ASHRAE Bi-State Chapter

Exchanger

Volume XXVIII, Issue 4 | Serving the Hudson Valley and Western Connecticut | December 2014

Inside this Issue

Save the Date

1 PDH Credit

Chapter Meeting
December 10th

Meeting Location:
Lucy's Lounge
446 Bedford Road
Pleasantville, NY 10570

5:30 - 6:30PM Arrival and Networking
6:30 - 7:30PM Presentation
7:30 - 9:00PM Networking and Awards

$20 reduced rate for membership appreciation or bring a gift for "Toys for Tots"

Walk-ins and General Public Welcomed

NEW "found money" for Facility Managers: HVAC Equipment, Building Management Systems, Big Data, and the Cloud

This presentation by Joseph H. Klotz, Johnson Controls Systems Products Regional Account Manager will provide an overview of the underlying technologies and trends that support Big Data and the User Experience in the HVAC/BAS industry, and will focus on the changes, challenges, and opportunities for people who design, manage, and maintain buildings and building management systems.

In Jeremy Rifkin's 1987 book "Time Wars", he proposed his theory of a "weightless economy". In a world of high speed digital networks and de-industrialization, much more than the weighty physical assets such as factories and warehouses, new resources – and sources of wealth and profit – will be found in knowledge creation, information, and ideas.

Faster and greater computing power in a smaller package for less money; standardized BAS protocols, Big Data, embedded "FDD" (fault detetection and diagnosis), cloud technology, and the convergence with IT infrastructures: these advances have set the stage for comprehensive, fully integrated Enterprise and Energy Management Systems.

Opportunities for energy and life-cycle cost savings can be derived from the analysis of temporal cues found in the constantly changing data from our HVAC systems and equipment. Companies will differentiate their businesses through "big data" analysis services, expert industry "know-how", and a customer-centric presentation of actionable information.

See www.ashraebistate.org for more information
RSVP to ashraebistateRSVP@olace.com

Sweater Competition

Sponsored by: Johnson Controls

President's Message

By James F. Dolan, P.E.

We had a wonderful meeting in November with our guest speaker Brian Conybeare, special advisor to Governor Andrew Cuomo. He appreciated the ASHRAE membership and our role in projects from Design to Construction. We intend to have a follow up meeting with him next year as the Tappan Zee Bridge project evolves. The subject of failing infrastructure, often attributed to bridges and roads, also includes the HVAC, Power, Lighting, Plumbing, Fire Protection etc. in our Society. Funding mechanisms and partnerships are a way of the future and how we ensure these needs are addressed, while maintaining a high quality for the betterment of all of society is a worthy subject for our Chapter.

Upcoming December Meeting! December 10th

See our notice in this Exchanger for the upcoming December meeting that will be somewhat of a Holiday Celebration and appreciation of our membership. We will have an award to the Best "BAD Holiday Sweater" and we know that the group from our Sponsor JCI is up for the Challenge. The event will be in Pleasantville at Lucy's so a nice change in venue for the Chapter. Oh yes, and we will have a presentation on Big Data and saving energy by a great speaker, Joe Klotz. Attend to learn more about the advances in computing power and how our industry will be affected.

Jim

ASHRAE Westchester Presentation — Upcoming December Meeting

New "Found Money" for Facility Managers:
HVAC Equipment, Building Management Systems, Big Data and the Cloud

Synopsis

In Jeremy Rifkin's 1987 book "Time Wars," he proposed his theory of a "weightless economy". In a world of high speed digital networks and de-industrialization, much more than the weighty physical assets such as factories and warehouses, new resources – and sources of wealth and profit – will be found in knowledge creation, information, and ideas.

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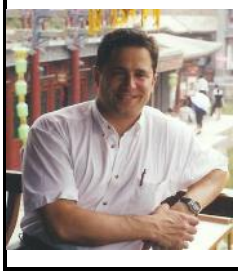
This presentation will provide an overview of the underlying technologies and trends that support Big Data and the User Experience in the HVAC/BAS industry, and will focus on the changes, challenges, and opportunities for people who design, manage, and maintain buildings and building management systems.

Speaker Biography
Joseph H. Klotz
Johnson Controls Systems Products



Much of Joe's career has been focused on using technology to drive life-cycle improvements and energy savings in large facilities and multi-building sites. His responsibilities at Johnson Controls include supporting the Branch Offices, their customers, and critical control, energy management, and sustainability projects. Joe is an ASHRAE member, and a member of the Association of Energy Engineers. Joe has been in the HVAC / BAS industry since 1981 as a facilities manager, public facilities director, international business manager, and CEO of a BAS manufacturer. Joe graduated from the University of Alaska Fairbanks with a BS in Natural Resources Management.

Shaping Tomorrow's Built Environment Today

ASHRAE Research

ASHRAE's Research Program sets ASHRAE apart from other professional societies and associations of its kind. ASHRAE's Handbook series, technical programs, standards, and special publications all utilize the results of Research conducted through ASHRAE funding. ASHRAE conducts timely research to remain the foremost, authoritative and responsive international source on the interaction between people and the indoor and outdoor environment through the operation of HVAC&R systems in buildings and other applications.

Research Donations in particular are the foundation of the ASHRAE Research Program. We at the Bi-State Chapter of ASHRAE would like to invite you to invest in ASHRAE Research. ASHRAE is a not-for-profit organization and needs your support for continued success! The Bi-State Chapter of ASHRAE has continued to raise the bar for research funding, and we couldn't have done it without your help. We would like to thank last year's contributors shown below.

We hope that we can count on you to help us reach our goal of $6,250 for the 2014 – 2015 campain year. You can do this by filling in the form below or by contributing on-line at: https://xp20.ashrae.org/secure/researchpromotion/rp.html.

For further information or assistance contact Cliff Konitz, RP Chair, at 845-297-5864 or mailto:c.konitz@verizon.net

Shaping Tomorrow's Built Environment Today

2013 - 2014 Research Promotion Donors

Major Donor - Silver $1,000 - $2,499

Bi-State ASHRAE Chapter

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ASHRAE Research and YOU

HOW IS ASHRAE RESEARCH USED?

- Update the Society's standards and guidelines
- Special ASHRAE publications
- Articles published in the ASHRAE Journal

WHAT FUNDS ASHRAE RESEARCH?

- Contributions from members and corporations
- A percentage of member dues
- Income from the ASHRAE cosponsored AHR Expo
- Interest earned on the Research Reserve and ASHRAE Foundation

HOW IS MONEY RAISED?

- Personal contact made by volunteers
- Special contracts with major donors
- Direct solicitation of ASHRAE members at the time of dues billing

HOW DOES ASHRAE RESEARCH HELP ME?

- Decreasing the spread of airborne diseases
- Conserving energy in hot and humid climates
- Understanding the relationship between occupant health and ventilation rates
- Decreasing the risk of spoiled food

Shaping Tomorrow's Built Environment Today

PLEASE COMPLETE THE INFORMATION BELOW AND RETURN WITH YOUR CONTRIBUTION TO:

Clifford Konitz
4 Dennis Road
Wappingers Falls, NY 12590

Phone: 845-297-5864 Fax: 845-297-5864

Please accept my research investment in the amount of $_____
Make checks out to **ASHRAE Research**.

Name_____Member #_____

Company_____Chapter Bi-State_____

Address_____

City_____State_____Zip_____

Please check one: ( ) Personal contribution
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Charge my gift to: ( ) Visa ( ) Master Card ( ) American Express

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Donors are recognized for their contributions as follows:

Honor Roll contributors are listed in the October ASRHAE Journal and receive the commemorative coin recognizing Giants in HVAC&R invention or innovation.

Individual Honor Roll beginning at $100
Corporate Honor Roll beginning at $150

Investors with contributions of $250 or more receive a wall plaque that can display six commemorative coins.

Contributions in any amount are gratefully received and 100% of the contribution goes directly to research. All contributions are tax deductible.

EPA Issues First ENERGY STAR Certification for Existing Multifamily Buildings

The U.S. Environmental Protection Agency (EPA) has announced the first existing multifamily housing properties to earn the new ENERGY STAR Multifamily certification for superior energy performance. EPA recognized 17 apartment and condominium buildings across the U.S for reducing energy use, increasing affordability, protecting public health, and combating climate change. The buildings took a variety of approaches to save energy, from investing in technological upgrades, such as high-efficiency lighting, to low-cost operations and maintenance changes, such as adjusting the schedules for outdoor lighting and ensuring equipment was only running when needed. EPA estimates that multifamily properties can become 30% more efficient by 2020, resulting in $9 billion in energy savings and preventing annual greenhouse gas emissions roughly equal to those from four million homes.

ASHRAE Certification Programs

BEMP Practice Exam Now Available

ASHRAE has launched a practice exam for the Building Energy Modeling Professional (BEMP) certification. The practice exam is designed to be similar in content and difficulty to the actual certification exam. It is a low-cost, online tool for limited self-assessment with a score report overview of performance at the end of the exam. Practice exams are already in place for the BEAP, CPMP and HFDP certifications. Practice exams for the HBDP and OPMP certifications are under development and should be launched later this year.

Visit www.ashrae.org/BEMP to learn more about the BEMP practice exam.

Visit www.ashrae.org/certification to learn more about ASHRAE certifications.

New Publications from ASHRAE

ASHRAE, a leader in building information technology, develops publications that impact every facet of the environment, both indoors and out.

Data Center Design and Operation – ASHRAE Datacom Series CD 4th Ed.

This CD-ROM presents the full text of all eleven ASHRAE Datacom Series publications and Standard 127-2012 in fully searchable and printable PDF format. Authored by ASHRAE Technical Committee 9.9, the Datacom Series provides comprehensive treatment of data center cooling, energy efficiency, and related subjects.

$289 ($246 ASHRAE Member) / CD / 2014

ASHRAE Reference Offers Design Guidance on Healthcare HVAC Systems

The second edition of *HVAC Design Manual for Hospitals and Clinics* provides in-depth design recommendations based on best practices from consulting and hospital engineers, with a focus on presenting what's different about healthcare HVAC systems.

$129 ($109 ASHRAE Member) / 312 pages / 2013

Visit www.ashrae.org/bookstore to learn more about these and other outstanding ASHRAE publications!

2014 Green Building Standard Now Available From ASHRAE/USGBC/IES

New requirements to further reduce energy and environmental impacts of buildings are contained in the 2014 version of the green building standard from ASHRAE, the U.S. Green Building Council and the Illuminating Engineering Society. ANSI/ASHRAE/USGBC/IES Standard 189.1-2014, *Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings,* addresses the areas of site sustainability; water-use efficiency; energy efficiency; indoor environmental quality; and the building's impact on the atmosphere, materials and resources.

The 2014 standard incorporates 67 addenda, reflecting changes made through the public review process since the standard was last published in 2011. Appendix H gives brief descriptions and approval dates of the addenda included in this new edition.

"The new standard updates all of its sections to reflect the latest information available to the committee," Andrew Persily, chair of the Standard 189.1 committee, said. "Compliance with these updated provisions will help further reduce energy and environmental impacts through high performance building design, construction and operation while providing indoor environments that support the activities of building occupants."

Major changes in the 2014 edition include:

- **Energy**: Significant updates are included to reflect the publication of Standard 90.1-2013, *Energy Standard for Buildings Except Low-Rise Residential Buildings,* including revised building envelope provisions. Fenestration orientation requirements were updated based on new research, as well as changes and updates made to equipment efficiency tables, ENERGYSTAR references and continuous air-barrier requirements.

- **Energy Performance, Carbon Dioxide Emissions, and Renewables**: Changes and clarifications are included to reflect changes to Standard 90.1. Carbon dioxide emission factors for different energy sources are updated.

- **Indoor Environmental Quality**: Lighting quality is added to the scope of this section, and requirements are added for lighting controls in specific space types. Requirements for air sealing of filtration and air-cleaning equipment are clarified, and new requirements for preoccupancy ventilation and building envelope moisture management are added.

- **Site Sustainability**: All site requirements are now mandatory, with prescriptive and performance options moved to the mandatory requirements. Requirements for stormwater management are enhanced, and new requirements added for bicycle parking and for preferred parking for low-emission, hybrid and electric vehicles. New requirements are added for predesign assessment of native and invasive plants.

- **Water**: More stringent water use requirements are included for toilets, clothes washers, dishwashers and green roofs.

- **Building Impacts on the Atmosphere, Materials, and Resources**: Requirements are updated for areas to store and collect recyclables, including batteries and electronics. Requirements also are updated for construction waste management and for life-cycle assessment. New requirements are added for multiple-attribute product declaration or certification and for maximum mercury content levels of certain types of electric lamps.

Construction and Plans for Operation: Requirements related to environmental impacts associated with idling construction vehicles are updated. New requirements are added to reduce the entry of airborne contaminants associated with construction areas.

The cost of ANSI/ASHRAE/USGBC/IES Standard 189.1-2014, *Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings*, is $128 ($109, ASHRAE members).

Stanford Engineers Invent High-Tech Mirror to Beam Heat Away from Buildings into Space

A new ultrathin multilayered material can cool buildings without air conditioning by radiating warmth from inside the buildings into space. Stanford engineers have invented a revolutionary coating material that can help cool buildings, even on sunny days, by radiating heat away from the buildings and sending it directly into space. A team led by electrical engineering Professor Shanhui Fan and research associate Aaswath Raman reported this energy-saving breakthrough in the journal *Nature*.

The heart of the invention is an ultrathin, multilayered material that deals with light, both invisible and visible, in a new way. Invisible light in the form of infrared radiation is one of the ways that all objects and living things throw off heat. When we stand in front of a closed oven without touching it, the heat we feel is infrared light. This invisible, heat-bearing light is what the Stanford invention shunts away from buildings and sends into space. Of course, sunshine also warms buildings. The new material, in addition to dealing with infrared light, is also a stunningly efficient mirror that reflects virtually all of the incoming sunlight that strikes it. The result is what the Stanford team calls photonic radiative cooling – a one-two punch that offloads infrared heat from within a building while also reflecting the sunlight that would otherwise warm it up. The result is cooler buildings that require less air conditioning.

"This is very novel and an extraordinarily simple idea," said Eli Yablonovitch, a professor of engineering at the University of California, Berkeley, and a pioneer of photonics who directs the Center for Energy Efficient Electronics Science. "As a result of professor Fan's work, we can now [use radiative cooling], not only at night but counter-intuitively in the daytime as well." The researchers say they designed the material to be cost-effective for large-scale deployment on building rooftops. Though it's still a young technology, they believe it could one day reduce demand for electricity. As much as 15 percent of the energy used in buildings in the United States is spent powering air conditioning systems. In practice the researchers think the coating might be sprayed on a more solid material to make it suitable for withstanding the elements.

The real breakthrough is how the Stanford material radiates heat away from buildings. As science students know, heat can be transferred in three ways: conduction, convection and radiation. Conduction transfers heat by touch. That's why you don't touch a hot oven pan without wearing a mitt. Convection transfers heat by movement of fluids or air. It's the warm rush of air when the oven is opened. Radiation transfers heat in the form of infrared light that emanates outward from objects, sight unseen. The first part of the coating's one-two punch radiates heat-bearing infrared light directly into space. The ultrathin coating was carefully constructed to send this infrared light away from buildings at the precise frequency that allows it to pass through the atmosphere without warming the air, a key feature given the dangers of global warming.

This multilayered coating also acts as a highly efficient mirror, preventing 97 percent of sunlight from striking the building and heating it up. "We've created something that's a radiator that also happens to be an excellent mirror," Raman said. Together, the radiation and reflection make the photonic radiative cooler nearly 9 degrees Fahrenheit cooler than the surrounding air during the day.

The multilayered material is just 1.8 microns thick, thinner than the thinnest aluminum foil. It is made of seven layers of silicon dioxide and hafnium oxide on top of a thin layer of silver. These layers are not a uniform thickness, but are instead engineered to create a new material. Its internal structure is tuned to radiate infrared rays at a frequency that lets them pass into space without warming the air near the building.

This research was supported by the Advanced Research Project Agency-Energy (ARPA-E) of the U.S. Department of Energy.

Theoretical Equation Demonstrates Global Warming Links to Carbon Emissions

A team of researchers from the Universities of Liverpool, Southampton and Bristol have derived the first theoretical equation to demonstrate that global warming is a direct result of the build-up of carbon emissions since the late 1800s when man-made carbon emissions began. The results are in accord with previous data from climate models. The theoretical equation revealed the complex relationship between carbon dioxide levels and the ocean system.

Burning fossil fuels increased atmospheric carbon dioxide levels leading to global warming and the greenhouse effect, which is partly offset by the oceans taking in both heat and carbon. The results show every million-million tons of carbon emitted will generate one degree Celsius of global warming. They also show that the build-up of carbon emitted over the last 200 years will then last for many centuries to millennia even if carbon emissions are subsequently phased out. The results also reveal that surface warming is related to the total amount of carbon emitted from fossil fuels, with little change over time as ocean carbon and changes in heat uptake almost cancel each other out.

Professor Ric Williams, Chair in Ocean Sciences at the University of Liverpool's School of Environmental Sciences, said, "Given the complexity of the climate system, it was a surprise to find out how simple the relationship is between global warming and how much carbon we emit. The ocean turns out to be crucial by taking up both heat and carbon, which lead to nearly compensating effects in how surface warming depends on carbon emissions. These findings potentially address the most important finding from the Intergovernmental Panel on Climate Change (IPCC) report last year, which is how the global warming increases with how much carbon we emit. In terms of wider policy implications, our theory reiterates a simple message: the more cumulative carbon emissions are allowed to increase, the more global surface warming will also increase. This policy implication reinforces the need to develop carbon capture techniques to limit the warming for the next generations."

Dr. Phil Goodwin, from Ocean and Earth Science, University of Southampton, added, "Our analysis highlights the nearly irreversible nature of carbon emissions for global warming. Once carbon has been emitted into the atmosphere the warming effect will last many centuries, even after much of the carbon has been absorbed by the ocean. We cannot wait until after significant anthropogenic warming has occurred to reduce carbon emissions and hope the climate goes back to normal by itself, it won't."

www.ashrae.org/scholarships

Bi-State Chapter Officers and Governors 2014—2015

Position	First Name	Last Name	Email	Phone
Officers				
President	James (Jim)	Dolan	jdolan@olace.com	(914) 919 3106
President-Elect	TBD		TBD	
Vice President	TBD		TBD	
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Treasurer	Dennis	LaVopa	dlavopa@dlFlowTech.com	(845) 265-2828
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BOG (term ends June 2017)	John	Fusco	jfusco@olace.com	(914) 919-3178
BOG (term ends June 2017)	Cliff	Konitz	c.konitz@verizon.net	(845) 297-5864
BOG (term ends June 2017)	Stephanie	O'Dea	Stephanie.L.Odea@jci.com	(914) 593-5245
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BOG (term ends June 2015)	Brendan	Smith	bsmith@lynstaar.com	(914) 741-1290 ext 17
BOG (term ends June 2015)	Larry	Sturgis		
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Chapter Alternate	TBD	TBD		
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CTTC	Marc	Wilson	Marc.Wilson@victaulic.com	(571) 271 8955
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Administrator	Cliff	Konitz	c.konitz@verizon.net	(845) 297-5864
Golf	Steven	Abbattista	sabbattista@olace.com	(914) 919-3102

Why Be Involved in a Local Chapter?

- Learn about the latest technologies presented in the program sessions
- Attain continuing education credits
- Meet industry associates and discuss local concerns
- Network amongst designers, installers, vendors, educators, in your local area to help improve business for all
- Share experiences with others
- Enjoy a social hour
- Carry out ASHRAE's mission on a local level

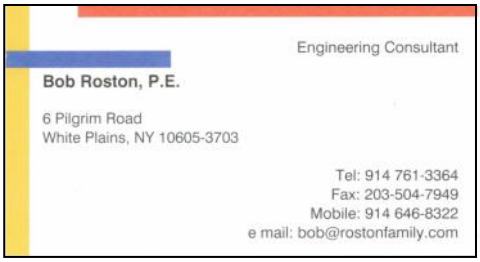
To advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world.

Notice to business card advertisers:

We are currently accepting business card advertisements for this year's newsletters. The cost of a business card ad is $125.00. The newsletter is published monthly, September through June (ten issues). That means for $125.00 ($12.50 an issue), your business card ad will circulate to approximately 300 recipients a month or an advertising cost of approximately 4 cents/recipient.

If you are interested in placing an ad, please forward a business card and check (payable to ASHRAE Bi-State) to:

ASHRAE Bi-State Chapter
DL Flow Tech
2421 Route 52
Hopewell Junction, NY 12533



Employment Opportunities

Employment ads may be submitted for inclusion in **The Exchanger** as follows:

1.$100.000 from companies placing ad for one (1) month.

2.$150.00 from companies placing ad for two (2) months.

3.No charge for members looking for employment.

Cost of Energy Efficiency Less Than Half That of New Generation According to LBNL Study

New research by Lawrence Berkeley National Laboratory (LBNL) has found that the cost of saving energy is less than half of constructing a new coal plant to generate the same amount of electricity. The LBNL study concluded that the average total cost of saved energy is only 4.4 cents per kilowatt hour (kWh). On average, U.S. utilities charge residential customers about 13 cents per kWh. "The EIA (Energy Information Administration) estimate for the cost of conventional coal for utilities is 9.5 cents per kilowatt hour—more than double the total cost of saved energy," said Merrian Borgeson, a senior scientist at the Natural Resources Defense Council. The LBNL report notes that residential programs had the lowest savings-weighted total resource cost of saved energy (CSE), at about 3 cents per kWh. Commercial and industrial programs cost about 5.6 cents per kWh.

ASHRAE, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes tomorrow's built environment today.

ASHRAE will be the global leader, the foremost source of technical and educational information, and the primary provider of opportunity for professional growth in the arts and sciences of heating, ventilating, air conditioning and refrigerating.

Upcoming Meetings

Month	Date	Promotion	Main Presentation	Tech Session
December	12/10/2014	Research Promotion	New "Found Money" for Facility Managers — Joseph H. Klotz	
January	1/14/2015	Membership Promotion	Save the date	
February	2/11/2015	Membership Promotion	Save the date	
March	3/11/2015	Membership Promotion	Save the date	
April	4/8/2015	Membership Promotion	Technical program at sustainable demonstration location	Earth Day
May	5/13/2015	Student Scholarships	Golf Outing (tentative, may be June)	
June	6/10/2015	Membership Promotion	Save the date	

ASHRAE Selected as 2014 Best of Building Award Recipient by USGBC Members

ASHRAE is pleased to announce that it has received the U.S. Green Building Council's (USGBC) Best of Building award for Best Professional Association. "ASHRAE is proud to be recognized as the Best Professional Association in the Best of Building Awards," Tom Phoenix, ASHRAE president, said. "ASHRAE strives to set an example for the industry in sustainability through efforts such as increasing the stringency of its standards, developing guidance that will lead to high performing buildings and offering resources to professionals in the building industry to keep them up to speed with the latest sustainable technology. We look forward to building on our foundation as future industry issues come to the forefront."

The Best of Building Awards celebrates the year's best products, projects, organizations and individuals making an impact in green building. Nominees and winners were selected exclusively by the members of USGBC, a vibrant and diverse community of nearly 13,000 of the world's leading organizations invested in sustainability. "USGBC's membership represents a diverse community of leaders that have made significant contributions to the advancement of green building," said Mahesh Ramanujam, chief operating officer, USGBC. "We congratulate ASHRAE as these peer-chosen awards reflect new and innovative achievements that are to be commended."

There are 30, peer-selected awardees selected for 48 individual categories in the competition. Awardees were selected based on their region, size and area of specialization and are designed to showcase the most progressive, innovative organizations in the fields of green architecture, landscape, engineering, interior design and manufacturing. A full list of winners can be viewed at usgbc.org.