



# Bi-State Chapter Exchanger

Volume XXVIII, Issue 3

Serving the Hudson Valley and Western Connecticut

November 2014

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## Save the Date

Chapter Meeting  
November 12th



Meeting Location: Casa Rina  
886 Commerce Street  
Thornwood NY 10592

5:30 - 6:00PM Arrival and Networking  
6:00 - 7:30PM Buffet Dinner  
7:30 - 8:30PM Main Presentation

\$25 Members, \$30 Non-Members  
*Complimentary Admission for  
Engineering Students*

*Walk-ins and General Public Welcomed*

The new Tappan Zee Bridge is becoming a reality!

The first span is scheduled to open in 2016 and will be completed in 2018. This major capital project in our region required a significant effort from the government in order to accelerate the project into the tangible vision it is today.

ASHRAE is proud that Brian Conybeare, special advisor to the Governor of New York, will discuss the Design-Build Legislation, environmental review and procurement processes for this 3.9 billion dollar project.

RSVP to [ashraebistateRSVP@olace.com](mailto:ashraebistateRSVP@olace.com)

### Directions

From Saw Mill Parkway- North or South, Exit at Marble Avenue- Exit # 27, Make right- continue to second traffic light, Make right onto Commerce Street, Casa Rina is the second house on our left, Parking is on your right.

See [www.ashraebistate.org](http://www.ashraebistate.org) for more information

## President's Message

By Jim Dolan



We are having a great start to the year after a joint meeting with AIA and now we are having Brian Conybeare, special advisor to the Governor, speak tonight at our usual haunt, Casa Rina. Many are interested in this subject and its impact on our area as well as the approach to get this project rolling which included legislation to allow for this to be a "Design-Build" project.

We are looking to also discuss some of our Chapter Committees and involvement with the Chapter. We are proud of the efforts that the Chapter has made over the years, the support of the community we are in and look forward to discussing ways the Chapter can continue to serve the members and their interests.

Thank you again to all of those who joined us at last month's AIA joint meeting with the BiState Chapter.

### Upcoming December Meeting

Our upcoming December meeting will be somewhat of a Holiday Celebration. A recommendation for an award to the Best "BAD Holiday Sweater" was made so feel free to get in the Spirit. More details on the details of the event, the speaker and his presentation are below.

James F. Dolan, P.E.

## 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.

Faster and greater computing power in a smaller package for less money; standardized BAS protocols, Big Data, embedded "FDD" (fault detection 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.

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.



## United States and China Announce New Climate Goals

The United States and China announced new goals for reducing their global warming pollution in the coming decades, with the U.S. ramping up its rate of decarbonization in five to 10 years and China promising that its carbon emissions will peak in the next 15 years. The announcements, which came at a multinational summit in Beijing on November 11, made clear for the first time the commitments that the two biggest sources of greenhouse gases will make as part of the urgent United Nations negotiations. The talks aim to reach a comprehensive climate change treaty that could be signed in Paris at the end of 2015. The U.S. and China produce about a third of the total annual emissions of carbon dioxide, the principal greenhouse gas. Both have set out plans to reduce emissions, especially by using less coal in the production of electricity. Their new pledges would deepen those commitments.

“President Barak Obama announced a new target to cut net greenhouse gas emissions 26-28 percent below 2005 levels by 2025,” the White House said. “At the same time, President Xi Jinping of China announced targets to peak CO2 emissions around 2030, with the intention to try to peak early, and to increase the non-fossil fuel share of all energy to around 20 percent by 2030.”

## 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](http://www.ashrae.org/BEMP) to learn more about the BEMP practice exam.

Visit [www.ashrae.org/certification](http://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 4<sup>th</sup> 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](http://www.ashrae.org/bookstore) to learn more about these and other outstanding ASHRAE publications!

## ASHRAE Announces Recipients of Student Design Competition and Applied Engineering Challenge

Students who took part in ASHRAE's 2014 Student Design Competition were challenged to do research and design for a research and design development facility. The competition focuses on a two story office building in New York City with a research and development facility. ASHRAE student teams outside the United States were allowed to locate the building in the capital of their state, province or country. ASHRAE also announces the recipients of the Applied Engineering Challenge, which focused on the need to improve indoor air quality (IAQ), particularly in residential applications in developing countries. Among the 39 entries from 13 countries, four were awarded first place in the categories that the competition and challenge offer.

First place in HVAC Design Calculations is awarded to a team from the University of Central Florida, Orlando: Christopher Erickson, associate engineer, Universal Creative, Orlando; Ian Faulkner, mechanical designer, exp U.S. Services, Orlando, Fla.; DJ Marshall, mechanical engineer, TLC Engineering for Architecture, Orlando, Fla.; Richard Suarez, quality engineer, Rockwell Collins, San Diego, Calif.; Kristian Jack Szymanski, Coral Springs, Fla.; and Ju Young Yu, Winter Park, Fla. Their faculty advisor is Gabriel Vazquez, Ph.D. The team's objective was to design a high efficiency HVAC system with long life cycle, and excellent indoor air quality while maintaining cost effectiveness. They selected variable refrigerant flow (VRF) systems with simultaneous heating and cooling and dedicated outdoor air systems (DOAS) with energy recovery. Other equipment included air valves for lab areas and high efficiency particulate absorption (HEPA) filters and exhaust fans to eliminate contamination. A 20 ton DOAS unit, three condensing units and several heat recovery units were used to supply required air to all types of VRF units contained within the building. A separate 50 ton DOAS unit was used for lab areas due to the high air change requirement of the clean room and high exhaust rate in the four research and development areas. For each DOAS unit, an exhaust fan was used, and one additional exhaust fan was selected for emergencies only, such as in the case of a refrigeration leak. The total cost associated with the selected systems was \$570,203. The design encompasses efficiency, health and safety, comfort, functionality, longevity, flexibility and maintainability with a low life cycle cost.

First place in HVAC System Selection is awarded to a team from Kansas State University, Manhattan, Kans.: John Gaito, Kathryn Helmer, Lexie Oliver, Alex Pint, Megan C. Walkowiak and Gordon Zimmerman, all of whom are senior level students in architectural engineering. Faculty advisors are Julia Keen, Ph.D., P.E., HPBD, and Fred Hasler, P.E. The students selected a ground source heat pump (GSHP) system where water is pumped through vertical piping in the ground, providing a heat source and heat sink for the heat pumps. The main water loop serves the heat pumps and DOAS allowing heat transfer between spaces to maximize energy efficiency. The GSHP system met all the owner's requirements in using the ground as a heat sink and heat source to serve the building. As a result, the energy savings are immense. This creates a low-cost, reliable, flexible, maintainable, sustainable system. An unusual addition to the system was incorporation of a wall of vegetation created by attaching plants that do not require soil to a mesh grid. Given that the building is used for research and design, the exhaust and ventilation rates are significant and consume large amounts of energy. Ten small bio-walls are used to decrease energy consumption for the entire building by decreasing the required ventilation in the office spaces.

First place in Integrated Sustainable Building Design is awarded to a team from Montana State University, Bozeman: Elyse Casper; Theresa R. Lindenau, Bozeman, Mont.; Terra Moran, materials engineer, Imperial Oil, Calgary, Alberta; Mary Peterson, project engineer in the commercial solutions division, 3M, Saint Paul, Minn.; and Martin Reaves, founder, Monolithic, Bozeman, Mont. Their faculty advisor is Kevin Amende, P.E. For the HVAC systems, students implemented multiple systems with high efficiencies, using the nearby river as a heat exchanger. The main system - a VRF system - is more expensive upfront, but more cost-effective and energy saving throughout the life of the building. It was implemented to condition the open office, library, meeting rooms, mail room and HR office spaces. It has the additional benefit of requiring no duct work; only the routing of small refrigerant lines. Fresh air is pre-conditioned by a heat recovery ventilation unit that exchanges energy with exhaust air leaving the building. This recovers energy while improving air quality. Fresh air is vented directly into the fan coil units in the VRF spaces, first mixing and then distributing throughout the rooms. Fresh air for the computer server and research and design spaces is ducted into the heat pumps and blown into the rooms directly. Acoustic and filtration specifications were addressed through appropriate noise dampening and filtration products. Review of data showed energy consumption was reduced by almost 70 percent; cooling load was reduced by over 60 tons; and carbon and greenhouse gas emissions were more than halved. The new design pays back after year twelve, and saves the owner almost \$1 million by the end of 40 years. Although the design did not reach net-zero, the improvements were exponential. With a larger budget or new construction, the net zero goal could be realized.

ASHRAE also announces the recipients of the 2014 Applied Engineering Challenge, in which students were required to design and specify a small, portable air conditioner that must be affordable, maintainable and effective in the local cultural environment. The first place Applied Engineering Challenge recipients are a team from California Polytechnic State University, San Luis Obispo: Juan Silva, sales operation, SYSERCO, Fremont, Calif.; and Nelson E. Echeverry, design engineer, Donald F. Dickerson Associates, Tarzana, Calif. Their faculty advisors are Steffen Peuker, Ph.D., and Jesse Maddren, Ph.D., P.E. The system involves a series of measures that a family living in Mexico City can take to improve the IAQ in their house. Starting in the kitchen, a wood stove with a chimney attached was used to vent out the smoke caused from burning biomass. The stove provides heating during cold days, reduces pollution caused by inefficient cooking stoves and provides reliable operation. Next, in the living room, a window fan was modified with an external air filter at the inlet of the fan, capturing most of the harmful contaminants and allowing fresh air to enter the house. With forced airflow, pollutants are dispersed, thus avoiding high concentrations. A window fan providing a capacity of 1400 CFM is sufficient to supply the entire house. For cooling, students chose a window unit, which helps in reducing humidity. One major benefit is that units are portable and can easily be installed in a new or different home. Two financial tiers were created: one targets low to middle class families, providing equipment and devices to satisfy comfort needs and to improve healthy living, but with less expensive materials. The second tier for high to mid class families contains a power generator and window unit.

## Berkeley Lab Scientists ID New Driver Behind Arctic Warming

Scientists have identified a mechanism that could turn out to be a big contributor to warming in the Arctic region and melting sea ice. The research was led by scientists from the US Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab). They studied a long-wavelength region of the electromagnetic spectrum called far infrared. It is invisible to our eyes but accounts for about half the energy emitted by the Earth's surface. This process balances out incoming solar energy.

Despite its importance in the planet's energy budget, it's difficult to measure a surface's effectiveness in emitting far-infrared energy. In addition, its influence on the planet's climate is not well represented in climate models. The models assume that all surfaces are 100 percent efficient in emitting far-infrared energy. That's not the case. The scientists found that open oceans are much less efficient than sea ice when it comes to emitting in the far-infrared region of the spectrum. This means that the Arctic Ocean traps much of the energy in far-infrared radiation, a previously unknown phenomenon that is likely contributing to the warming of the polar climate. Their research appears in the online early edition of the *Proceedings of the National Academy of Sciences*.

"Far-infrared surface emissivity is an unexplored topic, but it deserves more attention. Our research found that non-frozen surfaces are poor emitters compared to frozen surfaces. And this discrepancy has a much bigger impact on the polar climate than today's models indicate," says Daniel Feldman, a scientist in Berkeley Lab's Earth Sciences Division and lead author of the paper. "Based on our findings, we recommend that more efforts be made to measure far-infrared surface emissivity. These measurements will help climate models better simulate the effects of this phenomenon on the Earth's climate," Feldman says. He conducted the research with Bill Collins, who is head of the Earth Sciences Division's Climate Sciences Department. Scientists from the University of Colorado, Boulder and the University of Michigan also contributed to the research.

The far-infrared region of the electromagnetic spectrum spans wavelengths that are between 15 and 100 microns (a micron is one millionth of a meter). It's a subset of infrared radiation, which spans wavelengths between 5 and 100 microns. In comparison, visible light, which is another form of electromagnetic radiation, has a much shorter wavelength of between 390 and 700 nanometers (a nanometer is one billionth of a meter). Many of today's spectrometers cannot detect far-infrared wavelengths, which explains the dearth of field measurements. Because of this, scientists have extrapolated the effects of far-infrared surface emissions based on what's known at the wavelengths measured by today's spectrometers.

Feldman and colleagues suspected this approach is overly simplistic, so they refined the numbers by reviewing published studies of far-infrared surface properties. They used this information to develop calculations that were run on a global atmosphere climate model called the Community Earth System Model, which is closely tied to the Department of Energy's Accelerated Climate Model for Energy (ACME). The simulations revealed that far-infrared surface emissions have the biggest impact on the climates of arid high-latitude and high-altitude regions.

In the Arctic, the simulations found that open oceans hold more far-infrared energy than sea ice, resulting in warmer oceans, melting sea ice, and a 2-degree Celsius increase in the polar climate after only a 25-year run. This could help explain why polar warming is most pronounced during the three-month winter when there is no sun. It also complements a process in which darker oceans absorb more solar energy than sea ice.

"The Earth continues to emit energy in the far infrared during the polar winter," Feldman says. "And because ocean surfaces trap this energy, the system is warmer throughout the year as opposed to only when the sun is out." The simulations revealed a similar warming effect on the Tibetan plateau, where there was five percent less snowpack after a 25-year run. This means more non-frozen surface area to trap far-infrared energy, which further contributes to warming in the region. "We found that in very arid areas, the extent to which the surface emits far-infrared energy really matters. It controls the thermal energy budget for the entire region, so we need to measure and model it better," says Feldman

The research was supported by NASA and the Department of Energy's Office of Science.



## New Solar Power Material Converts 90 Percent of Captured Light into Heat

A multidisciplinary engineering team at the University of California, San Diego developed a new nanoparticle-based material for concentrating solar power plants designed to absorb and convert to heat more than 90 percent of the sunlight it captures. The new material can also withstand temperatures greater than 700 degrees Celsius and survive many years outdoors in spite of exposure to air and humidity. Their work, funded by the U.S. Department of Energy's SunShot program, was published recently in two separate articles in the journal *Nano Energy*. By contrast, current solar absorber material functions at lower temperatures and needs to be overhauled almost every year for high temperature operations.

"We wanted to create a material that absorbs sunlight that doesn't let any of it escape. We want the black hole of sunlight," said Sungho Jin, a professor in the department of Mechanical and Aerospace Engineering at UC San Diego Jacobs School of Engineering. Jin, along with professor Zhaowei Liu of the department of Electrical and Computer Engineering, and Mechanical Engineering professor Renkun Chen, developed the Silicon boride-coated nanoshell material. They are all experts in functional materials engineering.

The novel material features a "multiscale" surface created by using particles of many sizes ranging from 10 nanometers to 10 micrometers. The multiscale structures can trap and absorb light which contributes to the material's high efficiency when operated at higher temperatures. Concentrating solar power (CSP) is an emerging alternative clean energy market that produces approximately 3.5 gigawatts worth of power at power plants around the globe -- enough to power more than 2 million homes, with additional construction in progress to provide as much as 20 gigawatts of power in coming years. One of the technology's attractions is that it can be used to retrofit existing power plants that use coal or fossil fuels because it uses the same process to generate electricity from steam. Traditional power plants burn coal or fossil fuels to create heat that evaporates water into steam. The steam turns a giant turbine that generates electricity from spinning magnets and conductor wire coils. CSP power plants create the steam needed to turn the turbine by using sunlight to heat molten salt. The molten salt can also be stored in thermal storage tanks overnight where it can continue to generate steam and electricity, 24 hours a day if desired, a significant advantage over photovoltaic systems that stop producing energy with the sunset.



### APPLY

Each year the ASHRAE Foundation awards scholarships of up to \$10,000 each to qualified students.

### DONATE

Help support ASHRAE's student scholarship programs.

[www.ashrae.org/scholarships](http://www.ashrae.org/scholarships)

### Bi-State Chapter Officers and Governors 2014—2015

Position	First Name	Last Name	Email	Phone
<b>Officers</b>				
President	James (Jim)	Dolan	jdolan@olace.com	(914) 919 3106
President-Elect	TBD		TBD	
Vice President	TBD		TBD	
Secretary	Brendan	Smith	bsmith@lynstaar.com	(914) 741-1290 ext 17
Treasurer	Dennis	LaVopa	dlavopa@dIFlowTech.com	(845) 265-2828
<b>Governors</b>				
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
BOG (term ends June 2016)	Michael	Circosta	mjcarmonk@optonline.net	(914) 273-9173
BOG (term ends June 2016)	Dennis	LaVopa	dlavopa@dIFlowTech.com	(845) 265-2828
BOG (term ends June 2016)	Robert	Roston	bob@rostonfamily.com	(914) 761-3364
BOG (term ends June 2015)	Tom	Quartuccio	tquart@optonline.net	
BOG (term ends June 2015)	Brendan	Smith	bsmith@lynstaar.com	(914) 741-1290 ext 17
BOG (term ends June 2015)	Larry	Sturgis		
Chapter Delegate	James	Dolan	jdolan@olace.com	(914) 919 3106
Chapter Alternate	TBD	TBD		
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CTTC	Marc	Wilson	Marc.Wilson@victaulic.com	(571) 271 8955
Government Affairs	Michael	Circosta	mjcarmonk@optonline.net	(914) 273-9173
Research Promotion	Tom	Quartuccio	tquart@optonline.net	
Student Activities	Stephanie	O'Dea	Stephanie.L.Odea@jci.com	(914) 593-5245
Young Engineers in ASHRAE	Brendan	Smith	bsmith@lynstaar.com	(914) 741-1290 ext 17
Membership Promotion	James	Dolan	jdolan@olace.com	(914) 919-3106
Refrigeration	John	Fusco	jfusco@olace.com	(914) 919-3178
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Reception	Joseph	Trongone	jatrongone@optimumonline.com	(914) 332-7658
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:

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## 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.\$150,000 from companies placing ad for two (2) months.
- 3.No charge for members looking for employment.

### New Technology to Help Preserve Old Sistine Chapel Masterpiece

The Sistine Chapel receives six million visitors a year, with as many as 20,000 in a day. This has necessitated a "radical intervention" to allow for air circulation, dust suppression, and temperature and humidity control, said Antonio Paolucci, director of the Vatican Museums. To mark the 20-year anniversary of the restoration of Michelangelo's "The Last Judgment" in the Sistine Chapel, the Vatican Museums are hosting a two-day international conference on Oct. 30—31. Much of the conference will focus on new methods being taken to protect the priceless artistic treasure. Carrier will provide a state-of-the-art HVAC system for the Sistine Chapel, specially designed to address the challenges of protecting Michelangelo's masterpieces against deterioration. In addition, lighting company Osram retrofit the chapel with LED-based fixtures to highlight the frescoes. The project will involve custom-designed fixtures optimized for beam control and with a color spectrum that will highlight the pigmentation in the artwork. Paolucci said without the new HVAC system, there might be a "dangerous drift" preventing proper preservation.





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
November	11/12/2014	Government Affairs	Tappan Zee Bridge Project Brian Conybeare	
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	

### EPA Provides Guidance on Improving School IAQ

The U.S. Environmental Protection Agency (EPA) has released new guidance to help school districts protect indoor air quality while increasing energy efficiency during school renovations. The EPA states that renovation and construction activities can create dust, introduce new contaminants and contaminant pathways, create or aggravate moisture problems, and result in inadequate ventilation in occupied spaces. The “Energy Savings Plus Health: Indoor Air Quality Guidelines for School Building Upgrades” guide addresses 23 specific priority issues and contaminants commonly associated with building upgrades. The guidelines are available at: [http://www.epa.gov/iaq/schools/energy\\_savings\\_plus\\_health.html](http://www.epa.gov/iaq/schools/energy_savings_plus_health.html)

### DOE Announces \$9 Million in Funding to Improve Efficiency of Commercial Buildings

The U.S. Department of Energy (DOE) has announced the availability of \$9 million in funding to encourage investments in energy-saving technologies that can be tested and deployed in offices, shops, restaurants, hospitals, hotels, and other types of commercial buildings. The funding is intended to facilitate the implementation of market-ready solutions across the U.S. to improve commercial building energy efficiency, with a goal of demonstrating 20 percent savings or more across a variety of approaches.

Owners and occupants could cut energy waste, saving an estimated tens of billions of dollars annually, if they operated their buildings more efficiently and invested in energy-saving technologies, said DOE. Additionally, accelerating investment in efficiency upgrades could also lead to greater demand for new building products and technologies, many of which are produced and developed in the U.S. This funding opportunity encourages building owners and occupants to demonstrate widely-applicable and self-sustaining approaches that address key challenges and make building efficiency improvements easier.

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