



**Better Buildings Residential Network
Peer Exchange Call Series:**
*The Fruit(s) of Your Labor(s) Day: Workforce
Development*
September 13, 2018

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
 - **Nancy Kaplan**, Building Performance Institute
 - **Diana McCarthy-Bercury**, Earth Forward Group
 - **Hap Haven**, CLEARresult
 - **Dave Keefe**, Efficiency Vermont
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Solution Center guided tours

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year

Upcoming calls:

- September 27th: Back to School: Building Science Training
- October 11th: Resiliency in the Face of Disaster: Energy Efficiency's Role

Peer Exchange Call summaries are posted on the Better Buildings [website](#) a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join



Nancy Kaplan
Building Performance
Institute



**Diana McCarthy-
Bercury**, Earth Forward
Group

The Value of Partnerships in Training and Workforce Development

September 13, 2018

Presenter:

Nancy Kaplan

nkaplan@bpi.org



Building
Performance
Institute, Inc.



BPI's Role in Workforce Development

- 2018 marks the Building Performance Institute's (BPI's) 25th year
- Providing foundation of technical standards and certifications, and the Building Science Principles Certificate of Knowledge
- Work through a network of BPI Test Centers



Industry Crisis: Aging Workforce

 **Building Performance Institute, Inc. (BPI)** ...
Published by Quinn Anne [?] · November 10, 2017 · 🌐

#BPI's Nancy Kaplan, Manager of Major Accounts, and John Jones, National Technical Director, headed down to A.I. Prince Technical High School in Hartford, CT this past Tuesday to interact with and show support for a group of 60 construction instructors who received the BPI Building Science Principles (BSP) Certificate of Knowledge. The program's next goal is to educate the students on #buildingscience, then get them certified and ready as the next generation of #energyefficient professionals!



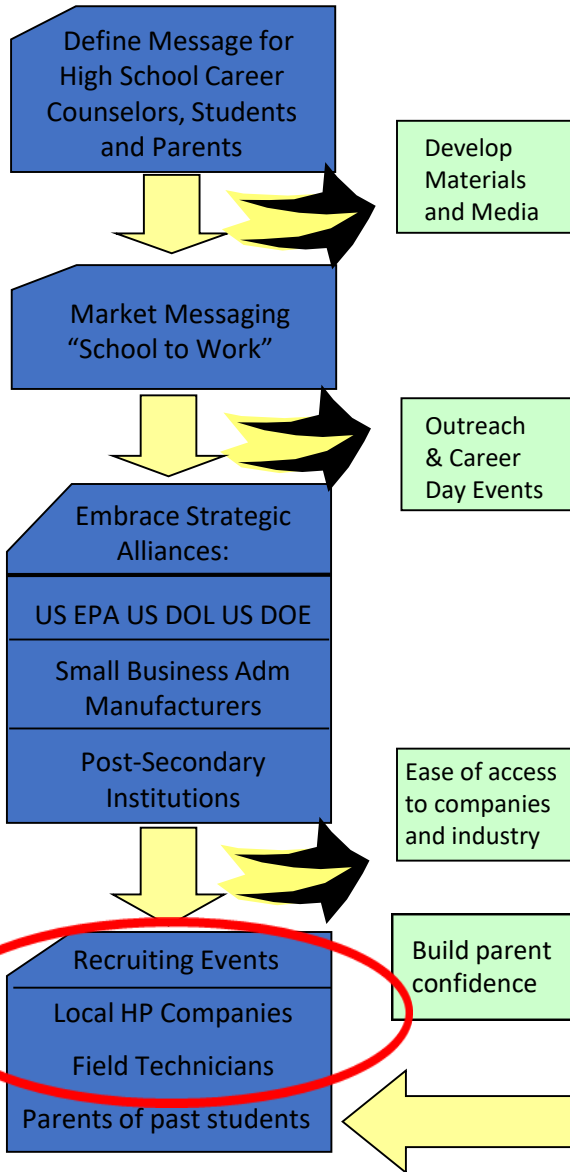
- Trade industries seeing a shortage of individuals entering the workforce
- Connecticut stepped up to the plate to address the issue

Addressing the Gap in the Workforce

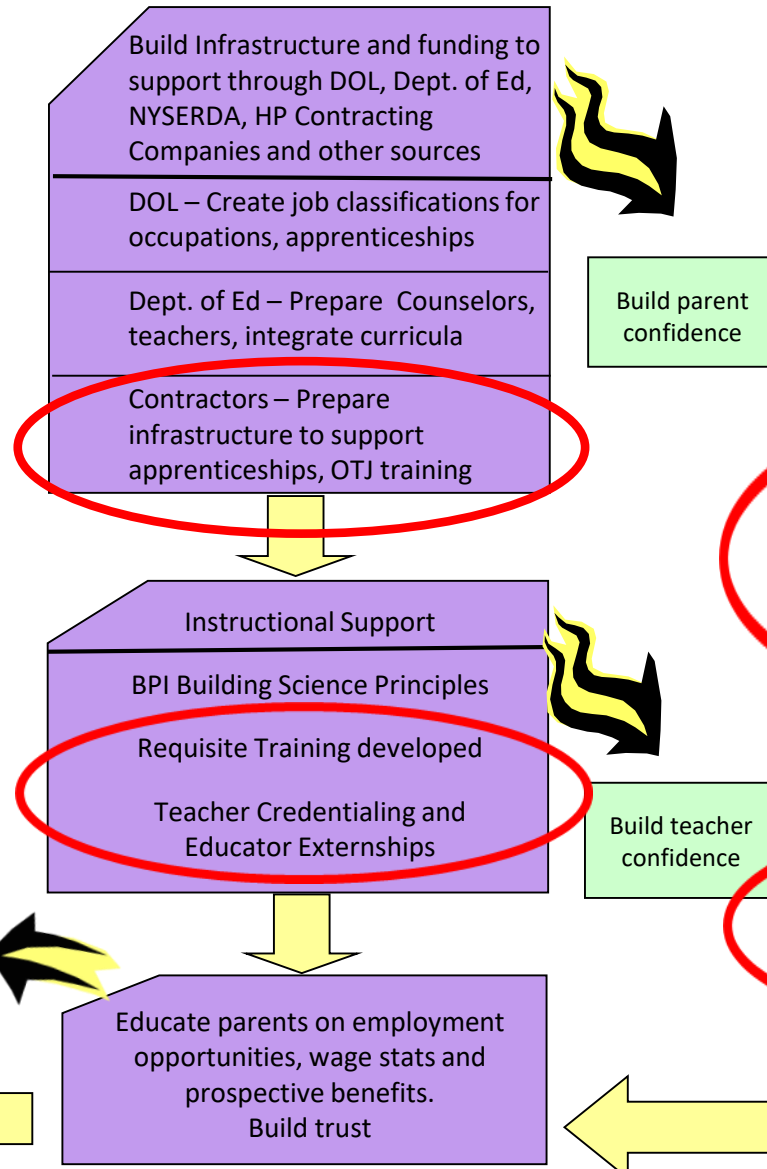
- Educators
 - Trained in Building Science Principles (BSP) and provided externships
- School counselors, parents, and students
 - Informed of the opportunities
- Student Preparedness
 - Need entry level training and credentials to be work ready
- Potential Employers
 - Linked to vocational technical schools

Creating a Career Path for Home Performance

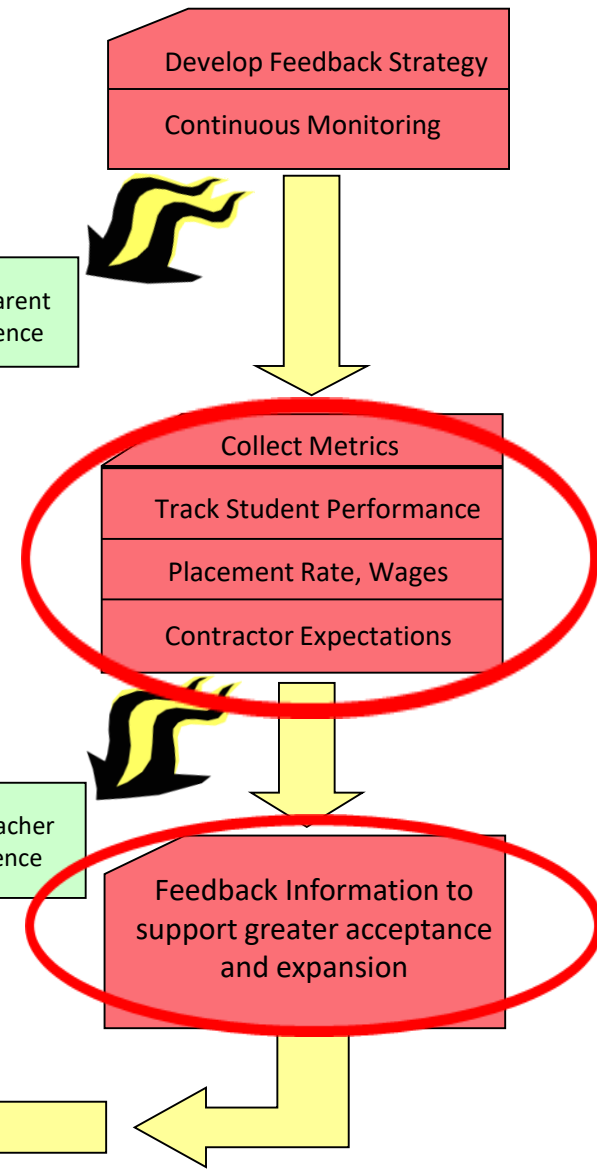
Create Interest and Demand



Create the Infrastructure to Support



Ensure Success



Building a Career Ladder

- Pathways of the future starting at the high school level and even younger; can still continue on to technical, community colleges, and universities
- Bring back the sense of having built something and made life better for others
- Some people prefer to work with their hands
- Apprenticeships are needed
- How to pay for it? Partnerships allow for the pooling of resources

BPI GoldStar Contractor Input

- Nearly half of the people providing information stated they had been in the home performance industry for 5-10 years
- Nearly 2/3 indicated that the quality of home performance work improves as a result of technicians holding BPI certifications
- 75% indicated they'd hire someone who is BPI certified over someone who is not certified
- Nearly 70% indicated they experience challenges in finding qualified people to hire
- **Companies are looking for:** technical, communication, time management and computer skills, attention-to-detail, quality workmanship, air sealing, the ability to follow instructions, self-driven, and the willingness to learn

Being Solution Oriented

Working together to create opportunities for students to graduate work ready.

Connecticut	BPI
<ul style="list-style-type: none">• Utilities• Department of Labor• School Districts• Manufacturers	<ul style="list-style-type: none">• Community Colleges• Vocational Schools• Professional Development<ul style="list-style-type: none">○ Platforms○ Conferences

Working with the Trades (HVAC)

- Wichita Technical Institute – training technicians since 1954
- Offers multiple programs
- HVAC Training – Heating, Ventilation, Air Conditioning and Refrigeration Technician (HVACR)
- Includes the BPI Building Science Principles Reference Guide and certificate exam as part of the training to ensure an understanding of how all the systems in a house affect how well the heating and air conditioning will work

Working with the Trades (Construction)

- Hudson Valley Community College – Construction Technology
- Offers an AAS in Construction Technology
- Uses BPI's Building Science Principles Reference Guide as a text book and BSP exam as the final exam for its Building Service Systems credit course
- Information is quoted from the instructor with his permission:

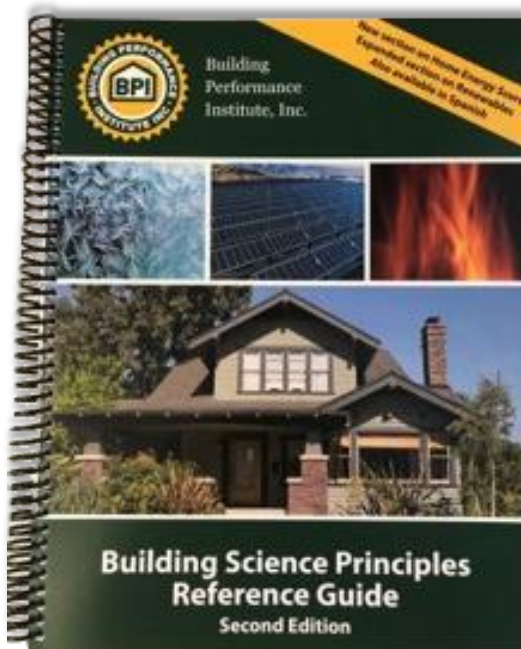
“I used the BSP test as the final exam in my Building Service Systems credit course at HVCC. It was a great success – 23 out of 24 of my students passed with several in the 90s (one 99) and now have this certificate to add to their resume when job seeking or transferring to a 4 year program.

The Building Systems Services (CNST 231) is a diverse course that introduces Building Science, HVAC, Electric and Plumbing to our construction management and construction certificate students.

I explain to the students how important it is they enter the field with building science knowledge in this day of high performance buildings and enhanced energy codes. It was great teaming up with BPI to make this happen for the students.

My goal is to take this a step further and also get them certified for IDL next year.”

The Building Science Principles (BSP) Reference Guide



The 275-page
Reference Guide



Sample BSP Certificate



Replicating the Process Across the Country

Available to discuss the process and offer support
in your location.

Nancy Kaplan

Manager of Workforce Development

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**Earth
Forward
Group**

Workforce Development Presentation: US Department of Energy

Diana McCarthy-Bercury

Principal, Earth Forward Group, LLC

EarthForwardGroup.com

Call Agenda

- Current Status in the Industry
- Workforce Development Target Groups
- Green Workforce Development Program (Background and Overview)
- Key Partners for Program Success
- Next Steps



Current Status Industry:

- Labor gap in the market
- Hard to find skilled labor
- Time & money to train
- Aging Workforce
- Industry work is seasonal and varies by region
- Certifications are costly
- Lacking a national standard of certifications, accreditation or requirements for the energy & weatherization workforce
- Funding is unpredictable



Workforce Training Groups

- Development: Future Workforce (Technical & Vocation High Schools, Community Colleges & Universities)
 - Transitioning: Skilled Labor (Transferrable Skills and Knowledge, Current Workforce, Tradesmen and Unions)
 - Continuous: Current Workforce (Recertifications and Advanced Training- adding new credentials for emerging markets)

GreenSTEP Workforce Development Program (CT)



- Develop a foundation for sustainable building construction, weatherization and retrofiting

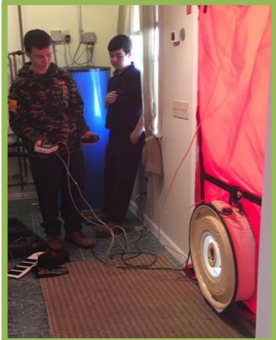


- Knowledge of career paths in the green building industry



- Secure employment or higher education
- Gain industry certifications (BPI, DOE, NABCEP)

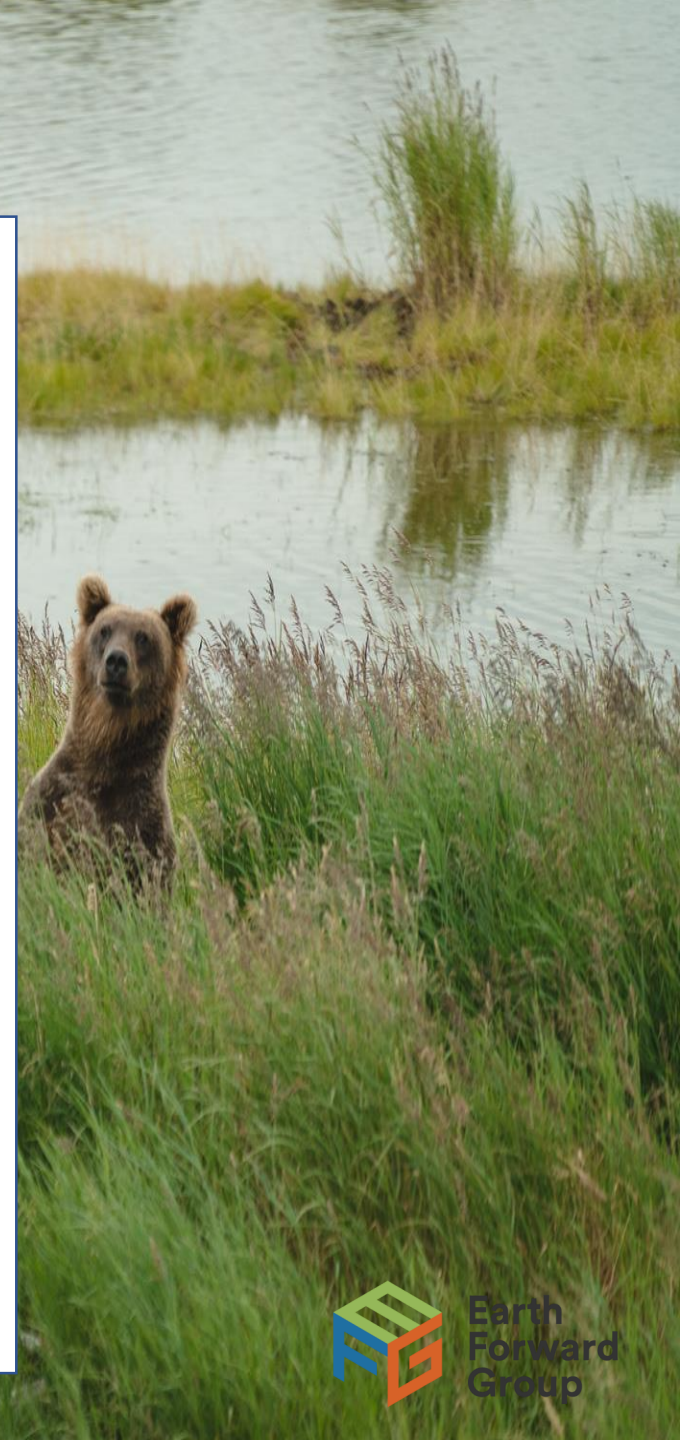
Four-Year High School Model



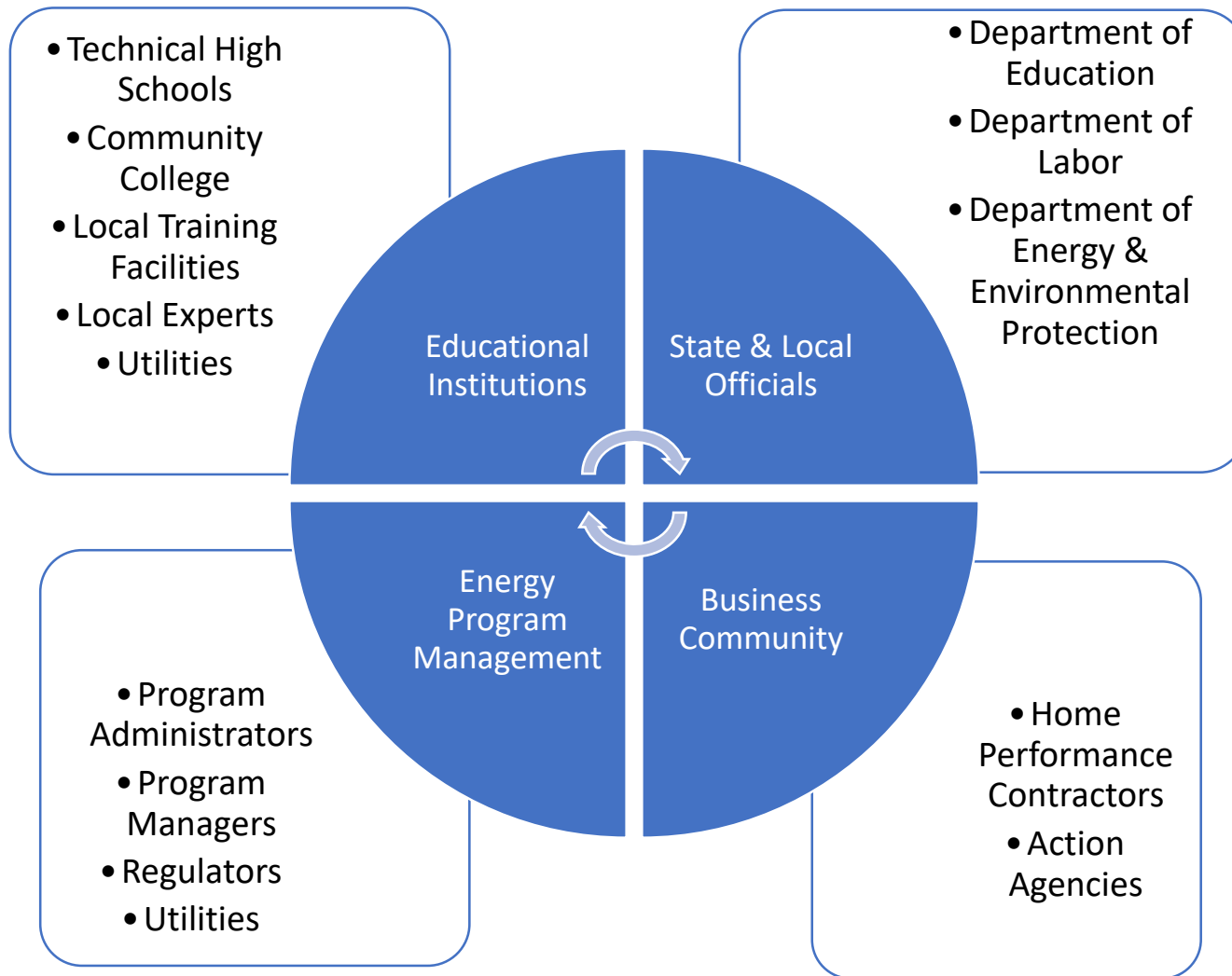
Year	Theme	Topics
9th	Introduction	Introduce topics: Sustainability, energy efficiency, resource conservation, weatherization, relationship to energy
10th	Experimentation	Acquaint students with Zero Energy Buildings, CT Science and Engineering Fair problem solving, Weatherization investigation
11th	Implementation	Net zero home production days, home energy auditing, Science and Engineering Fair Junior –project update
12th	Certification	Job search training, resume and interview training, industry certifications (NABCEP, BPI, DOE, ASHRAE) employer panels & career fair

Ready for the Real World

- **Building Performance Institute (BPI):**
 - Building Science Principles
 - BA, Weatherization Envelop & Duct Infiltration Leakage, Lead Tech
- **North American Board of Certified Energy Practitioners (NABCEP):**
 - NABCEP Solar Photovoltaic Entry
 - NABCEP Solar Thermal Entry
- **DOE Home Energy Score Rater**
- **US Green Building Council - Green Professional (GPRO & LEED)**
- **New Construction - RESNET**
- **Healthy & Safety (OSHA, Lead, etc.)**



Key Partners for Workforce Development



Steps for Successful Programs:

- Understanding Program Requirements & Certifications
- Identifying Key Allies & Partners
- Identifying Available Resources in the Region
- Networking with Industry Partners to Identify Needs
- Engage the Stakeholder Community
- Funding Opportunities

Questions?

Diana McCarthy-Bercury
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**Earth
Forward
Group**

EarthForwardGroup.com

Three Key Take-Aways

- A consistent concern throughout the industry is an aging workforce. There are not enough young people in the field to replace the retiring members of the industry.
- Stakeholders in Connecticut are addressing this program by offering training and certifications in the state's technical high schools. Students graduate ready for the field.
- The success of the program is attributed to understanding certifications, identifying key allies, identifying resources, networking, identify needs, engaging stakeholders, and finding funding opportunities.





Hap Haven
CLEAResult

U.S. DOE's Better Buildings
Residential Network Peer Exchange Call

September 13th, 2018



Workforce Development

or

How Training Needs Change Over Time

Hap Haven

Hap.Haven@NJCleanEnergy.com

New Jersey's Clean Energy Program™

RESIDENTIAL RETROFIT PROGRAMS

Program Goal

NJ's Clean Energy Program helps move everyone in the state toward more energy efficient, renewable and clean energy technologies.



There's an energy efficiency incentive program for the **smallest home** to the **largest commercial building**.

Societal Benefits Charge

**(7) COMMERCIAL
PROGRAMS**

**(4) RESIDENTIAL
PROGRAMS**

**ALL CUSTOMERS of PUBLICLY HELD UTILITIES
pay into a public fund**



Program History

- 1911 – Dept of Public Utilities established**
- 1994 – Became the Board of Public Utilities (BPU)**
- 1999 – Began the Renewable Portfolio Standard and the Societal Benefits Charge**
- 2003 – BPU establishes the NJ Clean Energy Program**

RESIDENTIAL NUMBERS:

400,000+ Warm Advantage installs (heaters, water heaters)

Cool Advantage installs (AC, heat pumps)

40,000+ Home Performance installs (Air seal, insulation, mech)

90,000+ Solar installs (stand alone, with SRECs, with HP)

Quick View of Incentives

WARM Advantage Rebates

High efficiency heaters (\$250 - \$500)

Water heaters (\$300 - \$500)

Combined heater and Water heaters (\$700 - \$950)

Coop Advertising 50% of cost up to \$25,000

COOL Advantage Rebates

Central AC, heat pump, and ductless mini-split (\$300 - \$500)

Coop Advertising 50% of cost up to \$25,000

Building Envelope Rebates

Attic Air Sealing - Up to \$500 per home

Insulation – Up to \$500 per home for attics, walls or crawlspaces

Quick View of Incentives

Home Performance with ENERGY STAR®

Whole house solutions: air sealing, insulation,
heaters, AC and water heaters.

Rebates up to **\$4,000** depending on estimated total energy saved

0% financing up to \$10,000

and

COOP advertising 50% of cost up to **\$75,000**

NJ Training History

2005 – Adopted a BPI suite of certifications as the baseline for Home Performance program

Including: BA, Envelope, Heating, AC + Heat Pump

2006 - Began training Home Performance contractors

Incentive was: Entry into program, BPI fees paid if you passed the tests, 50% rebates on test equipment, \$200 contractor incentive for audit

Program started with 10% customer incentive up to \$2,000 or 5.99% loan

2007 – 34 Approved Contractors

One BPI Building Analyst and Envelope training offered every month

10% up to \$2,000 or 5.99% loan (SIR ≥ 1)

20% up to \$4,000 or 3.99% loan (SIR ≥ 1)

50% up to \$5,000 (must save 25% of heating)

NJ Training History



2010 – 113 Approved contractors

2011 – Changed over to a market-based training model

2015 – ACCA established in NJ with state HVAC license

2016 – NJ HPwES changes the contractor requirements

Now BPI's GoldStar membership and Building Analyst Certification

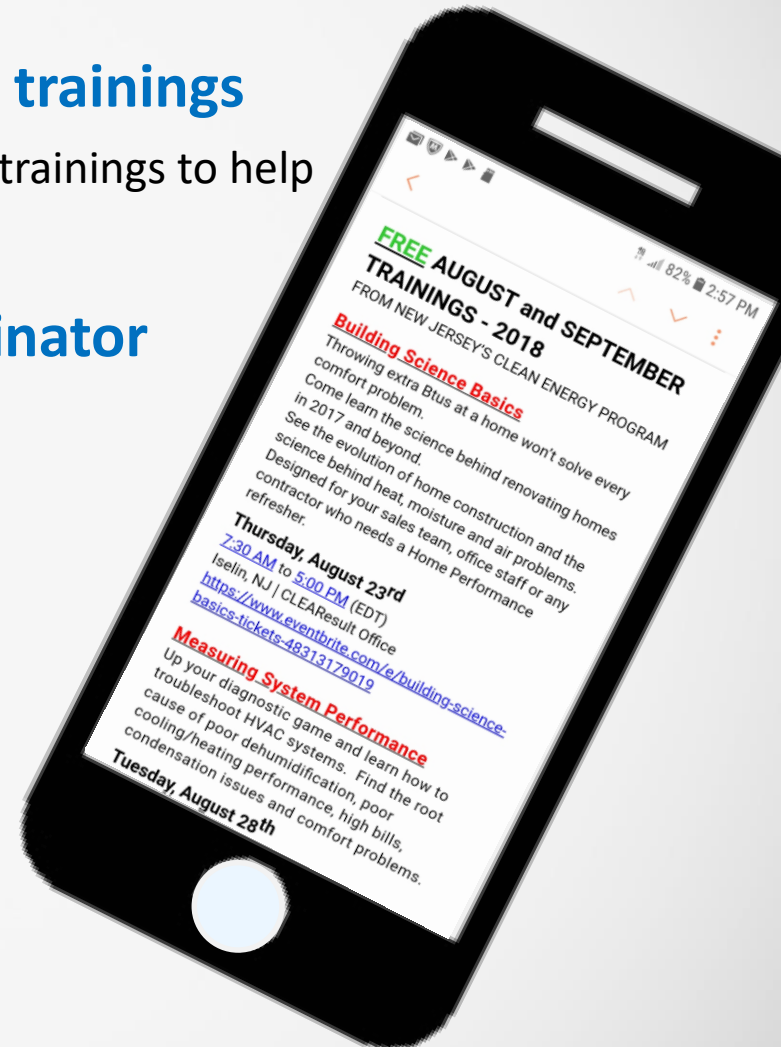
NJ Training History

2016 – Established monthly HVAC-HP trainings

Program, Technical and Business related trainings to help contractors become more effective

2016 – Established 3 Outreach Coordinator Positions

To educate HVAC-Plumbing contractors, Architects, Supply Houses, HERS Raters and other Trade Allies about programs, monthly workshops and events



NJ Training History

2017 – Established relationship with BPI Training Center

To educate contractors about BPI training opportunities with a focus on local trainings: ISLES – CEET program in Trenton



Instructor Dave Bone with ISLES class

2018 – Exploring Vocational-Technical school trainings

Expanding training opportunities into the “pipeline” will expand trade student understanding of building science and home performance

Given: All Votech schools in NJ are independent and adopt their own course work. This is a county by county, school by school outreach opportunity.

Long-term three-tier education opportunity:

- 1) 3-workshop introduction
- 2) BPI Building Science Principles
- 3) BPI Building Analyst Certification

Proposed Workshop Introduction

An introduction to the HP industry presented to a combined Votech Construction and HVAC class



Photo from NJ Council of Vocational-Technical Schools

- 20+ traditional vocational categories usually taught in trade silos
- Dynamic relationships between trades not a priority
- Historically creating health, safety and comfort issues in homes.

Votech Training Goals

1 – Paint a picture of an evolving industry that provides solutions based on testing and science

2 – Relate to and engage with the students

- Give real-world examples that affect both home systems and both trades
- Explain the evolving job and internship opportunities in NJ and beyond
- Hold a meaningful Q and A session



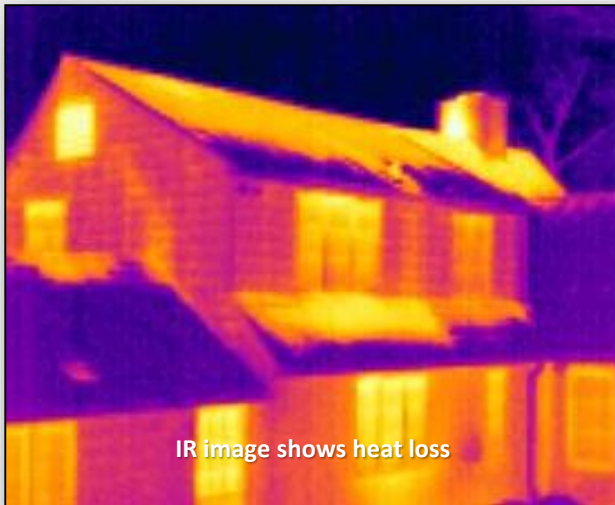
What is Home Performance?

Traditional trade specialization is only a starting point. Do you know how closing bedroom doors can back-draft a water heater?

Quality work is a key function of Home Performance work.

How many tests were performed on your house to guarantee that it operates properly?

HP contractors focus on health, safety, comfort and efficiency. What is your builder's or realtor's top priority?



IR image shows heat loss

Is the future of housing here?



Science shows us how to understand the movement of heat, air and moisture in a house. Did you just buy a house built with old technologies?

New Codes and programs require more testing. What are the special tools that HP contractors use to certify their work?

Sales shows us the value of higher comfort and lower or no utility bills. How many contractors can prove they have done the job right?



How do we achieve comfort and efficiency?

Structural System: This system keeps the heat in or out. Do you know why different homes have similar envelopes?

Mechanical System: This system delivers the heat or cool. Do you know why different homes have different HVAC systems?

One system can affect another, but you won't know it unless you are educated beyond your trade. What are some common problems the trades too often don't understand?

Programs, Funding, Staff and yes, Training Needs Change Over Time

Thank you, and feel free to reach out for more information

Hap Haven

Hap.Haven@NJCleanEnergy.com

New Jersey's Clean Energy Program™

Three Key Take-Aways

- The requirements of participation in New Jersey's Clean Energy Program have evolved to keep up with market needs.
- The Clean Energy Program proposed a series of workshops for technical schools on home performance and the importance of studying beyond one specific trade.
- If the workshops are successful, the Clean Energy Program will work on incorporating BPI trainings in technical schools. New Jersey technical schools are not managed at the state level so stakeholder buy-in will need to happen several times.





Dave Keefe
Efficiency Vermont



Supporting Our Home Performance Contractors

Dave Keefe



Who We Are

- Founded in 2000
- Statewide energy efficiency utility serving all electric customers
- Includes Home Performance with ENERGY STAR and Building Performance services



The Contractors

- About 50 companies
- Mostly small “general contractors”
 - Some focus on efficiency
 - Some incorporate efficiency into larger projects
- They do the audits themselves
- Almost all are shell-focused
 - Trying to get more mechanical involvement
- HP Advisory Committee

Training

- Free or nearly-free BPI certification training (8 days) for most participating contractors
- Better Buildings by Design conference
 - Reduced registration cost
- Occasional specific trainings (Rogers, Troast, Keefe)
- Assigned Energy Consultant for each contractor
- BPI Continuing Education credits whenever possible
- QA feedback
- “Thoughts of Home”

Recognition/Marketing

- Website Listings
 - Enhanced bio section
- Efficiency Excellence Network
 - Larger contractor network
 - Coop marketing, training, Heat Saver loan
- Best of the Best Awards
- Building Performance Professionals Association
- Considering ranking system

Other Support

- Equipment loans
- Pressure gauge field checks
- On-site diagnostic help for larger or more complex buildings

Thank you!



Three Key Take-Aways

- There are about 50 contractors that participate in Efficiency Vermont's home performance program. Most are general contractors that are trained by Efficiency Vermont on home performance.
- Efficiency Vermont focuses on contractor recognition and marketing. Networking, awards, and listings are all available.
- Other support include equipment loans and diagnostic help.



Upcoming Seasonal Messaging Opportunities

Gift energy efficiency to the ones you love this Valentine's



Set the mood with good lighting

There's nothing more attractive than someone who can pick the right energy-efficient light bulbs.

Stream Your Favorite Date Night Movie on Your Tablet Instead of Your TV

It's more cozy and more energy-efficient.

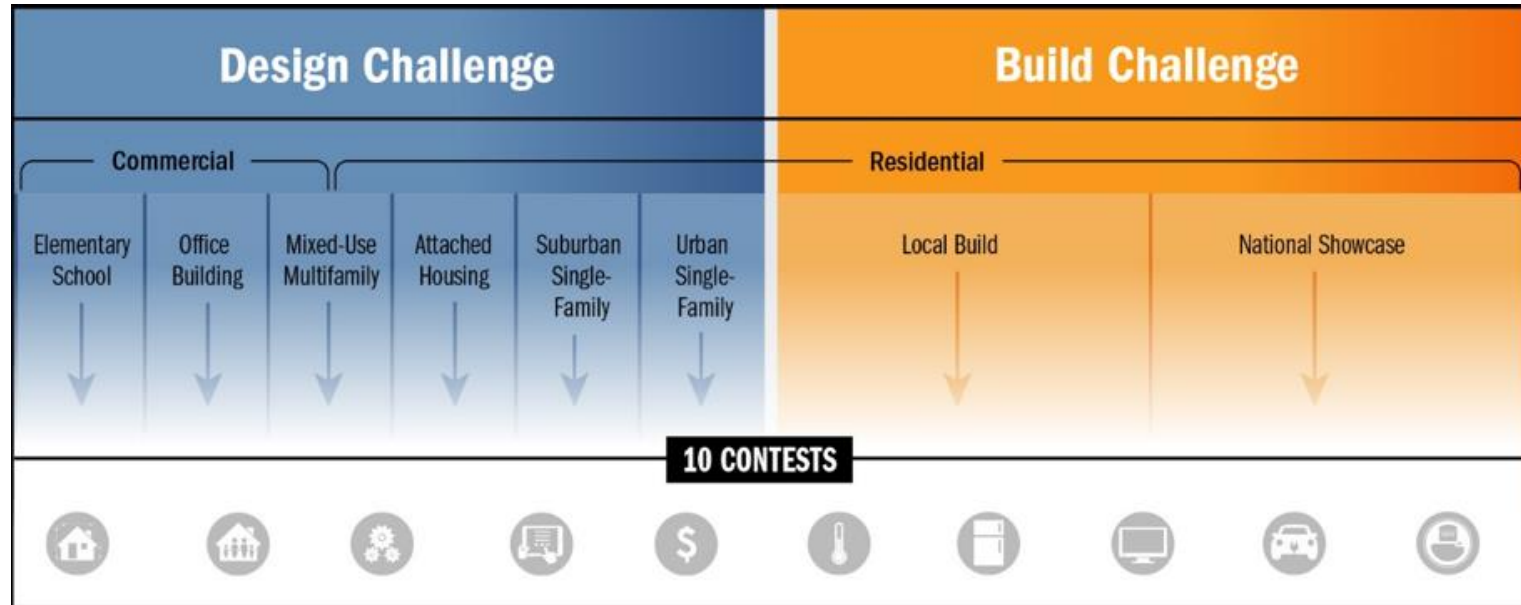


Images: Southern California Edison

The Solar Decathlon:

1 Competition, 2 Challenges, 10 Contests

The U.S. Department of Energy Solar Decathlon® is a collegiate competition, comprising 10 contests, that challenges student teams to design and build highly efficient and innovative buildings powered by renewable energy.



Apply by November 6, 2018 at www.solardecathlon.gov



Reminder

SEEA Request for Proposal:

Innovative EE projects to serve the Southeast

DUE DATE: September 17th, 2017

www.seealliance.org



Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- [Handbooks](#) - explain *why* and *how* to implement specific stages of a program.
- [Quick Answers](#) - provide answers and resources for common questions.
- [Proven Practices](#) posts - include lessons learned, examples, and helpful tips from successful programs.
- [Technology Solutions](#) **NEW!** - present resources on advanced technologies, **HVAC & Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.



<https://rpssc.energy.gov>

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or future call topic ideas to:
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