortgage lending institutions, state housing agencies, city housing agencies, mezzanine lenders, and other financial institutions by providing construction loan monitoring, property condition assessment, and technical plan & cost reviews.

**Specialties:** Consulting, Energy Auditing, Energy Modeling, Finance, Passive House

### Kuhn Riddle Architects

Amherst, Massachusetts  
413-259-1630  
kuhnriddle.com

We provide architectural and interior design services to a diverse client base throughout the Pioneer Valley and beyond, including colleges and schools, individual families, churches, offices, retail and multi-family developers, and municipalities. Sustainability guides our thought process on every project, at all levels of design, from the initial concepts through construction. Whether the project is new construction or a deep energy retrofit, we are committed to providing our clients with designs – and buildings – that are intelligent and environmentally sensitive.

**Specialties:** Architecture, Community Planning, Deep Energy Retrofit, Net Zero

## L

### Landmark Services, Inc.

Wellesley Hills, Massachusetts  
508-533-8393  
landmarkservices.com

Landmark Services specializes in renovating and restoring period homes. We also build 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' lifelong 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:** Deep Energy Retrofit, Design/Build, Historic Restoration, Net Zero, Passive House, Remodeling/Renovation

### Legend Power Systems

New York, New York  
866-772-8797  
legendpower.com

Legend Power® Systems is a global leader in onsite energy management technology. We help buildings overcome grid volatility challenges common to utilities around the world. Legend's industry-proven SmartGATE™ enables dynamic power-management of an entire building. The proprietary and patented system reduces total energy consumption and power costs, while also maximizing the life of electrical equipment. Legend's unique solution is also a key contributor to both corporate sustainability efforts, and the meeting of utility energy efficiency targets.

**Specialties:** Electrical, Energy Distribution, Energy Monitoring



**SUBLIME**  
WINDOWS

High Performance European Tilt/Turn Windows  
Climate-Optimized Performance  
US and European Manufacturing Options

www.SUBLIMEwindows.com 413•829•7923

**Lewis Creek Builders**

Essex Junction, Vermont  
802-662-1630  
lewiscreekcompany.com

Lewis Creek Company was founded in 2009 and has been serving the greater Burlington, Vermont area ever since. We are a team of architectural designers and tradespeople providing a holistic, full-service Design-Build experience. Our process allows you to explore and refine until the design is perfectly yours. We create spaces that are functional, beautiful, and designed to complement your lifestyle.

**Specialties:** Architecture, Construction Management, Design/Build, General Contractor, Passive House, Project Management, Remodeling/Renovation

**Light Hill Property Management, LLC**

Boston, Massachusetts  
617-563-8956

**Specialties:** Property Management, Real Estate

**M****M.J. Moran, Inc.**

Haydenville, Massachusetts  
413-268-7251  
mjmoraninc.com

The M.J. Moran Company was formed in February of 1978, and has steadily grown in size since then. Our repeat customers include Top Flite/Callaway Golf, Milton Bradley, Suddekor, Smith College, Mount Holyoke College, Amherst College, Eaglebrook School, Northfield Mount Hermon, and the Cooley Dickinson Hospital, just to name a few. As mechanical construction managers, we work closely with the architect, engineers, and owner, providing our expertise in value costing, budgeting and scheduling.

**Specialties:** Deep Energy Retrofit, Engineering, Geothermal, HVAC, Mechanical Systems

**Maclay Architects**

Waitsfield, Vermont  
802-496-4004  
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 ten 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, Certification/Commissioning, Consulting, Deep Energy Retrofit, Design/Build, Net Zero, Passive House

**Magnusson Architecture and Planning (MAP)**

New York, New York  
212-253-7820  
maparchitects.com

MAP offers comprehensive architectural and planning services that blend design excellence with technical and planning expertise. We specialize in mixed-use developments; affordable, supportive, senior, mixed-income, and market-rate housing; schools; community facilities; urban design; and community planning. Our clients include community groups, public agencies, municipalities, institutions, real estate developers, schools, and non-profit organizations.

**Specialties:** Affordable Housing, Architecture, Community Planning

**Maine Passive House, LLC**

Bethel, Maine  
207-890-3203  
mainepassivehouse.com

Maine Passive House is a green building and design company. We can custom build new houses, remodel or restore your existing home, and help with design, to create a beautiful, comfortable, healthy, and energy efficient home. Being green isn't just about using the correct light bulbs or flooring, but actually understanding what we're doing and why it makes sense. Our strengths lie in our knowledge of the science of building, our meticulous planning and organization, and our high quality custom woodworking and cabinetry. Having built everything from ski chalets and residential homes to agricultural timber framed structures to renovating historical buildings we have since 1996, developed a network of reliable and trustworthy sub contractors who take as much pride in their work as we do.

**Specialties:** Building Envelope, Consulting, Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

**Maloney Properties, Inc. (MPI)**

Wellesley, Massachusetts  
617-209-5204  
maloneyproperties.com

Maloney Properties (MPI) has created first class communities since 1981. It is our mission to provide high-quality housing in all of the communities we serve. MPI offers a comprehensive set of services, providing highly customized real estate solutions to a wide range of property owners and developers. MPI manages over 8,500 units of mixed-use, market rate, and affordable housing in 80 communities around Boston and across New England. We've earned our reputation for excellence with industry leading services and top REAC scores.

**Specialties:** Affordable Housing, Community Planning, Development, Property Management, Real Estate

**Maple Hill Architects**

Wayland, Massachusetts  
508-358-1615  
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:** Architecture, Design/Build, Net Zero, Remodeling/Renovation

**Mary Kraus Architect**

Amherst, Massachusetts  
413-548-0050  
marykrausarchitect.com

Making decisions in a group can be challenging. A compassionate, skilled facilitator makes all the difference, holding a safe space in which participants feel emboldened to speak their truth; in which active listening builds community and connection while embracing diverse views; and from which emerge satisfying solutions that integrate the varied needs of all participants. With over 25 years as a consulting cohousing architect, I have applied these skills to participatory design workshops, through which future neighbors work together to define their visions and design their communities.

**Specialties:** Affordable Housing, Architecture, Community Planning, Consulting

**Maryann Thompson Architects**

Watertown, Massachusetts  
617-744-5187  
maryanntompson.com

Maryann Thompson Architects is a Cambridge-based architecture firm that offers a wide range of services to public and private clients. We specialize in architecture that is sustainable, regionally driven and that attempts to heighten the phenomenological qualities of the site in which we work. Our architectural investigations revolve around such

concerns as the creation of a rich and thoughtful edge between inside and outside, utilizing light as a medium, and employing warm, natural materials in order to accentuate a sense of place. The firm's staff of 15 comes from diverse backgrounds, including architecture, landscape architecture, green architecture, planning, interior design and the visual arts.

**Specialties:** Architecture, Landscape Design

**Massachusetts Audubon Society**

Lincoln, Massachusetts  
781-259-2112  
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 (MassCEC)**

Boston, Massachusetts  
617-315-9355  
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, Incentives, Public Policy

**Mavrik European Windows**

Middletown, New York  
347-687-9888  
prossimo.us

Since 2015, we've provided triple pane European windows on dozens of projects of all sizes and styles. At Mavrik, we've scoured the globe for the best triple pane windows and doors. We have a complete offering of quality frame materials for any style and performance requirement. Through our unique combination of technology and human touch, we provide a new level of cost competitiveness and service. We also offer certified installation in the Eastern US. Get started on your next project today and see the Mavrik difference!

**Specialties:** Net Zero, Passive House, Windows

**McCauley Lyman, LLC**

Framingham, Massachusetts  
508-665-5801  
mccauleylyman.com

McCauley Lyman advises people about energy law and represents them in business-related transactions. We have particular expertise in the energy industry, including energy regulatory agencies and energy project financing. We help people negotiate contracts, arrange financing, buy and sell energy-related businesses and their assets as well as resolving disputes. We understand the need for timeliness, cost control, and practicality.

**Specialties:** Construction Management, Development, Finance, Legal/Accounting, Public Policy, Real Estate

**Mercer Bertsche Vernott Architects**

Old Mystic, Connecticut  
860-536-0632  
mbvarchitects.com

We are excited to announce the merger of two local architecture firms: Mercer & Bertsche Architecture

& Engineering + Christopher Vernott Architect. The new firm will conduct business as Mercer Bertsche Vernott Architects, LLC and will remain in our offices in Old Mystic, CT. This merger combines the personal expertise of Bob Mercer and Bill Bertsche in designing and renovating shoreline and historic homes in Southern New England with Chris Vernott's expertise in contemporary design and design/build projects. Our goal is to continue delivering timeless solutions for your lifestyle and applying our technical expertise to low energy and durable design solutions.

**Specialties:** Architecture, Design/Build, Engineering, Historic Restoration, Remodeling/Renovation

#### Michael Maines Residential Design

Palermo, Maine  
207-318-6224  
michaelmaines.com

Michael Maines works closely with clients to design new homes and renovations that are a joy to live in and that cost little to heat, cool and maintain. Comfortable working within a range of architectural styles, Michael infuses a modern sensibility into historically-derived designs, and traditional appeal into contemporary designs.

**Specialties:** Consulting, Design/Build, Net Zero, Passive House

#### Mighty Roots

Greenland, New Hampshire  
603-319-8095  
mightyroots.com

Mighty Roots is a residential design-build company focusing on healthy, durable, and energy efficient new homes and renovation/addition projects.

**Specialties:** Carpentry/Cabinetry, Design/Build, Remodeling/Renovation

#### Mindel and Morse Builders, LLC

Brattleboro, Vermont  
802-254-6662  
mindelandmorse.com

Mindel and Morse Builders provides clients in the Brattleboro, VT, area with beautiful, comfortable, and efficient homes – be it a new construction or renovation project. Ever since Steve Mindel and Jonathan Morse teamed up over thirty years ago, our focus has been to reach high energy efficiency. We continuously adapt new discoveries from building science and work with our clients to find the best solutions for their individual projects.

**Specialties:** Construction Management, Deep Energy Retrofit, Design/Build, Remodeling/Renovation

#### Minotair

Gatineau, Quebec  
514-994-8647  
minotair.com

The MINOTAIR PENTACARE-V12 Compact Air Treatment Unit controls the ventilation, temperature and humidity of your whole house. It filters, dehumidifies, heats, cools and renews the air to provide a healthy and comfortable environment all year round.

**Specialties:** HVAC, Indoor Air Quality

## N

#### N Sabella, Inc.

Framingham, Massachusetts  
617-462-0179  
nsabella.com

Uncommon dedication to service and craftsmanship. We are a full service, design-build firm specializing in residential remodeling. From renovations to additions, historical homes to contemporary, our experienced, licensed employees are dedicated to quality. N Sabella proudly serves Metrowest Boston. Our streamlined process keeps your project plans on budget, reduces design errors while completing your project on time.

**Specialties:** Deep Energy Retrofit, Historic Restoration, Remodeling/Renovation

#### National Grid

Waltham, Massachusetts  
508-860-6000  
nationalgridus.com

We are one of the largest investor-owned energy companies in the world – covering Massachusetts, New York, Rhode Island and the UK. We are at the heart of one of the greatest challenges facing our society—delivering clean energy to support our world long into the future. Every day we work with stakeholders to promote the development and implementation of sustainable, innovative and affordable energy solutions. We are proud of the contributions our work and our people make to the prosperity and wellbeing of our customers, communities and investors.

**Specialties:** Community Planning, Consumer Information, Development, Education, Electric/Hybrid Vehicles, Energy Auditing, Energy Distribution, Energy Storage, Geothermal, HVAC, Incentives, Insulation, Lighting, Net Zero, Public Policy, Solar Thermal

#### Neighborhood Housing Services of New Haven, Inc.

New Haven, Connecticut  
203-562-0598  
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:** Affordable Housing, Community Planning, Deep Energy Retrofit, Social Services

#### Net Zero Builders

Turner, Maine  
207-713-9090  
netzero.builders

There are many builders, developers and designers who sell similar concepts and brands. Our Company has a long history and background in the modular industry. We have taken what we have learned over the last 25+ years about the modular home manufacturing industry to the next level. As a group we have spent a long time strongly focusing on what drives the building cost/cost per square foot and have learned how to control it. We then developed a system that stream lines the very labor intensive building process while still providing a high level of custom finishes and options. Our system applies to stick built, post frame and modular construction projects.

**Specialties:** Design/Build, Net Zero, Prefab/Modular

#### New Ecology

Boston, Massachusetts  
617-557-1700  
newecology.org

The mission of New Ecology is to catalyze sustainable development and bring its benefits to under-served populations, and to maintain a focus on acting

Creativity, Craftsmanship, Satisfied Customers -

# That's our story.

Builder of high performance, energy efficient, healthy homes and home renovations.



**TWO STOREY  
BUILDING**  
Builder of fine, energy efficient, healthy homes

Custom Homes • Additions • Renovations • Design/Build



Bolton, MA • 617-438-0313 • [www.twostoreybuilding.com](http://www.twostoreybuilding.com)

locally to address global environmental issues. We work in many areas of community-based sustainable development, but we devote most of our efforts to green affordable housing. Our focus is on the practical and cost-effective: making new and existing buildings efficient, durable, and healthy.

**Specialties:** Certification/Commissioning, Community Planning, Consulting, Energy Auditing, Energy Modeling, Incentives

#### New Energy Works Timberframers

Farmington, New York  
800-486-0661  
newenergyworks.com

Thirty years ago we started New Energy Works Timberframing, a small timber frame company. Today, along with our sister company, Pioneer Millworks, we employ over 120 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, energy efficient enclosure systems, environmentally responsible practices, and state-of-the-art technology and software.

**Specialties:** Architecture, Design/Build, Net Zero

#### New Frameworks

Burlington, Vermont  
802-917-4059  
newframeworks.com

New Frameworks 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:** Certification/Commissioning, Consulting, Deep Energy Retrofit, Design/Build, Energy Auditing, Energy Modeling, Net Zero, Passive House

#### Next Phase Studios, Inc.

Boston, Massachusetts  
617-375-9300  
nps-architects.com

Next Phase Studios Architects is a collaborative design firm providing full design services for architecture and interiors. We work as an experienced, integrated team and use a dynamic, problem solving approach. As both individuals, and studio members, we strive for a very high level of expertise and effectiveness. This method leads to creative, sustainable, innovative design, building technology, and well managed Project Delivery.

**Specialties:** Architecture, Engineering

#### North River Architecture & Planning, PC

Stone Ridge, New York  
845-687-6242  
nriverrarchitecture.com

North River Architecture & Planning, PC was founded by Stephanie Bassler and Peter Reynolds in 2009. Stephanie and Peter have completed many diverse design projects in the Hudson Valley and beyond, distinguished by their energy efficiency, sensitivity to local context, to the community, and to the client's highest achievable goals. As Principal of NRAP, Stephanie pursues projects with a strong best-practices approach to sustainability, efficiency, and integration of whole systems design. As Senior Designer, Peter draws on over 25 years of experience with architectural, interior design, master planning, and space planning services that integrate North River's design values with clients' diverse needs over a broad range of project scales.

**Specialties:** Architecture, Design/Build, Passive House

#### Northern Manhattan Improvement Corporation (NMIC)

New York, New York  
212-822-8300  
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:** Affordable Housing, Deep Energy Retrofit, Energy Auditing, HVAC, Insulation, Social Services

#### Nossotto Homes, Inc.

Medway, Massachusetts  
508-246-6528

Primarily a residential remodeling company specializing in energy saving processes while updating the appearance and functionality of the home.

Nossotto Homes Inc. is dedicated to create new or renovate existing spaces that are functional for it's occupants. Creating a comfortable living or work area in relation to function, lighting, heating and cooling. When updating a space or structure the latest passive house techniques will be utilized wherever possible to reduce future energy costs and to prolong the life of the structure and to provide optimal air quality for the occupants.

**Specialties:** Construction Management, Deep Energy Retrofit, Insulation, Passive House, Remodeling/Renovation

#### Noveda Technologies, Inc.

Bridgewater, New Jersey  
908-685-6448  
noveda.com

Noveda Technologies is the award-winning global leader in real-time, Web-based monitoring for conventional and renewable energy systems. The company's patented software solutions help reduce energy and water usage, optimize performance of renewable energy systems, and reduce the carbon footprint for customers across commercial, retail, government, education, and utility sectors.

**Specialties:** Consumer Information, Energy Modeling, Energy Monitoring

#### NYSERDA

New York, New York  
518-862-1090  
nysesda.ny.gov

NYSERDA offers objective information and analysis, innovative programs, technical expertise, and funding to help New York businesses and residents increase energy efficiency, save money, use renewable energy, and reduce their reliance on fossil fuels.

**Specialties:** Consulting, Finance

## O

#### October Engineering, LLC

Sudbury, Massachusetts  
508-561-7553  
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](http://octoberengineering.com) for details and work samples.

**Specialties:** Energy Auditing, Energy Modeling, Energy Monitoring, Engineering, HVAC, Mechanical Systems

#### Old Mill Builders

Brookfield, Connecticut  
203-546-8860  
oldmillbuilders.com

Whether you're interested in a timber frame,

contemporary, rustic retreat, or even a conventional framed home, at Old Mill Builders, we have a deep desire to make every home as energy conscious, and sustainable, as possible. We start by building a well-insulated house. We also use energy efficient mechanical equipment, and employ wind, solar, geothermal, and other green technologies. We use recycled materials or reclaimed wood as much as possible, to reduce our carbon footprint and that's why we love working with wood, stone and metal – they are natural, organic materials that won't pollute or contaminate our beautiful surroundings.

**Specialties:** Construction Management, Consulting, Design/Build, General Contractor, Timber Framing

## P

#### passivhausMAINE (phME)

Freeport, Maine  
207-710-9478

passivhausmaine.org

We build and design extremely energy efficient buildings. As a Certified Passive House Consultant we do energy calculations using the PHPP software.

**Specialties:** Certification/Commissioning, Consulting, Passive House

#### Pathfinder Engineers & Architects, LLP

Rochester, New York  
585-325-6004  
pathfinder-ea.com

Pathfinder, a women-owned business enterprise, offers mechanical, electrical and plumbing engineering, energy engineering, architecture, commissioning, energy modeling and laser scanning to diverse clients in both the private and public sectors. Headquartered in Rochester, NY, our demonstrated ability has taken us from its founding to a staff of nearly 30 engineers, architects and designers. Along the way, we have excelled in meeting client demand for innovation, sustainable design, guidance and integrated service.

**Specialties:** Architecture, Certification/Commissioning, Energy Auditing, Energy Modeling, Engineering, Mechanical Systems

#### Paul Lukez Architecture

Somerville, Massachusetts  
617-628-9160  
lukez.com

Paul Lukez Architecture (PLA) was established in 1992. The firm's charter calls for transforming environments into sustainable and poetic places. We believe that by listening carefully to our clients, and integrating research as part of our design process, we can create inspiring and transformative places. Today the architecture + urban design firm continues to build bridges between academia and practice through design-research. Our firm is rooted in research-oriented practice, for which we have developed a four-stage design process that is based on the following four sets of actions: Listening/Researching/Designing/Testing.

**Specialties:** Architecture, Net Zero

#### Pavers By Ideal

Westford, Massachusetts  
978-692-3076  
idealconcreteblock.com

Ideal manufactures a full line of interlocking concrete pavers and retaining wall systems. Products include Andover Collection, Andover 5511, Eco-Stone, Aqua-Bric, and Turfstone, environmentally friendly permeable pavers. Pavers by Ideal offers a GREEN solution.

**Specialties:** Landscape Design, Pavement/Masonry

#### Peacock Builders

Bar Harbor, Maine  
207-801-2620  
peacockbuilders.net

We are a custom home builder serving Hancock County from Town Hill on beautiful Mount Desert

Island. We do a limited number of projects each year to maintain the highest standards of workmanship and quality control. Our reputation is built on exceptional work, communication and enthusiasm for the process of building.

**Specialties:** Carpentry/Cabinetry, Design/Build

**Pearl Certification**

Charlottesville, Virginia  
646-416-2650  
pearlcertification.com

Pearl's certification system enables home buyers to see and understand the value of a home's high-performing assets when the home is sold. Research from across the U.S. shows that third-party home performance certifications like Pearl's add an average of 4% to the sale price of high-performing homes, compared to similar homes lacking these assets. An appraiser authored study on Pearl Certified homes showed a 5% premium when the homes were marketed correctly. Pearl is the only private certification firm to sponsor the U.S. Department of Energy's prestigious Home Performance with ENERGY STAR program. Pearl is a National Association of Realtors (NAR) REach Accelerator company.

**Specialties:** Building Envelope, Certification/Commissioning, Energy Auditing, HVAC, Insulation, Lighting, Photovoltaics, Real Estate

**Performance Building Supply**

Portland, Maine  
207-780-1500  
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:** Building Supply, Healthy Materials, HVAC, Windows

**Petersen Engineering, Inc.**

Portsmouth, New Hampshire  
603-436-4233  
petersenengineering.com

Petersen Engineering provides green consulting services in the areas of HVAC, plumbing, fire protection and building envelope for commercial, residential and industrial buildings.

**Specialties:** Consulting, Engineering, HVAC, Mechanical Systems

**Pill-Maharam Architects**

Shelburne, Vermont  
802-735-1286  
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, Construction Management, Consulting, Net Zero, Passive House

**Pinnacle Window Solutions**

Hallowell, Maine  
207-588-6590  
pinnaclewindowsolutions.net

Our focus at Pinnacle Window Solutions is to offer green window solutions for every application. From traditional to modern and residential to commercial, we work hard to make your window choice and ordering process simple and enjoyable.

Our knowledgeable team of eight has over fifty years combined experience in the window and building industry and can easily answer all of your questions.

**Specialties:** Building Supply, Windows

**Pioneer Valley Habitat for Humanity**

Florence, Massachusetts  
413-586-5430  
pvhabitat.org

Since 1989, Pioneer Valley Habitat for Humanity has built decent, affordable homes with 37 low income families in Hampshire and Franklin Counties. We build our homes with volunteer labor and donations of material, supplies, land, and services.

**Specialties:** Affordable Housing, Design/Build, Social Services

**Placetaylor, Inc.**

Roxbury, Massachusetts  
617-639-0633  
placetaylor.com

Placetaylor is an architecture, construction and development company committed to building high performance, energy efficient contemporary buildings since 2008.

**Specialties:** Architecture, Construction Management, Design/Build, Development

**Preservation of Affordable Housing (POAH)**

Boston, Massachusetts  
617-449-1017  
poah.org

Preservation of Affordable Housing (POAH) is a nonprofit developer, owner and operator of nearly 9,000 affordable homes in 9 states and the District of Columbia. Our mission is to create, preserve and sustain affordable, healthy communities that provide economic security and access to opportunity for all people. At POAH we recognize that managing the environmental footprint of our properties is a critical piece of our preservation mission. POAH

has committed to both The Big Reach and Better Buildings Challenge, national programs with a target of reducing portfolio wide energy and water consumption but 20% by 2020. Our green initiatives weave throughout POAH activities and impact development, operations, and property management practices.

**Specialties:** Affordable Housing, Community Planning, Design/Build, Finance, Real Estate, Social Services

**Public Service Solar, LLC**

Trenton, New Jersey  
609-425-6318  
PublicServiceSolar.com

In your home, or on the phone we can analyze your current consumption and show you how you can choose to take advantage of the full power of the Sun's energy and break away from the lifetime debt of your electric bill! We walk you through verifying as the homeowner, submitting your utility application, and setting up a on site inspection of your home. With you every step of the way! To install and beyond!

**Specialties:** Consulting, Design/Build, Electrical, General Contractor, Photovoltaics, Project Management, Roofing

**PV Squared Solar**

Greenfield, Massachusetts  
413-772-8788  
pvsquared.coop

PV Squared is proud to be one of the longest standing renewable energy specialists in the Pioneer Valley and Western New England. Since our founding in 2002, we have worked to deliver projects that go above and beyond, both in terms of energy production and financial performance, and in terms of thoughtfulness and attention to detail. Our structure as a worker-owned cooperative means we're able to offer the benefit of working with an owner of the



KUHN·RIDDLE ARCHITECTS

Low Carbon Foot Print. Near Zero Net Energy.  
Sustainable Construction.  
Healthy Indoor Air Quality.

Partnering with Architects and Designers  
from Concept to Reality



Sustainability Leadership for 45 Years.

wright-builders.com 413.586.8287

business through every phase of your project, and that we're invested in the long term happiness of our clients, the livelihood of our workers, and the health of our community. Our customer-focused approach has built a reputation for quality and service that is second to none. If you're interested in talking solar, we'd love to hear from you.

**Specialties:** Consulting, Education, Electrical, Energy Storage, Living Building Challenge, Net Zero, Photovoltaics

## Q

### Québec International

Québec City, Quebec  
418-681-9700

quebecinternational.ca

Québec BVI is a structured business network that brings together stakeholders from the green and smart building sector, including designers, manufacturers and other experts with one shared goal: shaping the future of the building industry. By implementing innovative initiatives and tangible development projects, the cluster supports Québec City area's distinct expertise and position as an excellence hub in:

- Low-environmental footprint buildings.
- Low energy buildings.
- Responsible architectural products.
- Innovative building technologies.

**Specialties:** Community Planning, Development

### Quebec Government Office in Boston

Boston, Massachusetts  
617-482-1193

international.gouv.qc.ca/en/boston

Quebec has maintained an office in New England since 1970, recognizing the region's importance as a neighbor and a partner in a wide array of sectors. The Quebec Government Office in Boston's mandate is to defend and promote Quebec's interests throughout the region and to foster economic, political, artistic, academic and institutional exchanges with the six New England states.

**Specialties:** Community Planning, Consulting, Education, Public Policy

## R

### r3construction, inc.

Melrose, Massachusetts  
781-844-2621

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:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

### Rachel Conly Design, LLC

Peaks Island, Maine  
207-766-5625

rachelconlydesign.com

Rachel Conly Design is a high performance architecture group located in Maine. Our work blends tradition with the contemporary sensibilities of a modern, energy efficient, carbon conscious lifestyle. We create inspired spaces which are durable, efficient, healthy and comfortable, using thermal envelope and indoor air quality practices rooted in today's building science standards. Better for you, better for the planet.

**Specialties:** Architecture, Building Envelope, Deep Energy Retrofit, Net Zero, Passive House, Project Management, Remodeling/Renovation

### RBI Solar, Inc.

Cincinnati, Ohio  
513-618-7214

rbisolar.com

RBI Solar is a market leading provider of solar mounting systems. We design, engineer, manufacture, and install solar mounting systems for commercial and utility scale projects. As a specialist in fixed-tilt ground mount, single-axis tracker, carport, landfill and roof mount solar systems, we focus on providing best-in-class solar racking systems and project management capabilities to serve owners and integrators.

**Specialties:** Design/Build, Engineering, Mechanical Systems, Photovoltaics, Project Management

### Retrotec, Inc.

Everson, Washington  
604-732-0142

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:** Energy Auditing, Energy Monitoring, HVAC, Indoor Air Quality, Insulation, Mechanical Systems, Research

### RH Irving Homebuilders

Salisbury, New Hampshire  
603-344-6488

rhirvinghomebuilders.com

Specializing in High Performance building practices since 1972, R.H. Irving is one of New Hampshire's most experienced home builders. We are skilled in a wide variety of energy efficient and sustainable construction techniques, including high performance construction, super insulation, triple glazed windows, air sealing, heat recovery ventilation systems, designs that utilize natural daylight and passive solar heat, panelized stick framing, and post & beam construction. Our high performance building practices result in unparalleled comfort, healthy indoor air

quality, low heating costs, and long term affordability.

**Specialties:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation

### Richard Renner | Architects

Portland, Maine  
207-773-9699

rennerarchitects.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:** Architecture, Deep Energy Retrofit, Design/Build, Net Zero

### Right Environments

Brooklyn, New York  
917-588-0378

rightenvironments.com

Technical consulting for energy efficiency and environmental quality in buildings. Envelope detail consulting and MEP for new construction/extensive renovation. Projects in NY, CT, MA, ME, etc. Certified Passive House Consultant.

**Specialties:** Building Envelope, Consulting, Deep Energy Retrofit, Mechanical Systems, Passive House, Remodeling/Renovation

### Ripcord Engineering

Portland, Maine  
207-835-4060

ripcordengineering.com

Ripcord Engineering offers integrated high-efficiency HVAC and plumbing design, Energy Modeling, and Mechanical Commissioning for Commercial and Residential buildings. On time. On top.

**Specialties:** Affordable Housing, Certification/Commissioning, Consulting, Energy Modeling, Engineering, Mechanical Systems, Passive House

### RJ Aley Building Contractor

Westport, Connecticut  
203-226-9933

rjaley.com

We specialize in energy efficient home remodeling, green building & historic preservation. Our projects include additions, bathrooms, kitchens and whole house renovations that blend seamlessly with the architectural style & period details of your home while enhancing its energy efficiency, functionality and comfort. We pride ourselves on attention to detail, and re-enforce our commitment to high standards through ongoing education in energy efficiency and sustainable building materials and methods. We strive to establish a relationship with our clients based on trust and integrity.

**Specialties:** Deep Energy Retrofit, Design/Build, General Contractor, Historic Restoration, Insulation, Remodeling/Renovation

### RL Benton - Builder

Center Sandwich, New Hampshire  
603-284-6860

linkedin.com/pub/richard-benton/10/186/14b

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:** Carpentry/Cabinetry, Design/Build, Solar Thermal, Timber Framing

### Rodman CPAs

Waltham, Massachusetts  
617-965-5959

rodmancpa.com

Rodman CPAs provides tax advisory, accounting, and business strategy services to small and mid-sized emerging and established businesses. The firm



## R.H. Irving Homebuilders

# Fossil Fuel Free High Performance Homes

Zero Energy Modulares or Site-Built

Deep Energy Retrofits

High Performance Upgrades for existing homes

# 1st

Place

NH Saves Drive to Net Zero contest

**Bob Irving Owner/Builder** · Serving New Hampshire & Eastern Vermont

603.648.2635 · rhirvinghomebuilders.com · bob@rhirvinghomebuilders.com

combines the innovative and strategic approach associated with large accounting firms with the personal touch of a smaller CPA firm. The firm works with clients across a range of industries, with a particular expertise in the clean energy sector. Rodman's "Green Team" are domain experts in alternative energy, offering tax advisory, financial, and accounting services and Investment Tax Credit (ITC) studies for cleantech companies involved in solar, wind, biomass, and energy efficiency projects.

**Specialties:** Finance, Legal/Accounting

#### RSP Systems

Bronx, New York  
718-991-6999  
rsp-systems.com

Authorized Capstone Microturbine distributor for NY & CT. RSP Systems helps customers in the greater New York and CT area that need significant thermal energy to run their facilities. We choose and implement the best solution for their on-site power-generation needs. We know that a reliable, secure power system is an essential component in our customers' business plans and success, so we work closely with them to understand their requirements and then design and deliver the most cost-effective system available. We offer Capstone® microturbines which is the best selection of equipment and support services available in the industry. Capstone® microturbines can operate on a variety of gaseous or liquid fuels and emit very low emissions, making them clean, green, reliable sources of energy.

**Specialties:** Cogeneration/CHP

#### RST Thermal

Westwood, Massachusetts  
781-320-9910  
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:** HVAC, Mechanical Systems

#### RXR Realty

New York, New York  
212-797-1330  
rxrealty.com

RXR is a New York-based, approximately 500-person vertically integrated real estate operating and development company with expertise in a wide array of value creation activities, including distressed investments, uncovering value in complex transactions, structured finance investments and real estate development. RXR's core growth strategy is focused on New York City and the surrounding region.

**Specialties:** Development, Real Estate

## S

#### SAF Systems, Inc.

Somerville, Massachusetts  
727-688-5072  
saf-usa.com

We supply an amazing wall paneling system that can insulate the building with the power of the sun. This lean, green technology uses passive solar heat gain instead of layers and layers of insulation to reduce the heating load by up to 90%. Designed and developed in Switzerland, we are now bringing it to North America with all our European expertise to go with it.

**Specialties:** Consulting, Deep Energy Retrofit, Insulation, Net Zero, Passive House, Photovoltaics

#### Sage Builders, LLC

Newton, Massachusetts  
617-965-5272  
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:** Construction Management, Consulting, Deep Energy Retrofit, Design/Build, Project Management

#### Scenic Window Company, LLC

Greenfield, Massachusetts  
413-774-9946  
scenicwindowcompany.com

We offer complete design, sales, installation and service of European Tilt & Turn windows and doors. We have over 30 years experience in the construction industry. The last dozen of those years have been spent involved in energy efficient projects & products. At Scenic, we work with just one well established Polish manufacturer and just one US based shipper. This loyalty and commitment to single sourcing helps us assure control over the process, and allows us to provide superior quality, value and constant lead times. We also offer tilt turn windows and doors made right here in the US.

**Specialties:** Windows

#### Second Street Associates, LLC

Boston, Massachusetts  
617-821-2429  
distillerynorth.com

Second Street Associates is a real estate developer in South Boston, currently building a 65 residential unit Passivhaus, along with café, food store, greenhouse, theatre, roof gardens, and transportation system for the 300 people who will be on the site. Passivhaus buildings use 90% - 95% less energy for heating and cooling than new buildings to code, and 70% reductions overall. We use environmentally state of the art materials and technologies, most imported from Europe, and are developing our own innovative technologies around Interior Air Quality, transportation, urban food, health and exercise, and natural light management.

**Specialties:** Community Planning, Development, Passive House, Real Estate

#### SegoDesign

Concord, Massachusetts  
617-335-8731  
segodesign.com

SegoDesign creates beautiful, dynamic, and inspiring landscapes. Our custom-designed, sensitively place-based, low-maintenance landscapes delight, feed, and elevate.

**Specialties:** Landscape Design

#### Sellers Lathrop Architects, LLC

Westport, Connecticut  
203-222-0229  
sellerslathrop.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:** Architecture, Design/Build, Remodeling/Renovation

#### Shoreline Builders, Inc.

Scituate, Massachusetts  
781-544-3360  
shorelinebuilders.net

Shoreline Builders provides new-construction and addition/renovation services to residents on Boston's south shore and Cape Cod. Our approach to developing a High-Performance Home is to craft a plan that results in a durable, comfortable, healthy, energy efficient and environmentally responsible place for our clients to live. At Shoreline Builders, we create an experienced collaborative team of Client/Architect/Builder that combines our expertise in design, building science and project delivery with the values of our clients.

**Specialties:** Construction Management, Deep Energy Retrofit, Design/Build, Remodeling/Renovation

#### Smart Energy of New England, Inc.

Colebrook, New Hampshire  
800-608-5840  
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.

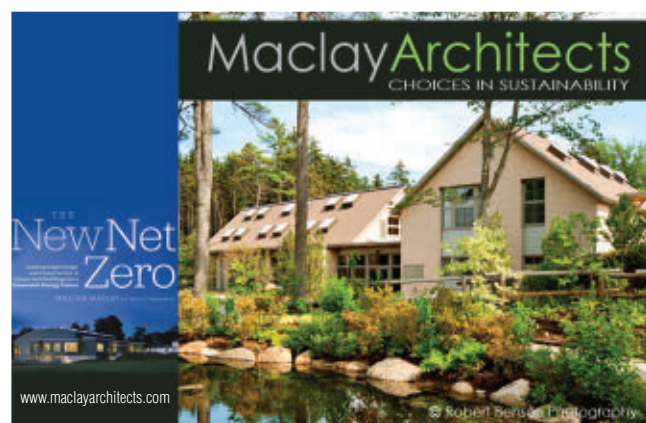
**Specialties:** Consulting, Photovoltaics, Solar Thermal, Wind

#### SolaBlock

Easthampton, Massachusetts  
413-687-2853  
solablock.com

SolaBlock 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:** Certification/Commissioning, Community Planning, Net Zero, Passive House, Photovoltaics



## Solar Store of Greenfield

Greenfield, Massachusetts  
413-772-3122  
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 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 t-shirts are available.

**Specialties:** Consulting, Energy Storage, Photovoltaics, Solar Thermal

## Solar Wave Energy, Inc.

Cambridge, Massachusetts  
617-242-2150  
solarwave.com

Solar Wave Energy has been installing and servicing solar energy systems since 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](http://www.solarwave.com).

**Specialties:** Certification/Commissioning, Energy Auditing, Energy Monitoring, Solar Thermal

## Solaris

Englewood, Colorado  
720-474-6050  
solaris-shop.com

Solaris distributes solar panels and complete solar power systems for residential and commercial applications. We enable do it yourself homeowners and installers to go solar for less, with wholesale pricing, quality components and excellent customer service.

**Specialties:** Building Supply, Photovoltaics

## Solect Energy Development

Hopkinton, Massachusetts  
508-598-3511  
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:** Incentives, Photovoltaics, Public Policy

## SOTA Construction Services, Inc.

Pittsburgh, Pennsylvania  
412-766-4630  
sotaconstruction.com

We are a leading regional provider of sophisticated, cost-effective sustainable buildings, with our

experience ranging widely over the decades from LEED, Energy Star, and now including Passive House. As part of our commitment to better and healthier buildings, we are a financial supporter of the Green Building Alliance and Conservation Consultants, Inc., in Pittsburgh and have been a long-time member of the United States Green Building Council. Our president, Ernie Sota, has been involved in sustainable approaches to construction since 1977, creating one of Pittsburgh's very first green buildings in the Roland Street Urban Rooftop Bio-shelter.

**Specialties:** Construction Management, Passive House, Project Management

## South Mountain Company

West Tisbury, Massachusetts  
508-693-4850  
southmountain.com

South Mountain Company is a fully integrated architecture, engineering, building, and renewable energy firm located on Martha's Vineyard. SMC is employee-owned; 21 of its 35 employees are owners and the rest are on a track to ownership. We are committed to a Triple Bottom Line, which means that people, planet, and profit are all equally important to us - balancing profits with environmental restoration, social justice, and community engagement.

**Specialties:** Architecture, Deep Energy Retrofit, Design/Build, Engineering, Net Zero, Photovoltaics

## Sparhawk Group

Yarmouth, Maine  
207-846-7726  
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:** Certification/Commissioning, Consulting, Energy Auditing, Engineering, Mechanical Systems

## Spartan Solar

Greenfield, Massachusetts  
413-768-0095  
gospartansolar.com

Spartan Solar is a full service solar hot water provider based in Greenfield, Massachusetts. Solar hot water is the solar that comes with a battery.

**Specialties:** Consulting, Design/Build, HVAC, Net Zero, Solar Thermal

## Steele Kellogg AIA

Madison, New Jersey  
973-377-5757  
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, Remodeling/Renovation

## Stephen Turner, Inc.

Providence, Rhode Island  
401-273-1935  
buildingcommissioning.com

Stephen Turner 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, retro commissioning, ongoing commissioning of existing buildings, and commissioning of system retrofits.

**Specialties:** Certification/Commissioning, Construction Management, Energy Auditing

## Steven Winter Associates, Inc.

New York, New York  
203-857-0200  
swinter.com

Steven Winter Associates provides research, consulting and advisory services to improve commercial, residential and multifamily built environments for private and public sector clients. We specialize in energy, sustainability and accessibility consulting as well as certification, research & development and compliance services. Our engineers and architects have led the way since 1972 in the development of best practices to achieve high performance buildings. As a matter of course, we collaborate with our clients to produce the most cost-effective and innovative solutions.

**Specialties:** Architecture, Certification/Commissioning, Community Planning, Consulting, Design/Build, Education, Energy Auditing, Engineering, HERS Rater, HVAC, Indoor Air Quality, Insulation, Net Zero, Passive House, Photovoltaics, Research

## Steveworks, LLC

Newton, Massachusetts  
617-201-0121  
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



*Jim Muka*  
Independent Window Representative

Office Tel: 413-774-6975  
Cell: 413-834-7003  
E-mail: [jimmuka212@gmail.com](mailto:jimmuka212@gmail.com)

Estimating • Quotes • Service

MSORA Windows and Doors  
[www.m-sora.si/en](http://www.m-sora.si/en)

Passive House Aluminum Clad / Wood • Tilt-Turn • Lift / Slide and Swing Doors



Net Zero Energy since 2014

ALFANDRE ARCHITECTURE

We are a full service architecture firm with offices located in the beautiful Hudson Valley

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:** Building Envelope, Deep Energy Retrofit, Design/Build, General Contractor, Remodeling/Renovation

**Stiebel Eltron, Inc.**

West Hatfield, Massachusetts  
413-247-3380  
stiebel-eltron-usa.com

Stiebel Eltron is the world leader of advanced water heating technology. Founded in Germany in 1924 by Dr. Theodor Stiebel, the company is still family owned. The product line has grown to include whole house and point-of-use tankless electric water heaters, including the Tempra® Plus with German-patented Advanced Flow Control™, commercial/industrial three-phase water heaters, mini-tank and wall-mounted water heaters, air-to-water heat pump water heaters, plus small, quiet electric space heaters and contemporary, high efficiency touchless hand dryers. Stiebel Eltron is known world-wide for its engineering and manufacturing expertise and its drive to develop innovative products with greater energy efficiency, convenience, and reliability.

**Specialties:** Solar Thermal

**studioWEBSTER**

Pelham, Massachusetts  
413-992-2932  
studio-webster.com

A residential design firm focusing on high performance housing, deep energy retrofits, net zero homes, passive new construction and existing buildings in Western New England.

**Specialties:** Building Envelope, Deep Energy Retrofit, Insulation, Net Zero, Passive House, Project Management, Remodeling/Renovation

**Sublime Windows, LLC**

Greenfield, Massachusetts  
413-829-7923  
sublimewindows.com

Sublime Windows is making the most energy efficient European-Style windows available to the Northeastern US. Our products have been carefully designed to optimize real-life performance for our specific climate. Windows are a significant component of the larger building system, and our experience goes beyond the window products that we sell. We have a solid understanding of building science, energy modeling, architectural detailing, and construction techniques related to energy efficient buildings.

**Specialties:** Windows

**Sullivan County Office of Sustainable Energy**

Monticello, New York  
845-807-0578  
sullivanny.us/Departments/SustainableEnergy  
The Sullivan County Office of Sustainable Energy (OSE) works to develop cost effective projects, policies and practices that make County operations and our surrounding community more sustainable, resilient, healthy, energy efficient and environmentally responsible. The OSE works to achieve these goals in County operations and throughout the community by providing research, analysis, strategies, informational outreach and project support on a range of issues relating to sustainability, and by working in close coordination with numerous County departments, local and state agencies and community organizations to maximize the resources available to the County and its residents.

**Specialties:** Public Policy

**SunBug Solar**

Arlington, Massachusetts  
617-500-3938  
sunbugssolar.com  
Founded in 2009, SunBug Solar has designed and installed over 800 solar systems all across Massachusetts, ranging in size from 1kW to over 500kW. We deliver the highest-quality solar solutions in conjunction with the best possible customer experience. Our integrated approach—from initial education through consultative design to quality installation and ongoing support—has earned SunBug the highest reputation for customer service, and a host of satisfied residential and commercial customers.

**Specialties:** Photovoltaics, Solar Thermal

**SunCommon**

Waterbury, Vermont  
802-882-8181  
suncommon.com  
Serving over 7000 homes, schools, and businesses in NY and Vermont, we're building a resilient power system while using our business as a force for good. We break down barriers to clean energy every day by making it affordable for everyone to go solar at no upfront cost. And it's easy – our experienced team goes to work for you, using the highest quality equipment in the world.

**Specialties:** Photovoltaics

**Sustainable Comfort, Inc.**

Worcester, Massachusetts  
508-713-6680  
greenrater.com  
Sustainable Comfort is a consulting, development, and property management firm with expertise in energy efficient multifamily housing. SCL specializes in ENERGY Star Homes, LEED for Homes, Enterprise Green Communities, Passive House, HERS Rating, State Incentive Programs, and Code Compliance. We are a small group who hold the conviction

that through better construction practice and management, we can help developers, architects, contractors and residents achieve healthier, resilient, and sustainable multi-family buildings. Our vision is to move the multifamily market to conscious development and management that results in sustainable buildings that support the people who build them, call them home and the communities that surround them.

**Specialties:** Affordable Housing, Building Envelope, Carpentry/Cabinetry, Certification/Commissioning, Community Planning, Construction Management, Consulting, Deep Energy Retrofit, Development, Energy Modeling, General Contractor, HERS Rater, Incentives

**Sustainable Energy Analytics**

Waltham, Massachusetts  
781-790-5718  
sea.us.com  
Sustainable Energy Analytics is a growing service company centered on Energy Efficiency and Resiliency in the Residential New Construction Sector. Our current product set includes energy code compliance/verification, state incentive program support, various energy, air, and resiliency certifications, building science consulting, HVAC equipment & building envelope testing, and premium energy audits. We offer our services primarily in eastern Massachusetts with occasional projects in the New England region.

**Specialties:** Consulting, Design/Build, Energy Monitoring, HERS Rater, HVAC, Indoor Air Quality, Insulation

**SWZ Architects, LLC**

Winchester, Massachusetts  
617-890-8907  
swzarchitectsllc.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, Deep Energy Retrofit, Net Zero, Remodeling/Renovation

**Symmetry Electric**

Somerville, Massachusetts  
781-738-6180  
symmetry-electric.com

**Specialties:** Electrical

**T**

**Taggart Construction, Inc.**

Freeport, Maine  
207-865-2281  
tagcon.com  
Residential and commercial design/build construction company, emphasizing energy efficient, environment



**NEW ENERGY WORKS**  
design | timberframing | woodworks  
800.486.0661  
newenergyworks.com



**22**  
RECLAIMED AND SUSTAINABLE  
UL GREENGUARD GOLD CERTIFIED  
OPTIONS IN YOUR PALETTE

**Pioneer millworks**  
RECLAIMED & SUSTAINABLE WOOD PRODUCTS  
800.951.9663  
pioneermillworks.com



friendly and occupant healthy building solutions. Architectural services, construction management, value engineering, historic restoration and custom woodworking.

**Specialties:** Carpentry/Cabinetry, Construction Management, Deep Energy Retrofit, Design/Build, General Contractor, Healthy Materials, Historic Restoration, Net Zero, Passive House, Project Management, Property Management, Remodeling/Renovation, Windows

#### **Tecogen, Inc.**

Waltham, Massachusetts  
781-466-6451  
tecogen.com

Energy efficiency re-imagined for tomorrow's heating, cooling and power. Tecogen natural gas engine-driven cogeneration, air conditioning and water heaters supply electric power, cooling or hot water while free heat from the engine is recovered and purposefully used on site. Benefits are dramatic reductions in energy costs and greenhouse gas emissions. Backed by Tecogen engineers and maintenance professionals, customers are assured their equipment will perform well into the future. Visit us at [www.tecogen.com](http://www.tecogen.com).

**Specialties:** Cogeneration/CHP, HVAC

#### **The Green Engineer, Inc.**

Concord, Massachusetts  
978-369-8978  
greenengineer.com

The Green Engineer 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, the firm has a technical staff of fifteen LEED-Accredited Professionals. The expert team brings to the table experience and perspective from a variety of backgrounds including engineering, architecture, construction, planning, development, and public policy.

**Specialties:** Certification/Commissioning, Construction Management, Consulting, Energy Modeling, Engineering, Project Management

#### **The Pakatar Group**

Watervliet, New York  
518-874-1604

[stonehenge-associates.com](http://stonehenge-associates.com)

The Pakatar Group is a family owned consultancy serving the energy, sustainable and built environment. We specialize in air leakage testing, envelope consulting and commissioning, energy modeling and code consulting. We serve the northeast including New York, Massachusetts, New Hampshire, Connecticut and Vermont.

**Specialties:** Certification/Commissioning, Construction Management, Consulting, Education, Energy Auditing, Energy Modeling, HERS Rater, Project Management

#### **The Valle Group**

East Falmouth, Massachusetts  
508-548-1450  
vallegroup.com

The Valle Group sets the standard for thoughtfully-planned communities in southern New England. The company's special expertise is planning and creating communities of quality, energy-efficient homes, and building and remodeling for homeowners.

**Specialties:** Construction Management, Deep Energy Retrofit, Design/Build, Passive House

#### **Thompson Johnson Woodworks**

Peaks Island, Maine  
207-653-1392  
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:** Deep Energy Retrofit, Design/Build, Remodeling/Renovation

#### **Thornton Tomasetti, Inc.**

Portland, Maine  
207-347-5066  
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:** Certification/Commissioning, Consulting, Energy Auditing, Energy Modeling, Engineering, Net Zero, Passive House

#### **Thoughtforms Corporation**

Acton, Massachusetts  
978-263-6019  
thoughtforms-corp.com

Thoughtforms Corporation specializes in building high-end custom homes and unique institutional buildings in eastern Massachusetts. Clients trust Thoughtforms to deliver custom quality in a transparent and informative way and to be a partner for the long-term. The quality clients expect extends far beyond the level-of-finish and what can be seen in the here-and-now and includes the health and comfort of the indoor environment, energy use, durability, and technology among other elements.

**Specialties:** Carpentry/Cabinetry, Construction Management, Consulting, Design/Build, Landscape Design, Passive House, Remodeling/Renovation

#### **Threshold Building Co.**

Shelburne Falls, Massachusetts  
413-489-0042  
ThresholdBuildingCo.com

With dedication to craft, people, and place, Threshold Building Co. offers the highest quality finish work, timber frames, and high performance building to the community of Western Massachusetts and beyond. We lead a committed client, a forward thinking design team, talented builders, and excellent subcontractors to complete projects with integrity and beauty. These projects combine form and function for the way people live today, and provide durability for the future. Threshold's mission is to provide Western Massachusetts with comprehensive building services focusing on quality craftsmanship, sustainable building practices and clear customer communication.

**Specialties:** Construction Management, Deep Energy Retrofit, Design/Build, Remodeling/Renovation, Timber Framing

#### **Tim McCarthy Architect, PC**

North Bangor, New York  
518-353-4541  
[facebook.com/pages/category/Professional-Service/Tim-McCarthy-Architect-PC-124189404321421](https://facebook.com/pages/category/Professional-Service/Tim-McCarthy-Architect-PC-124189404321421)

We provide architecture and construction management services. We live and work in the Lake Placid, Potsdam, Saranac Lake, Malone areas.

**Specialties:** Architecture, Construction Management, Design/Build, Net Zero, Prefab/Modular

#### **TimberHomes Vermont**

Vershire, Vermont  
802-685-7974  
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:** Construction Management, Design/Build, Net Zero, Timber Framing

#### **Timeless Architecture**

Milton, Massachusetts  
617-696-6448  
timearch.com

Mr. MacLean is an architect, educator and licensed builder who began his career as a project manager with a number of large architectural firms in Boston before he started his own firm, Timeless Architecture in 1988. He has been promoting and teaching Green Design for 25 years, starting with the Boston Society of Architects, where he served as co-chair of the Committee on the Environment (COTE), a sub-committee of the BSA that promotes sustainable design in the New England Region. He has taught and developed ongoing curricula at the Boston Architectural College, Sustainable Design Institute and Master's program.

**Specialties:** Architecture, Design/Build, Net Zero

#### **Tishman Speyer**

New York, New York  
212-715-0300  
tishmanspeyer.com

At Tishman Speyer, we convert opportunity into value through our expertise in every aspect of real estate. Our global professionals work collaboratively across disciplines and borders to bring together market-driven insights, experience and expertise. All of which allow us to create properties of enduring value around the world.

**Specialties:** Construction Management, Development, Finance, Real Estate

#### **Treehouse Design, Inc.**

Rockport, Massachusetts  
978-546-8302  
treehousedesigninc.com

Treehouse Design was founded in 1990 to provide architectural and construction management services for the needs of the vibrant, historically-rich coastal communities of Cape Ann. Currently, our company employs 20 individuals with a broad range of skills and experience, from architects and interior designers to construction managers and cabinet makers. Our office and workshop is located in Rockport, MA, where we take on a broad range of projects, from individual furniture commissions to multi-unit housing developments. Our primary focus, however, is single-family residential design and construction.

**Specialties:** Architecture, Carpentry/Cabinetry, Construction Management, Design/Build

#### **Tri-Star Equities, Inc.**

New York, New York  
212-751-4800  
tristareq.com

Tri-Star Equities has specialized in property management for small residential and commercial owners in Manhattan for over 25 years and has become a trusted advisor to many long-term clients. Our success in real estate management is due to personalized client services, in-depth market knowledge, strong relationships with vendors and professional service providers, and a passionate commitment to maintaining buildings at a high standard. At Tri-Star, our team consisting of property managers, building staff, and outside architects, engineers, and contractors work collaboratively to solve problems.

**Specialties:** Property Management

#### **Trillium Architects, LLC**

Ridgefield, Connecticut  
203-438-4540  
trilliumarchitects.com

We are a woman 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, Deep Energy Retrofit, Design/Build, Net Zero, Remodeling/Renovation

#### **Truth Box, Inc.**

Providence, Rhode Island  
401-453-1300  
truthbox.com

We are a small architecture firm specializing in sustainable, energy-efficient design. We believe that high quality design and green building go hand-in-hand, and that higher performance does not necessarily mean higher costs. We work on a variety of project types - new single family homes, mill building renovations, new multi-family, and commercial buildings - and we particularly enjoy urban infill and re-purposing old buildings.

**Specialties:** Affordable Housing, Architecture, Building Envelope, Design/Build, Development, Net Zero, Real Estate

#### **Two Storey Building**

Bolton, Massachusetts  
617-438-0313  
twostoreybuilding.com

Two Storey Building, started by brothers Doug & Bill Storey in 2001 in Bolton, Massachusetts, is a custom builder of fine, energy efficient, healthy homes, and remodeling projects including whole house remodeling, kitchen, bathroom and basement remodeling, home additions, sunrooms, and decks. Two Storey Building built the first Silver LEED certified home in Massachusetts, many Energy Star Certified and Stretch Code certified homes and Doug Storey has received the Certified Green Professional (CGP) designation from the NAHB. Two Storey Building is registered with the EPA and is a Lead Safe Certified Firm under the new Renovation, Repair and Painting (RRP) Guidelines issued by the EPA. Doug, Bill and Mat are all Certified Lead Renovators.

**Specialties:** Deep Energy Retrofit, Design/Build, Project Management, Remodeling/Renovation

## U

#### **Uncarved Block, Inc.**

Becket, Massachusetts  
413-464-2598  
uncarvedblockinc.com

Uncarved Block is a design/build organization that combines historic building techniques with modern technology and an eye towards the artistic. We specialize in energy efficient structures primarily built with local wood and stone.

**Specialties:** Deep Energy Retrofit, Design/Build

#### **United Illuminating Company**

New Haven, Connecticut  
203-499-2923  
uinet.com

The United Illuminating Company (UI), Southern Connecticut Gas Company (SCG) and the Connecticut Natural Gas Company (CNG) are administrators of the residential, commercial, and 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:** Consumer Information, Energy Distribution, Incentives

#### **Unity Homes**

Walpole, New Hampshire  
603-756-3600  
unityhomes.com

Unity is dedicated to building better homes for more people. We do this by using sophisticated technology and innovative prefabrication to streamline the process, minimize waste and guarantee performance.

**Specialties:** Design/Build, Prefab/Modular

#### **Urban Habitat Initiatives Inc.**

Boston, Massachusetts  
617-423-5566  
usgbc.org/organizations/urban-habitat-initiatives-inc

Urban Habitat Initiatives 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:** Consulting, Energy Modeling, Project Management

## V

#### **Valley Home Improvement**

Northampton, Massachusetts  
413-584-7522  
valleyhomeimprovement.com

Valley Home Improvement is a 3 tiered residential design/build remodeling company serving the Pioneer Valley for more than two decades. In conjunction with our full service remodeling work, Valley Solar offers PV design and installation, and our Weatherization division implements a wide range of energy conservation measures.

**Specialties:** Deep Energy Retrofit, Design/Build, Insulation, Photovoltaics, Remodeling/Renovation

#### **Valley Solar, LLC**

Florence, Massachusetts  
413-584-8844  
valleysolar.solar

Valley Solar provides homeowners and small businesses in western Massachusetts with efficient and affordable solar power systems. We install roof, grow, trackers, power and storage solutions. We are the solar energy division of Valley Home Improvement with over 25 year of award-winning home improvement and exceptional customer satisfaction.

**Specialties:** Photovoltaics

#### **Ventacity Systems, Inc.**

Portland, Oregon  
888-836-8458  
ventacity.com

People need fresh, clean air inside where they live and work. Ventacity produces dedicated outdoor air systems (DOAS) with heat recovery ventilation (HRV) - the most efficient way to keep a building, and the people in it, healthy and comfortable. Ventacity's products enable HVAC engineers to design buildings that reduce energy use by 50% by separating ventilation from air conditioning and applying heat recovery technology along with heat pumps to a building. If fully deployed, commercial heat recovery systems could reduce US carbon dioxide emissions by 220 million metric tons each year. That's the same global warming impact as removing 19% (49 million) of US passenger cars from the road.

**Specialties:** HVAC, Indoor Air Quality

#### **Vermont Energy Investment Corporation (VEIC)**

Burlington, Vermont  
802-658-6060  
veic.org

Efficiency Vermont provides technical assistance, rebates, and other financial incentives to help Vermont households and businesses reduce their energy costs with energy-efficient equipment, lighting, and approaches to construction and major

renovation. Efficiency Vermont partners extensively with contractors, suppliers, and retailers of efficient products and services throughout the state.

**Specialties:** Consulting, Consumer Information, Incentives, Public Policy

#### **Vermont Integrated Architecture, PC**

Middlebury, Vermont  
802-989-7249  
vermontintegratedarchitecture.com

Vermont Integrated Architecture is a full-service architectural design firm. We strive to strengthen communities, support local economies, and sustain healthy environments while creating beautiful, functional spaces.

**Specialties:** Architecture, Energy Modeling, Healthy Materials, Historic Restoration, Net Zero, Passive House, Remodeling/Renovation

#### **Village Carpentry and Landscaping**

Southampton, Massachusetts  
413-824-0204  
villagecarpentryma.com

Our company is a full service construction company which works with clients to plan and build anything from house repairs to completed homes. Our main focus is on timber framing with local timbers and in helping clients limit or eliminate their use of plywood and foam insulation. We are always researching new methods to use locally available environmentally sustainable solutions to make modern homes healthier and more comfortable, including local lumber, cellulose insulation, dry laid stone foundations, natural plasters, etc.

**Specialties:** Carpentry/Cabinetry, Construction Management, Deep Energy Retrofit, Design/Build, Healthy Materials, Landscape Design, Timber Framing

#### **VSECU**

Montpelier, Vermont  
800-371-5162  
vsecu.com/vgreen

VSECU is a Vermont-based, member-owned credit union. When you join, you're powering a movement for cooperative finance, neighbor helping neighbor to improve all members' lives. Our special solar and energy improvement consumer loans feature discounted rates, extended terms and are available for NESEA members to invest in their energy-saving goals.

**Specialties:** Finance

## W

#### **Wagner Development**

Lowell, Massachusetts  
508-451-3202  
wagnerdevelopmentcorp.com

Founded in 2009, Wagner Development is a full-service remodeling firm that provides services to Lowell, MA and surrounding communities. We are committed to providing quality residential remodeling projects built in a safe, clean environment with excellent craftsmanship and unwavering communication. Wagner Development is a proud member of the Northeast Sustainable Energy Association and the National Association of the Remodeling Industry.

**Specialties:** Deep Energy Retrofit, Design/Build, Net Zero, Passive House, Remodeling/Renovation, Windows

#### **Walker Cellar Works**

Harrisville, New Hampshire  
603-827-9999  
walkercellarworks.com

Specializing in energy retro-fits for historic homes & cellars, basement finishing systems from wine storage to home theater & problem basement consultation.

**Specialties:** Deep Energy Retrofit, Design/Build, Remodeling/Renovation

**Warren Construction Group, Inc.**

South Freeport, Maine  
207-865-3522  
warrenconstructiongroup.com

Warren Construction Group's guiding principle is to successfully plan and build each project to the highest possible level of satisfaction for both the client and architect. Our staff is comprised of talented, experienced craftsmen, carpenters, managers, and field personnel, who are dedicated to the development and realization of the commercial, institutional, and residential projects we undertake. We work with a broad spectrum of like-minded trades people and subcontractors who share our work ethic, who adhere to safe building practices, and who perform their jobs to our exacting specifications.

**Specialties:** Building Envelope, Carpentry/Cabinetry, Construction Management, Deep Energy Retrofit, Passive House, Project Management, Remodeling/Renovation

**Warren Design Build**

Berlin, Massachusetts  
978-621-7619  
warrendesign.com

Over 30 years experience using current building science techniques to design and build durable, low maintenance, healthy, low-impact homes.

**Specialties:** Design/Build

**Water Energy Distributors**

Hampstead, New Hampshire  
603-329-8122  
northeastgeo.com

In continuous operation since 1974, the Water Energy Distributors, Inc. team has designed and equipped with 18,000 Carl Orio geosystems in support of the professional geothermal installer. Water Energy is the largest and oldest distributor of geothermal HVAC equipment and related design in the northeast. We currently partner with over 1,000 installers, architects, engineers and other professionals throughout New England and nearby New York State.

**Specialties:** Geothermal, HVAC, Mechanical Systems

**West Hill Energy And Computing**

Brattleboro, Vermont  
802-246-1212  
westhillenergy.com

Since 1991, West Hill Energy and Computing has been on a mission to provide robust and reliable evaluations of public and private efforts to reduce energy use. Our interdisciplinary staff brings the experience and knowledge to implement effective evaluation strategies addressing impact, economic, net to gross and policy issues. Our team uses tried and true methods, such as billing analysis and MG&V, as well as developing creative approaches to address intractable or unusual issues. Each principal has over 25 years of experience and specializes in the evaluation, measurement and verification of energy efficiency programs.

**Specialties:** Consulting, Energy Auditing, Energy Modeling

**Whole Forest**

Quakertown, Pennsylvania  
845-649-2458  
wholeforest.com

We focus on fostering a symbiotic relationship between local communities, threatened rainforests, and consumers. Our mission is to build a strong forestry economy in Cristóbal Colón, a small town in the coastal region of Ecuador. This economy will conserve local rainforests and connect communities to international green markets, thus reversing tropical deforestation. Tropical deforestation causes 15% of the global carbon emissions leading to climate change. We're implementing a new type of business strategy that addresses the primary drivers of deforestation.

**Specialties:** Carpentry/Cabinetry, Design/Build

**Wolfworks, Inc.**

Avon, Connecticut  
860-676-9238  
homesthatfit.com

We are guides. We guide a process for clients who are prepared to design and build collaboratively and responsibly. Together we create spaces that look great, work well, and feel good to be in.

**Specialties:** Deep Energy Retrofit, Design/Build, Historic Restoration

**Wood to Stone LLC**

Great Barrington, Massachusetts  
413-822-5779  
woodtostonellc.com

It is our mission to provide professional building services in a personal affordable process to enable our clients to build, repair, or improve their home. The Wood to Stone family consists of a diverse and talented crew. We foster a team approach, and take great pride in our professionalism, integrity, and enthusiasm. Striving for excellence, we merge a strong work ethic with talent, producing the highest quality work in the most efficient manner. Most small projects are designed by our talented in-house team. For larger projects, we have a close team of subcontractors that work with us every step of the way. We love to keep our business local and community-oriented.

**Specialties:** Carpentry/Cabinetry, Deep Energy Retrofit, Design/Build, Pavement/Masonry

**World Class Supply**

Newark, Delaware  
302-737-1441  
worldclasssupply.com

Our mission is to supply our customers with building science consulting as well representing high performance products that will help lead to a change toward zero-energy buildings. We are passionate when it comes to "Passive House" and have certified passive consultants and builders on staff to help you with your projects. We offer training on building envelope air tightness systems as well as WUFI Hygrothermal Analysis and THERM modeling.

**Specialties:** Building Supply, Consulting, Net Zero, Passive House

**Wright Builders, Inc.**

Northampton, Massachusetts  
413-586-8287  
wright-builders.com

Wright Builders has been a leader in sustainable and high performance construction for over 43 years. In Western MA and southern VT, we continue to bring creativity and ingenuity to every project regardless of size, striving for the highest quality and enduring value. Utilizing the guidelines for Energy Star and LEED Certification standards, all buildings are designed and constructed to protect and promote the health and wellness of its occupants, while reducing the overall impact of the construction on the environment.

**Specialties:** Community Planning, Construction Management, Design/Build, Net Zero, Passive House

**Wyeth Architects, LLC**

Chester, Connecticut  
860-526-5111  
WyethArchitects.com

Wyeth Architects is a Connecticut based architectural firm. We design for residential, institutional, and commercial clients. Our work has received numerous awards for design excellence. With decades of experience in new construction, renovation, and restoration, we know how to work within your budget to create designs that look good and feel right. We offer complete architectural services, from design consultation to construction documents and construction administration, as well as specialty services: energy conservation, historic preservation, and help with municipal approval processes.

**Specialties:** Architecture, Community Planning,

Construction Management, Consulting, Historic Restoration, Landscape Design, Net Zero, Passive House

**Y****Yankee Thermal Imaging**

Rochester, New Hampshire  
603-330-3377  
yankeethermalimaging.com

Yankee Thermal Imaging is a full service energy auditing and insulation construction firm specializing in your residential and commercial energy savings needs. Established in 2008, we are a New Hampshire established business based out of Rochester and servicing the entire New England area.

**Specialties:** Energy Auditing, Insulation

**Yanmar America**

Adairsville, Georgia  
770-877-9894  
yanmar-es.com

YANMAR's Energy Systems division began operation in 1984, and today has installed more than 375,000 Combined Heat and Power (CHP or cogeneration) and Variable Refrigerant Flow (VRF) Natural Gas Heat Pump systems worldwide. Using a YANMAR-designed, lean-burn Miller Cycle Gas Engine, which was developed from the company's world-class diesel engine technology, these environmentally friendly systems are designed for reliability, efficiency, energy conservation, comfort and long-term savings.

**Specialties:** Cogeneration/CHP, HVAC

**Yestermorrow Design/Build School**

Waitsfield, Vermont  
888-496-5541  
yestermorrow.org

We teach the arts of design and building as an integrated process, and provide instruction in fundamental skills. We offer nearly 100 classes in Land & Community Planning, Whole Structure Design/Build, Building Systems & Building Science, Woodworking & Craft and Tutorials.

**Specialties:** Education

**Yule Development Co., Inc.**

Newton Center, Massachusetts  
617-630-8540  
yuledevelopment.com

Yule Development Company is engaged in residential and commercial real estate development in the Greater Boston area. Our expertise is in identifying distressed real estate, designing creative solutions, implementing the resultant development plans, and managing the completed projects.

**Specialties:** Development, Project Management, Property Management, Real Estate

**Z****Zachau Construction**

Freeport, Maine  
207-329-2564  
zachauconstruction.com

A structure is only as sound as the foundation it rests upon. That goes for both buildings and the partnerships needed to put them in place. For almost fifty years, Zachau Construction has been nurturing the knowledge and relationships that have turned the visions we've shared into places that endure. That's the kind of plan for success we'd welcome building with you. Zachau has maintained a consistently high standard for service to its clients throughout its history, for projects of every size and scope. We have the depth of experience and operational insight to meet the challenges of special project requirements including: historical restorations and preservation, occupied spaces, environmentally sensitive areas, and off-hours work.

**Specialties:** Construction Management, Design/Build, Historic Restoration, Remodeling/Renovation

**Zehnder America, Inc.**  
Hampton, New Hampshire  
888-778-6701  
zehnderamerica.com

Zehnder America provides high quality heating and ventilation solutions to promote comfortable, healthy, and energy-efficient indoor living. Zehnder America is a division of the Zehnder Group, headquartered in Switzerland. The Zehnder Group is represented worldwide and specializes in advanced heating, cooling, and ventilation technology.

**Specialties:** HVAC, Indoor Air Quality

**ZeroEnergy Design**  
Boston, Massachusetts  
617-720-5002  
zeroenergy.com

ZeroEnergy Design creates beautiful, healthy buildings to empower families, uplift communities, and improve our living world. ZED was founded in 2005 with a commitment to deliver ecologically sensible architectural design for all clients as a best practice. To date, the firm has worked on hundreds of projects ranging from selective renovations to large new construction. Clients include homeowners, housing authorities, non-profit organizations, developers, and institutions. SERVICES: Architecture + Mechanical Design for Homes and Residential Buildings.

**Specialties:** Architecture, Consulting, HVAC, Mechanical Systems, Net Zero, Passive House

**Zone 6 Energy**  
New Haven, Vermont  
802-458-2386  
zone6energy.com

Zone 6 Energy specializes in air-sealing buildings in the dynamic climate of the northeast United States. We offer BPI certified blower door testing and leakage diagnostics, installation of air-sealing measures including AeroBarrier, and full test-out and documentation to ensure that your buildings meet all necessary code requirements for air-tightness. Our staff have over 40 years of combined experience constructing energy-efficient homes and buildings throughout New England; we are fully equipped to take care of your air-sealing requirements quickly and efficiently.

**Specialties:** Building Supply, Energy Auditing

## NESEA ACADEMIC MEMBER DIRECTORY

### A

**Amherst College**  
Amherst, Massachusetts  
413-542-2202  
amherst.edu

Amherst College prepares students to use ideas to make a difference in the world. Since our 1821 founding, Amherst has demonstrated steadfast confidence in the value of the liberal arts and the importance of critical thinking. Today, our financial aid program is among the most substantial in the nation, and our student body is among the most diverse. Small classes, an open curriculum and a singular focus on undergraduate education ensure that leading scholars engage daily with talented, curious students, equipping them for leadership in an increasingly global and complex world.

**Specialties:** Education, Research

### B

**Bishop Brady High School**  
Concord, New Hampshire  
406-546-2684  
bishopbrady.edu

Bishop Brady High School is a Catholic coeducational secondary school located in Concord, New Hampshire. Students of varied religious, social and academic backgrounds are a part of the Bishop Brady community. Bishop Brady is a center for the pursuit of academic excellence and for the development of the total person. It is a caring community where each person is invited to build quality interpersonal relationships and to exert a positive influence on the climate of the school. Bishop Brady is a school where students learn in a nurturing, creative atmosphere; where educators teach in a dedicated, professional manner, and where administrators know that caring is as important to the heart as knowledge is to the mind.

**Specialties:** Education

### G

**Greenfield Community College**  
Greenfield, Massachusetts  
413-775-1472  
gcc.mass.edu

GCC offers a Renewable Energy/Energy Efficiency program which provides students with the knowledge and skills needed for entry-level employment opportunities in the renewable energy/energy efficiency field; provides students already employed in the trades with knowledge and skills relevant

to specific renewable energy/energy efficiency technologies, as well as broader understanding of the scientific, economic and political context of the industry; provides students with a general education background combined with a comprehensive introduction to renewable energy/energy efficiency and technical and general electives with course work geared toward transfer requirements for a four-year Baccalaureate program.

**Specialties:** Education

### H

**Hampshire College**  
Amherst, Massachusetts  
413-559-6288  
hampshire.edu

The Environmental Studies and Sustainability Program (ESSP) brings together a rich grouping of courses, ongoing projects, campus programs, and speaker series that allows students to develop their own ways of combining the sciences, social sciences, and humanities to study and work on environmental and sustainability topics.

**Specialties:** Education

### P

**Putnam Vocational Technical Academy**  
Springfield, Massachusetts  
413-787-7424

spspa.ss18.sharpschool.com  
The Roger L. Putnam Vocational Technical Academy is steeped in a proud tradition of providing outstanding academic and technical education. Putnam's administration, faculty, staff and students work collaboratively to promote a school culture that fosters and supports the expectation of excellence among all our stakeholders, and, at the same time, respects diversity.

**Specialties:** Education

### U

**UMass Amherst Building and Construction Technology Program**  
Amherst, Massachusetts  
413-545-1976  
bct.eco.umass.edu

Building and Construction Technology (BCT) at UMass Amherst prepares undergraduate and graduate students for successful careers in the building industry.

**Specialties:** Education, Research

**University of Maine at Augusta  
Bachelor of Architecture Program**

Augusta, Maine  
207-832-5116  
uma.edu/academics/programs/architecture

The University of Maine at Augusta's Architecture program is rooted in three essential elements. The first is the mission to engage community; this is where our work takes place. The second is the desire to work in collaboration, both within and without the university; this is what allows us to affect positive change. And third is seen in our curriculum, based in the idea of being "grounded in real"; these are the tools we use to affect our collective built environment.

**Specialties:** Education

### W

**Western New England University**  
Springfield, Massachusetts  
413-782-1739  
wne.edu

The Western New England University College of Engineering is dedicated to giving you a premier education that will stimulate your ingenuity, inspire your imagination, and make you a productive contributor to the field of engineering. No matter which major you choose to study, our dedicated faculty and hands-on design projects will prepare you to improve people's lives through the power of engineering.

**Specialties:** Education, Research

### Z

**Zilkha Center for Environmental  
Initiatives of Williams College**

Williamstown, Massachusetts  
413-597-4462

sustainability.williams.edu/zilkha-center-mission  
The Zilkha Center for Environmental Initiatives is committed to protecting and enhancing the natural and built environment in which we learn, work, and live. We research, investigate, support, promote and implement sustainability programs and educational initiatives. We work with faculty, staff and students, and local and national organizations to deepen our understanding of our impact on the earth's resources and our responsibilities for developing a sustainable future. In working towards that future, we aim to support the global effort to advance environmental sustainability. At the core of our approach is the belief that sustainability means meeting the needs of our current generation without compromising the ability of future generations to meet their needs.

**Specialties:** Community Planning, Education, Research

# pemco

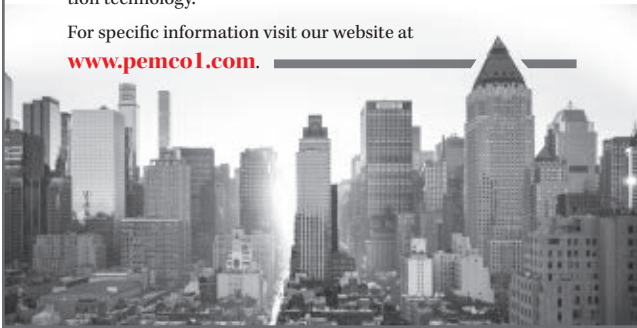
PROCESS AND ENERGY MEASUREMENTS CORPORATION

PEMCO provides the latest and best technology for measurement of cooling and heating energy. With NESEA's focus on energy efficiency one of the most important steps is to measure energy consumption prior to and after efforts to conserve energy.

PEMCO now designs and builds various meters for chilled water, hot water, and condenser water measurement. These designs include the latest in digital communication technology including wireless as well as large data storage.

For steam and condensate applications we offer multiple technologies given the fact that both steam and condensate measurements are often difficult. We strive to utilize the correct technology for the best accuracy which is often not the least expensive. Here too we can offer the latest digital communication technology.

For specific information visit our website at [www.pemco1.com](http://www.pemco1.com).




# MCCAULEY LYMAN LLC

McCauley Lyman is a renewable energy law firm. We advise and represent business people in their transactions and have particular expertise in the renewable energy industry, including developing and financing energy projects.

We help people negotiate contracts, obtain permits, acquire real estate, arrange financings, and buy and sell energy related businesses and their assets. We understand the need for timeliness, cost control, and practicality.

McCauley Lyman is in an alliance with Barclay Damon, LLP, a National *Law Journal* "Top 250 Firm", which provides our clients with access to Barclay Damon's 33 practice areas.

Visit our website @ [www.McCauleyLyman.com](http://www.McCauleyLyman.com) to learn more.

**Burrington's**  
*Solar Edge* 

6 Reed Circle  
Windsor Locks, CT  
06096-1214

(860) 623-0159  
[www.solaredge.biz](http://www.solaredge.biz)  
[solaredge@yahoo.com](mailto:solaredge@yahoo.com)

**Gail Burrington**  
ELC #0195608-PV1 HIC #568720




**NEW ENGLAND**  
**SOLAR**  
**hotwater**

HOME / SCHOOL / BUSINESS

[www.NESHW.com](http://www.NESHW.com)  
(781) 536-8633

**TIMELESS ARCHITECTURE**



*Spirited beauty with award winning green design.*

[www.TIMEARCH.com](http://www.TIMEARCH.com) **617-696-6448**



**URBAN HABITAT INITIATIVES INC.**

**Green Strategic Planning and Implementation Support from the Building to the District Scale**

**Kimberly Vermeer, LEED AP Homes**  
p: (617) 423-5566 • e: [kim.vermeer@urbanhabitatinitiatives.com](mailto:kim.vermeer@urbanhabitatinitiatives.com)  
website: [urbanhabitatinitiatives.com](http://urbanhabitatinitiatives.com)

# INDEX TO ADVERTISERS

## AIR & WATER BARRIERS

ProSoCo, Inc. .... 37  
www.prosoco.com

## AIR LEAKAGE TESTING

Retrotec ..... 10  
www.retrotec.com

## ALTERNATIVE ENERGY

Cotuit Solar, LLC ..... 50  
www.cotuitsolar.com

## ARCHITECTS

Alfandre Architecture, PC ..... 62  
www.alfandre.com  
George Penniman Architects, LLC ..... 49  
www.pennimanarchitects.com  
Next Phase Studios, Inc. .... 51  
www.nps-architects.com  
ZeroEnergy Design ..... 25  
www.zeroenergy.com

## ARCHITECTURE

Bensonwood ..... Outside Back Cover  
www.bensonwood.com  
C&H Architects ..... 24  
www.candharchitects.com  
Dietz & Company Architects, Inc. .... 24  
www.dietzarch.com  
Fitch Architecture & Community Design ..... 51  
www.facdarchitects.com  
GO Logic, LLC ..... 70  
www.gologic.us  
ICON Architecture, Inc. .... 33  
www.iconarch.com  
Maclay Architects ..... 61  
www.maclayarchitects.com  
Timeless Architecture ..... 68  
www.timearch.com

## ATTORNEYS

McCauley Lyman, LLC ..... 68  
www.mccauleylyman.com

## BUILDING COMMISSIONING

Stephen Turner, Inc. .... 9  
www.sturnerinc.com

## BUILDING DESIGN & CONSTRUCTION

Bensonwood ..... Outside Back Cover  
www.bensonwood.com  
Eco-Logical Building Solutions ..... 50  
www.ecologicalbuildingsolutions.com  
New Energy Works Timberframers ..... 63  
www.newenergyworks.com  
RH Irving Homebuilders ..... 60  
www.rhirvinghomebuilders.com  
Two Storey Building ..... 57  
www.twostoreybuilding.com  
Valley Home Improvement ..... 29  
www.valleyhomeimprovement.com  
Wright Builders, Inc. .... 59  
www.wright-builders.com

## COMMERCIAL & INSTITUTIONAL

Legend Power Systems Inc. .... 6  
www.legendpower.com

Wright Builders, Inc. .... 59  
www.wright-builders.com

## COMMISSIONING

Stephen Turner, Inc. .... 9  
www.sturnerinc.com

## CONSULTING

Stephen Turner, Inc. .... 9  
www.sturnerinc.com  
Urban Habitat Initiatives, Inc. .... 68  
www.urbanhabitatinitiatives.com

## DESIGN PROCESS

Integrated Eco Strategy ..... 10  
www.integratedecostrategy.com

## EDUCATION/EDUCATIONAL PROGRAMS

Association for Energy Affordability Inc. .... 47  
www.aea.us.org

## ENERGY AUDITING

Association for Energy Affordability Inc. .... 47  
www.aea.us.org  
Legend Power Systems Inc. .... 6  
www.legendpower.com

## ENERGY CONSERVATION

EFI ..... 21  
www.shopEFI.com  
Legend Power Systems Inc. .... 6  
www.legendpower.com

## ENERGY CONSULTANTS

Power House Energy ..... 41  
www.powerhouseenergyconsulting.com

## ENERGY EFFICIENCY SOLUTIONS

National Grid ..... 3  
www.myngrid.com

## ENERGY MANAGEMENT

Quadlogic Controls Corp. .... 37  
www.quadlogic.com

## ENERGY SERVICES

Bensonwood ..... Outside Back Cover  
www.bensonwood.com

## ENGINEERING SERVICES

Peterson Engineering Group ..... 52  
www.peg-eng.com  
Preferred Utilities Manufacturing Corporation ..... 32  
www.preferred-mfg.com

## ENVELOPE & ENCLOSURE

ZIP System™  
Building Enclosures ..... Inside Back Cover  
www.insulateyourbuild.com

## FLASHING – FLUID APPLIED

PROSOCO, Inc. .... 37  
www.prosoco.com

PERMEABLE PAVERS BY IDEAL

**The Solution to Stormwater Runoff  
is Right Under Your Feet**

**Aqua-Bric,® Eco-Stone,® Andover Collection™ & 5511™  
Permeable Pavers**

Ideal permeable pavers offer built-in technology - the pavement and base act as a stormwater treatment system that reduces or eliminates runoff to mitigate pollutants and improve water quality.

- High-strength 8000 psi pavement
- Easy to clean and maintain
- ADA compliant
- Cost competitive to porous asphalt
- Freeze-thaw and snow-plow safe
- Qualifies for LEED® credits

**IDEAL CONCRETE BLOCK CO.**  
 www.PaversbyIdeal.com ■ info@IdealConcreteBlock.com

CALL 1-800-24-IDEAL FOR A PERMEABLE LUNCH & LEARN

**FLOORING/SIDING**

Pioneer Millworks ..... 63  
www.pionermillworks.com

**HIGH PERFORMANCE MECHANICAL SYSTEMS**

Zehnder America, Inc. .... 33  
www.zehnderamerica.com

**HVAC**

PEMCO ..... 68  
www.pemco1.com

**INDOOR AIR QUALITY**

Daikin Comfort, Inc. .... 13  
www.daikincity.com  
Zehnder America, Inc. .... 33  
www.zehnderamerica.com

**LIGHTING SUPPLIES**

Fred Davis Corporation ..... 48  
www.freddaviscorp.com

**LIVING BUILDING CHALLENGE**

Next Phase Studios, Inc. .... 51  
www.nps-architects.com

**MONITORING/TESTING EQUIPMENT**

PEMCO ..... 68  
www.pemco1.com

**MULTIFAMILY**

Association for Energy Affordability Inc. .... 47  
www.aea.us.org  
Legend Power Systems Inc. .... 6  
www.legendpower.com

**NET ZERO ENERGY**

Bensonwood ..... Outside Back Cover  
www.bensonwood.com  
Eco-Logical Building Solutions ..... 50  
www.ecologicalbuildingsolutions.com  
Next Phase Studios, Inc. .... 51  
www.nps-architects.com  
Pinnacle Window Solutions ..... 17, 21  
www.pinnaclewindowsolutions.net  
Timeless Architecture ..... 68  
www.timearch.com

**PASSIVE HOUSING**

Association for Energy Affordability Inc. .... 47  
www.aea.us.org  
Bensonwood ..... Outside Back Cover  
www.bensonwood.com  
Passive House Institute  
US (PHIUS) ..... Inside Front Cover  
www.phius.org  
Zehnder America, Inc. .... 33  
www.zehnderamerica.com

**PAVEMENT**

Ideal Concrete Block ..... 69  
www.idealconcreteblock.com

**PHOTOVOLTAICS**

Valley Home Improvement ..... 29  
www.valleyhomeimprovement.com

**REAL ESTATE**

Second Street Associates, LLC ..... 10  
www.distillerynorth.com

**REMODELING/DEEP ENERGY RETROFITTING**

Eco-Logical Building Solutions ..... 50  
www.ecologicalbuildingsolutions.com  
Next Phase Studios, Inc. .... 51  
www.nps-architects.com  
Pinnacle Window Solutions ..... 17, 21  
www.pinnaclewindowsolutions.net  
RH Irving Homebuilders ..... 60  
www.rhirvinghomebuilders.com  
Timeless Architecture ..... 68  
www.timearch.com

**RENEWABLES & THE GRID**

Stiebel Eltron, Inc. .... 7  
www.stiebel-eltron-usa.com

**RETRO COMMISSIONING**

Stephen Turner, Inc. .... 9  
www.sturnerinc.com

**SINGLE FAMILY**

Wright Builders, Inc. .... 59  
www.wright-builders.com

**SOLAR POWER DESIGN & INSTALLATION SERVICES**

PV Squared ..... 53  
www.pvsquared.coop

**SOLAR THERMAL**

New England Solar Hot Water ..... 68  
www.neshw.com  
Stiebel Eltron, Inc. .... 7  
www.stiebel-eltron-usa.com

**SOLAR/PV DESIGN SERVICES**

Burrington's Solar Edge ..... 68  
www.solaredge.biz

**UTILITY INCENTIVE PROGRAMS**

Legend Power Systems Inc. .... 6  
www.legendpower.com  
Yardi Systems, Inc. .... 11  
www.Yardi.com/Pulse

**UTILITY MEASUREMENTS**

PEMCO ..... 68  
www.pemco1.com

**VENTILATION**

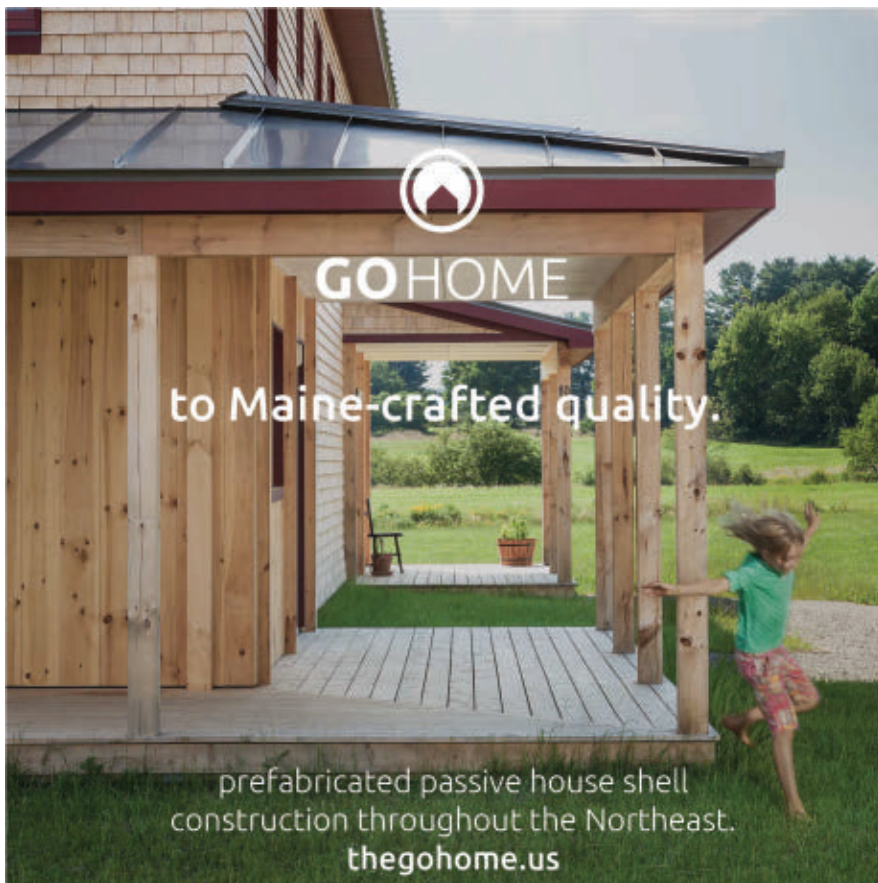
RST Thermal ..... 25  
www.RSTThermal.com

**VENTILATION EQUIPMENT**

Zehnder America, Inc. .... 33  
www.zehnderamerica.com

**WINDOWS**

European Architectural Supply ..... 4  
www.finewindows.com  
Jim Muka, Window Sales ..... 62  
www.m-sora.si/en  
Pinnacle Window Solutions ..... 17, 21  
www.pinnaclewindowsolutions.net  
Sublime Windows, LLC ..... 55  
www.sublimewindows.com





# The Front

**FIGHTS AIR AND MOISTURE.**



# The Back

**FIGHTS HEAT AND COLD.**

**Together, they knock out the elements.**

ZIP System® R-sheathing is the simple all-in-one structural panel with built-in exterior insulation. Featuring integrated moisture, air and thermal protection, ZIP System R-sheathing completely reimagines traditional wall assemblies by streamlining the weatherization process. Learn how to protect your next project at [InsulateYourBuild.com](https://www.insulateyourbuild.com).



# TEKTONIKS

**ADVANCED BUILDING COMPONENTS**

**YOU DESIGN IT – WE PREFAB IT**

Scalable, PreFabricated, High Performance, Wood-Based Panels  
and Timber Fabrication



**PROJECT:** Bosarge Family Education Center, Coastal Maine Botanical Gardens

**DESIGN COLLABORATION:** Maclay Architects and Scott Simons Architects

**CONSULTING:** Thornton Tomasetti

**STRUCTURAL:** Becker Structural Engineers

**PRODUCTS:** Tektoniks Passive House PHlex Panels and  
Robotic Timber Fabrication by Bensonwood

[tektoniks.com](http://tektoniks.com) | 603.756.3600

TEKTONIKS Building System by

