

SOL*AIR

Newsletter for the Southern California Chapter of ASHRAE

Oct 2024 | Vol 69 No 2

UPCOMING EVENTS



**ASHRAE WINTER CONFERENCE
ORLANDO & AHR EXPO**
Sat-Wed Feb 8-12, 2025

Sept 30th is the **last day** for **Students** to apply for **grants!** See **page 11!**

OCTOBER MEETING

Tue Oct 1st, 2024

HOW DO WE GET TO A DECARBONIZED WORLD?

Speaker Paul Torcellini, Ph.D.
Principal Engineer, National Renewable Energy Laboratory



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TICKETS

Students: FREE
Chapter Members: \$70
Non-Members: \$80

LOCATION

Quiet Cannon Conference Center
901 Via San Clemente
Montebello, CA 90640

REGISTER HERE

<https://www.eventbrite.com/e/how-do-we-get-to-a-decarbonized-world-tickets-1015420809977>

Tue Oct 1st, 2024

Quiet Cannon, Montebello, CA
<https://socialashrae.eventbrite.com>

HOW DO WE GET TO A DECARBONIZED WORLD?

**Paul Torcellini**Principal Engineer
National Renewable Energy Laboratory
ASHRAE Distinguished Lecturer

About the Lecture

Many organizations are setting decarbonization goals, leaving design teams to implement them. This raises questions about electrification, energy targets, electric vehicles, business viability, and alignment of solar resources with building loads. The lecture will present examples of companies creating action plans to meet these goals and provide strategies for making decarbonized buildings the norm.

Learning Objectives

1. Outline the process for creating a decarbonized building.
2. Explain how buildings interact with the grid to support renewable energy.
3. Prioritize buildings in a portfolio to achieve carbon reduction goals.
4. Apply design strategies to meet EUI targets and reduce carbon impact.

Paul Torcellini, Ph.D.

Principal Engineer, National Renewable Energy Laboratory

Paul Torcellini has 30 years of experience in energy use in buildings, focusing on low and zero-energy designs with minimal environmental impact. He holds a BS in Mechanical Engineering from Worcester Polytechnic Institute, an MS in Mechanical Engineering (specializing in heat transfer and building modeling), and a PhD in building controls from Purdue University.

An ASHRAE Fellow for 25 years, Paul has won two ASHRAE Technology Awards for energy-efficient building design and contributed to the Advanced Energy Design Guide Series. He chaired guides for zero-energy K-12 schools and small to medium office buildings. Paul has taught at several universities and lives in a zero-energy home in Connecticut, where he also runs a sustainable farm.

President's Message

Dear ASHRAE Southern California members and guests,

I hope you all enjoyed the long summer days, despite the challenges posed by wildfires and extreme heat.

Last month we had our first meeting of the year, which focused on the important topic of rising legionella disease cases in Los Angeles County and the mitigation efforts that are in motion by the LA County of Public Health. Our speaker, Prabhu Gounder, MD, emphasized the importance of good water management practices that are in line with ASHRAE guidance documents - Standard 188, Standard 514 and Guideline 12. The turnout at the meeting was great, and I was impressed by the engaged participation of our members.



I'm excited to announce that our upcoming meeting will dive into another key topic of decarbonization of the built environment. Our speaker, Paul Torcillini, a distinguished ASHRAE lecturer and principal engineer at NREL, is a renowned expert in this field. I'm confident that this presentation will provide valuable insights into the latest trends and innovations in sustainable building design and operation.

Thank you for your continued engagement and participation in our chapter. Enjoy the beginning of beautiful fall season.

Thank you,

Rafi Karim
ASHRAE SoCal President, 2024-2025

MEET OUR BOARD 2024-2025



Elyse McBride, PE

Past President

elyse.mcbride@ifactor.com

Elyse McBride, PE is a mechanical engineer at Infrastructure Factor Consulting, Inc. She has experience with K-12 schools, hospitals, and commercial building design. She has previously served on the Tri-County ASHRAE board before moving to the SoCal ASHRAE region. She received her bachelor's degree in Mechanical Engineering from Cal Poly Pomona.



Rafi Karim, PE

President

Rafi.Karim@arup.com

Rafi is the Mechanical Building Performance Leader for Arup's Los Angeles office with extensive experience leading multidisciplinary teams to deliver high-performance projects. Rafi is passionate about sustainable built environment and has served numerous grassroots positions in ASHRAE SoCal and ASHRAE San Diego during the last 11 years.



Matt Sittel

President-Elect

matt.sittel@rfmacdonald.com

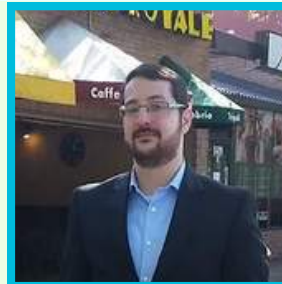
Matt Sittel is a New Equipment Sales Engineer for R.F. MacDonald Co., supporting clients with equipment and design assistance for hot water and steam boilers, pumps, and other commercial HVAC and industrial equipment. Matt covers West LA County through Santa Barbara. He has a passion for learning about and sharing new technology and energy-saving equipment and designs, as well as helping to solve complex problems with clients.



Shahpoor Khosravi, PE

Treasurer

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Chet Dik

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Alex Larson

Director of Membership and Retention

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Alex Larson is a sales engineer with DMG. He is currently the Director of Membership and Research Promotion and the Communications Co-Chair. Outside of work he enjoys scuba diving and backpacking.

MIKE'S MONTHLY MAINTENANCE

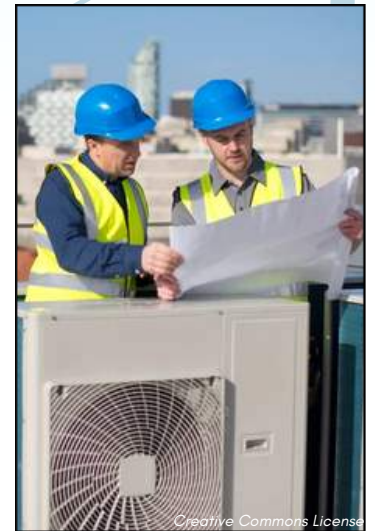


3 Lessons From This Summer's Heat & Humidity Wave

As has become our norm, we spent weeks (not days) above a 76 °F wb peak in much of the LA basin this summer. That led to many issues, some more obvious and some less. This month we'll briefly discuss three of these issues: outside air cooling load; cooling tower performance; and chiller compressor selection.

Outside Air Cooling Load

Any facility that you are designing with high outside air loads requires a judgment call; what peak (and possibly off-peak) design conditions to use? Certainly the level of criticality (as well as criticalness?)...in other words, the risk if the system cannot fully perform...is a major consideration. Budget is also a factor. So is usage and time schedule – for example, a fire station along the coast where people will try to sleep at night, vs. a classroom that is only used during the day – present very different situations. I've seen wet bulb in the 78 F range too often in recent years to not consider what that would mean to an outside air peak load. I've also seen systems that cannot dehumidify at low load (VRF; or single circuit constant speed DX equipment that cycle the compressor with load; as just two examples) fail miserably in the fire station example. My best advice is to recognize that a lot of our design weather condition data is significantly out of date, and adjust accordingly. *Our climate has changed rapidly; can we?*



Cooling Tower Performance

This is a many-faceted subject. Today's cooling tower fill is extraordinary in its ability to efficiently evaporate water. It is also much less forgiving of even a short blip in water treatment, since the efficiency was generally bought with much more surface area...which means lots of layers of very tightly packed, rippled sheets of fill material that is easily bridged by sand and calcium deposits if either water treatment or water flow over the fill gets wacky. Our current Title 24 requirements for reduced water flow in a cooling tower at part load pretty much guarantees that this wackiness will happen at some point, to some degree. And since many chemical treater's training is not a lot more than swimming pool treatment basics, and building engineers as a group get minimal exposure to water treatment theory (especially the microbiological side of things), wacky conditions are bound to

MIKE'S MONTHLY MAINTENANCE



happen from time to time. Don't expect the service contractor to know enough to keep the building out of hot water, either, since most of them have zero training in water treatment. This is a whole 'nother subject for a column, but the upshot for this discussion is that if you do not build a couple of wet bulb degrees safety factor into your cooling tower selection, you are cruisin' for a bruisin'. I saw several recently cleaned cooling towers operating in the 87-90 °F leaving water temperature range from late July to early September.

Chiller Compressor Type

You might reasonably ask, "what does compressor type have to do with wet bulb?". Let me try to explain. The original positive displacement compressor was the reciprocating ("recip") type, with pistons, rods, crankshaft, etc., similar to a car engine. They were only practical to build up so big (typically the concept peaked out at about 150 tons per compressor), though, and had efficiency limitations. In recent years scroll compressors have become popular due to relatively low cost, decent efficiency and robust performance. They become impractical for mass use above about 20 tons, though, so unless you want a forest of little compressors, larger equipment needs to move in another direction. Super fine machining tolerance manufacturing made the screw compressor practical, and it solves many problems since it can be made pretty large and is reasonably efficient. All of the above are positive displacement compressors (the gas is forced to move from low to high pressure, no matter how high the pressure; it either accomplishes that or the result is that it either overloads the motor, breaks the compressor, or both). Over 100 years ago the centrifugal compressor took over the larger compressor market. It could move a much larger volume of refrigerant gas and do it very efficiently; but unlike the recip, scroll or screw compressors, it is not positive displacement. A centrifugal compressor propels the gas using kinetic energy. If the tower water temperature rises much beyond the condenser design, the increased pressure in the condenser will be too great for the kinetic energy to overcome. The compressor will be unable to shove that gas into the condenser, and the result will be surge. "Surge" is the condition where the gas proceeds to the condenser until the moment when the pressure is too great, at which point the gas reverses direction and momentarily actually travels backward through the spinning compressor. It is only momentary, since this action instantly relieves the pressure in the condenser...so the impeller once again can propel the gas to the condenser. With tower water that is too warm, this can repeat until the chiller either breaks or shuts down (and you can hear it happening for hundreds of yards). Advanced centrifugal designs can detect that issue and unload the compressor, so there is not as much pressure in the condenser to overcome. But – and this is a big But – it means that the chiller is unloading at precisely the time

MIKE'S MONTHLY MAINTENANCE



when the load is greatest (and bear in mind that all the outside air loads are pegging the meter when the wet bulb is in excess of design conditions). This tends to be a problem in terms of building conditioning. For those older tech centrifugals that don't automatically unload, worse things can happen. Surging is very hard on a chiller. Water cooled chiller compressor type is therefore related to anticipated ambient wet bulb...and peak wet bulb temperatures that are well beyond design conditions are a killer.

What are the lessons? Climate change is not going to reverse itself during our careers. 79 F peak wet bulb is on the near horizon; I've already seen it a few times in the past 5 years. That will (should) impact tower selections. Nighttime operation with any significant outside air load where comfort is important may need a good DOAS (dedicated outdoor air system) or chilled water in order to assure low load dehumidification. Water treatment cannot be an afterthought. And at least one screw (positive displacement) chiller is a good idea in a centrifugal chiller plant, not just as a low load (pony) chiller, but also as high wet bulb insurance.

I look forward to hearing from you! For your questions or comments, please use: mgallagher@wasocal.com

Mike Gallagher, PE, fASHRAE

President at Western Allied Corporation

PEOPLE, PROCESS & PERFORMANCE



Effective Performance Reviews

Performance reviews are a vital aspect of professional development, offering a structured opportunity to reflect on your achievements, discuss opportunities for improvement, and share career aspirations. However, for some of us, performance reviews just like Halloween can bring out the fears and anxieties lurking in the back of our minds, making even the best employees a bit nervous. So, how do you overcome anxiety of performance reviews? What are the key components of an effective performance review? If time permits, what else should be discussed during a performance review? In this brief write up I will be exploring some of the key areas and hope to remove the spooky out of performance reviews.

Preparing for your Performance Review

To prepare for a performance review, focus on compiling written comments and supporting evidence that highlight your achievements and contributions. To make this easy it's good to reference a project folder, notebook, email or even your meeting calendar. That review should bring to mind work activities, requests, project issues and positive feedback from your colleagues. Then review your job description to ensure your accomplishments align with your role's expectations. The last thing you want to do is spend time talking about something that is not integral to your job duties or of limited importance to the bottom line. Prepare questions and feedback for your manager to show your engagement and proactive approach to your development and finally, be ready to discuss future goals and how you can achieve them.

Clear and Valuable Contributions

Make your comments clear and crisp. This is crucial, as your manager will likely reference these to adjust your performance rating, discuss with their leadership, or justify promotions in the near future. Avoid long drawn-out points or never-ending lists, and rather make short and clear statements. Clarity is key because value must be easily understood. Remember that busy work may not always add to the bottom line or project success. This is your time to highlight the significant projects and tasks you've completed not put the reader to sleep. For example, as an HVAC Engineer, you might discuss a project where you designed an energy-efficient HVAC system 20% more efficient than required in the design brief while keeping costs within budget. Explain how this not only led to cost savings for the customer but also supported the company's sustainability goals. Providing specific metrics or feedback from clients can further strengthen your case.

PEOPLE, PROCESS & PERFORMANCE



Discussing Career Objectives

Where do you want to be 5, 10, or 20 years from now? During performance reviews make it a point to discuss your career aspirations with your manager. For instance, you might want to advance to a Senior HVAC Engineer or Project Manager role. Make sure they are aware of that goal so they can assign you more complex projects or leadership roles to prepare you for those opportunities. If you have already identified the skills and experiences you need, that's a perfect time to get your manager's approval and company support for your development. Additionally, you can discuss other goals such as moving into a different part of the company, gaining experience with a different product line, or getting involved with ASHRAE at local meetings, annual conferences, or technical committees. This proactive approach not only helps you stay focused on your career path but also demonstrates your commitment to growth and development to your company.

Seeking Performance Feedback

Constructive feedback is crucial for professional growth. During performance reviews, ask your manager about your strengths and areas for improvement, with specific examples. Feedback typically falls into four categories: Positive & Unexpected, Positive & Expected, Negative & Unexpected, and Negative & Expected. If Positive & Unexpected, adopt it in your daily work and refine it as needed. If Positive & Expected, celebrate it and continue leveraging it for future success. If Negative & Unexpected, explore it to understand and limit its occurrence, focusing on the root cause and corrective actions. Seek additional feedback from colleagues and clients if needed. If Negative & Expected, act on it with increased focus and priority, seeking input from your manager on suggested actions.

Opportunities for Improvement

A performance review without a bit of self-assessment is not very useful. That is because at the foundation of continuous improvement lies self-awareness. Sharing some areas of improvement with your manager is not a sign of weakness, but rather a great indication of self-awareness and willingness to grow and potential to learn more, do more, and provide value to the company. That said, when meeting your manager, openly discuss any obstacles you've faced during the year and how you've addressed them. Highlighting these challenges and your solutions demonstrates your problem-solving skills and resilience. It also shows your ability to handle difficult situations effectively. Additionally, if the issue caused major problems, you could discuss any lessons you learned from these challenges and how they have helped you grow. This is also a good time to ask for feedback on what you could do differently in the future.

PEOPLE, PROCESS & PERFORMANCE



Achievements and Recognition

While modesty is generally valued, it can hinder you during performance reviews. In large teams, managers may not always have a comprehensive view of your work, so it's crucial to be bold and proud of your accomplishments. This is the time to confidently highlight your achievements and celebrate your contributions to the team's success. If your performance has been stellar, and you feel you deserve a raise or promotion, let it be known. Just be prepared to present a compelling case based on your achievements and contributions. Ultimately, as the saying goes, "If you don't ask, the answer will always be no."

Lastly, as Halloween approaches, remember that performance reviews, are not there to scare you, but give you an opportunity to share our accomplishments, identify opportunities for improvement and prepare for future opportunities. I would love to hear from you. Please send comments or questions to ric@rocsolidteam.com.

Ricson Chude, PE, CEM, CEA, CMVP

Engineering Manager at Southern California Edison



2025 ASHRAE WINTER CONFERENCE

ORLANDO, FEB 8-12 | AHR EXPO, FEB 10-12

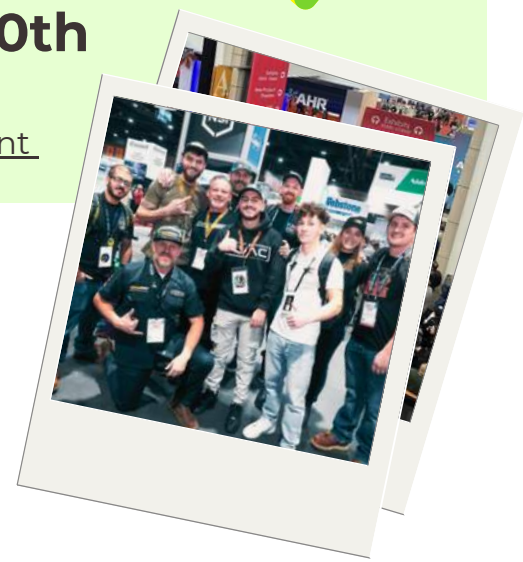


CALLING ALL STUDENT MEMBERS



Want to attend the ASHRAE Winter Conference in Orlando, FL for **FREE??** Apply [here!](#) Applications due **Sep 30th**

<https://www.ashrae.org/communities/student-zone/scholarships-and-grants/student-activities-travel-grant>



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GOVERNMENT AFFAIRS



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STATE AND LOCAL

ASHRAE Sends Letter on California Building Energy Performance Strategy Report

On August 23, 2024, ASHRAE provided comments on the California Energy Commission's notice regarding the state's development of a report on Building Energy Performance strategies. California already has benchmarking requirements, and in 2023, California passed SB 48, the Building Energy Savings Act, which requires the CA Energy Commission to use the state's existing benchmarking data to develop a strategy to decarbonize large existing buildings. This strategy is due by August 2026. ASHRAE's comments included a recommendation to reference Standard 100-2024, Energy and Emissions Building Performance Standard for Existing Buildings. The comments can be found [here](#). These comments are made by the ASHRAE President.

FEDERAL AFFAIRS

New DOE Codes Funding Goes to Jurisdictions to Support Building Performance Standards

On August 27, the Department of Energy announced that 19 state and local governments will receive over \$240 million to adopt and implement the latest energy efficient and innovative building codes. The funds are from the Inflation Reduction Act (IRA) and are administered through DOE's Office of State and Community Energy Programs (SCEP). Existing commercial and multifamily buildings can play an important role in reducing both energy costs and greenhouse gas emissions through policies such as Building Performance Standards (BPS). Currently, approximately 25% of commercial buildings fall under BPS requirements. The 19 jurisdictions receiving this latest influx of funding will now have technical assistance to support energy code adoption and implementation, as well as the adoption of Building Performance Standards. More information on the awardees can be found on the SCEP website [here](#).

GLOBAL NEWS

Kenya's Decarbonization Roadmap: In August, Kenya developed a National Decarbonization Roadmap with the help of the Global Buildings Performance Network and UNEP/GlobalABC. This plan aims to cut the nation's CO₂ emissions by 32% by 2030 and will be presented to the Ministry of Lands, Public Works, Housing, and Urban Development. Sector-specific Nationally Determined Contributions (NDC) targets will also be set for Kenya's 2025 NDC update.

U.S. and China Climate Talks: In early September, U.S. climate diplomat John Podesta met with Chinese officials to discuss 2035 emission cuts and climate finance ahead of COP29 in November. The U.S. is pushing for stronger commitments, while China seeks consistent cooperation, amid uncertainties due to the U.S. Presidential election.

Europe's Record Summer: The European Union's Copernicus Climate Change Service reported that summer 2024 was the hottest ever recorded in Europe, with June and August setting new temperature records and July nearly matching the hottest July ever. August was the 13th of 14 months with temperatures 1.5°C above pre-industrial averages, suggesting we may be nearing or have surpassed the 1.5°C threshold set by the Paris Agreement.

Written by **Akshay Dhanapal Kumar, CEM** | Mechanical Design Engineer at P2S





Sept Meeting: Preventing Legionella Montebello, CA

We had a great turnout at our September meeting. Our speaker, Prabhu Gounder, MD, emphasized the alarming increase in legionella disease cases in Los Angeles County. This underscores the importance of understanding and addressing the risks associated with this potentially fatal illness. Dr. Gounder highlighted the crucial role of water management plans in

mitigating these risks and ensuring the safety of building occupants.

ASHRAE guidance documents, such as ASHRAE Standard 188, provide invaluable resources for developing and implementing effective water management programs. These standards offer practical guidance on various aspects of water system design, operation, and maintenance.



2024

EVENT RECAP





Net Zero Conference Anaheim, CA

Last Wednesday, ASHRAE had the privilege of participating in the Net Zero Conference, an inspiring gathering of passionate professionals dedicated to advancing sustainability. Our booth became a hub for meaningful discussions with individuals eager to explore innovative solutions for decarbonization, energy efficiency, and net-zero building design.

We were honored to be recognized for our industry-leading standards, which continue to shape the future of sustainable building practices. Attendees expressed great interest in how our standards are applied to real-world projects, driving impactful results across various sectors.

The insightful talks and workshops held throughout the day showcased the shared commitment to creating a more sustainable future, with many engaging conversations around ASHRAE's work in energy modeling, HVAC optimization, and building performance. It was truly inspiring to see so many dedicated professionals and emerging leaders collaborating toward a common goal.

We are excited to continue supporting and advancing the sustainability movement, one project at a time!



2024 EVENT RECAP



BOARD ROSTER

2024-2045 ASHRAE Southern California Board

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Research Promotion Co-Chair	Rey Ong	626-552-6660	rong@siglers.com
Reception Chair	Open		
Raffle Chair	Open		
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Director of Public Relations & Correspondence	Open		
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